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**THE FUTURE COSTS OF ALZHEIMER’S DISEASE**

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**INTRODUCTION**

Technological innovations in medical care and healthier lifestyles are causing a steady increase in the lifespan of the United States’ population. At the same time, the post-World War II Baby Boom increasing the number of older individuals. The population over the age of 65 is predicted to double from 41.5 million persons in 2012, to 83.7 million persons in 2050 (U.S. Census Bureau, 2012). This could have severe economic ramifications in the near future; one of the most important being increased medical spending. As a person ages, they become more susceptible to diseases and infirmities. This can lead to increased costs and spending on treatment and care. One of the most prevalent and expensive infirmities that can affect individuals as they age is dementia.

Dementia is a decline in mental capacity which is strong enough to cause problems in at least two mental faculties such as memory degradation, impaired judgment, or difficulty communicating. The most prominent of these diseases is Alzheimer’s disease (AD). A recent study found that approximately 11 percent of the population older than 65 is afflicted with the disease (Alzheimer’s Association, 2014). Symptoms can include memory loss, impaired judgment, and difficulty communicating. Alzheimer’s disease does not have any known cure. Instead, medication is prescribed commonly to reduce the severity of symptoms.

The main costs associated with AD, therefore, are costs for medication and long-term care. The total cost of care has been estimated to be between $157 billion and $215 billion per year (Hurd, 2013). Most of the costs are spent on formal and informal long-term care instead of medication (Hurd et al., 2013). Our study investigates whether the benefits of treatment and care for AD patients are greater than the costs. It may be more cost-efficient to reallocate some funds from AD treatment to AD prevention.

**DIAGNOSING AND TREATING OF AD**

AD is a degenerative brain disorder which causes the patient to have decreased mental capacity and experience behavioral changes. Little is known about the physiological cause of AD. One potential explanation is the "amyloid cascade" hypothesis which theorizes that toxic fragments of proteins known as beta amyloids build up in the brain, damaging the neuronal synapses and eventually forming plaques in the brain which kill the neurons and disrupt transmission between still living neurons (Boyd, 2010: 59-60). Although the amyloid cascade hypothesis is the most widely accepted explanation, there is uncertainty regarding which factors contribute to the creation of these protein fragments and how these fragments are actually formed (Budson and Kowall, 2011: 17-18).

There are a variety of potential symptoms that can be experienced by the patients as a result of disrupted communication between neurons. The most common is memory deficiency, but other symptoms include: impaired vision and depth perception, trouble communicating, impairment of motor function, difficulty paying attention, and changes in emotional and behavioral states (Budson and Kowall, 2011: 18-30). Although not all patients experience every symptom, the symptoms' prevalence and severity usually increase with a patient’s age. The increase in severity of the symptoms often requires that patients acquire more care as their mental state worsens necessitating increased spending on care.

The most common way to diagnosis AD is by its symptoms…. Other methods to diagnosis include searching for potential genetic factors or measuring the amount biomarkers such as the beta amyloids present in the brain (Budson and Kowall,2011: 34-35). , After a successful diagnosis, the next step is generally to prescribe treatment for the disease.

Due to AD's complexity, it is most likely that one treatment will not be enough to delay, prevent, or cure the disease. The most common treatment plan involves treatment of each specific symptom or a set of symptoms such as slowing the degradation of mental function or delaying the onset of the symptoms (NIA, 2014a). Several prescription drugs have been approved by the Food and Drug Administration (FDA) including Donepezil, Galantamine, and Memantine. These drugs belong to one of two groups. Donepezil and Galantamine focus on treat mild to moderate AD and Memantine focuses on treatmenting moderate to severe AD. Drugs in the mild to moderate AD category, called chloroinesterase inhibitors, focus on delaying or preventing more severe symptoms from occurring. These drugs help to prevent the breakdown of neurotransmitters in the brain which normally decline with the onset of AD. Moderate to severe AD drugs assist patients with daily function retention (NIA, 2014b). The cost of these drugs varies depending on brand name and dosage, but prices can range from $177 to $489. Generally, the mild to moderate AD drugs are cheaper than the moderate to severe AD drugs (Consumer Reports, 2012).. For all medications, there was a very small, almost negligible, effect on slowing the mental degradation for patients (Consumer Reports, 2012). Moreover, an average of 17.5 percent of individuals on the medications stopped taking them due to “adverse effects” such as nausea, vomiting, and insomnia (Consumer Reports, 2012). Both findings suggest that the high cost of these medications may exceed their low benefits.

Since there is no cure for AD and symptoms become more severe with age, it is common for older patients to be placedin long-term care. Since the mental faculties of the patients decline, they require supervision for much of their lives to keep them from harming themselves or others by accident. If the patient's family chooses to place the patient in a formal care institution, they may be paying high amounts of money for this care with the average out-of-pocket expenditure amounting to $19,196 per person (Alzheimer's Association, 2014). In contrast, the patient may remain at home with their family to reduce direct costs for care. Studies have found, however, that there are significant indirect costs in terms of foregone wages that should be included in the cost of illness analysis (Hurd, 2013).

**COSTS IN CONTEXT**

The total estimated cost of AD in 2010, as estimated by Michael Hurd, was between $157 billion and $215 billion (Hurd, 2013). These costs are substantial enough to compare to the costs of spending on heart disease and cancer. The 2010 estimate by the CDC estimated heart disease costs $444 billion annually, almost a sixth of all money spent on health care (CDC, 2011). The American Cancer Society estimated the 2010 cost of cancer was $263.8 billion (ACS, 2010). Heart disease and cancer combined cause 14 deaths per death attributable to AD (Murphy et al, 2010). When the costs of heart disease and cancer are combined, the ratio is four dollars for every dollar spend on AD. This is a disproportionately higher amount of spending per death compared to cancer and heart disease. Figure 1 shows the approximate spending per death for each of the three diseases. The ratios are approximately two million dollars per death for AD, $743,000 per death for heart disease, and $459,000 per death for cancer. It is important to note that these are not the average costs incurred by death, only the ratio of annual spending per death caused by each disease.

Another metric where there is disproportionate spending between cancer, heart disease, and AD is in research spending. In 2010, $450 million was spent on research by the NIH while $5.8 billion was spent on cancer research and $3.93 billion was spent on heart and cardiovascular disease research (NIH, 2014). The total amount of research spending on both cancer and heart disease is over 21 times the amount spent on AD research. This is a disproportionately lower amount of research funding for AD compared to the other two afflictions.

**METHODOLOGY**

Two sources of data were used to calculate the projected costs of AD . The first source of data was a study by Hebert et al. (2013) which estimated the projected number of individuals with AD by the year 2050. They used the probabilities of AD and calculated the incidence a longitudinal population-based study. These were combined with the US Census Bureau estimates of current and future population to estimate current and future numbers of people with AD in the United States. Their average result was that 13.8 million Americans over the age of 65 would have contracted AD by the year 2050. One limitation to the study, however, is that it does not consider any changes in racial demographics in the future. Different races have varying incidence rates, so any change in the racial makeup of the nation may change the number of cases in 2050. This result also does not account for people under the age of 65 who may have AD. There is such a low incidence rate of individuals under 65 that this number is negligible. (Hebert et al., 2013).

Our second data source was the Alzheimer's Association's (AA) annual cost of illness studies from 2011 to 2014. The AA estimates the average annual per-person cost for an AD patient. Using their cost estimates, we calculate the real percent annual increase in spending from 2011 to 2014. We then compute the real average annual increase in spending to estimate the expected increase in spending through 2050. The AA study does not take into consideration pre-existing conditions AD patients may have, but this should have no affect on the increase in spending.

Using this annual increase in spending and the projected population with AD we calculated the expected future costs by multiplying the cost per person with AD by the projected number of AD patients. The AA also disaggregates the annual per person payments by the cost of various health care services utilized by AD patients. Using this information, we further assess the average, annual percentage of total spending incurred for each service per person. Finally, we use the percentages to predict the future total cost of each service.

**RESULTS**

We estimated an average real annual increase of 1.26 percent in spending on AD from 2011 to 2014. Since the values were adjusted for inflation, the annual increase in in the cost of health care in general or AD costs.

|  |  |  |
| --- | --- | --- |
| Year | Cost PPY (2010 Dollars) | Percent Change |
| 2010 | $42,072.00 | Average: 1.26% |
| 2011 | $42,505.00 | 1.029% |
| 2012 | $43,362.00 | 2.016% |
| 2013 | $43,683.84 | 0.742% |

Our projected average annual cost per patient is illustrated in figure 2. By 2050, the average annual cost per patient will increase by 65 percent if the most recent trend in annual increase in AD spending continues. Figure 3 shows our projected total costs of AD for 2010, 2020, 2030, 2040, and 2050 in billions of dollars.[[1]](#footnote-1) By our estimates, the total amount of money spent on AD will increase by almost 500 percent from $197.7 billion in 2010 to $958 billion in 2050. The drastic increase in costs is the result of three factors. First, Baby Boomers will have aged into the period of life when they are most likely to be diagnosed with AD. In addition, life expectancies are expected to increase. The risk of contracting AD increases with older ages, so an increase in life expectancy couple with the Baby Boom generation is expected to result in three times the number of AD patients by the year 2050 (Hebert et al., 2013). Finally, the increase in cost is also due to the predicted increase in spending on health services for AD patients. The increase AD costs is staggering as it is 2.51 percent of the predicted GDP for the year 2050 (Pricewaterhouse Cooper, 2013).

Figure 4 illustrates the breakdown of costs in 2050 by type of health-care service. The three largest categories are nursing homes (41 percent), inpatient hospital costs (23 percent), and medical provider costs (14 percent). The amount spent on nursing homes is extremely high especially considering these facilities do not help decrease the prevalence of symptoms, the severity of symptoms, or help fight the disease. The long-term facilities only help to make those afflicted more comfortable and safe at the end of their life. Indeed, in 2050, more than 60 cents of every dollar spent on health care services will be attributed to short-term or long-term care as measured by inpatient hospital costs and nursing home costs. Research, on the other hand, represents only 0.25 percent of AD spending.

**LIMITATIONS**

There are three limitations to our study. First, we assumed a constant cost for all stages of AD. When a person contracts AD, their mental faculties degrade with increasing severity as time goes on. It would then be expected that the cost per AD patient would increase as the severity of the symptoms increased. Our study instead uses a common average price per patient no matter what stage of the disease a patient is in.

Related, our study does not consider cost-savings from the implementation of the Affordable Care Act (ACA). The ACA is designed to lower medical spending so it is reasonable to expect that AD spending would decrease as well, or increase at a slower rate than our predicted values. Since the ACA is still in its infancy, it is difficult to predict exactly how it will affect AD costs.

Finally, our estimated annual increase in AD spending only considers data from 2011 to 2014. The trend in AD spending over this period may not be representative of the long-term trend. However, due to a change in data formatting by the AA in 2011, a longer time series was not available.

**RECOMMENDATIONS**

Our results forecast increasing comfort-care costs and a dwindling share of funding for AD research if current medical practices continue. These comfort-care costs are the bulk of AD spending. By only focusing on keeping the patients alive and not curing the disease, AD will continue to be a significant burden on the economy.

Recently, in 2011, President Barack Obama signed the National Alzheimer’s Project Act (NAPA) into law, which may alter the trajectory of costs. The goals of the NAPA are to: prevent and treat AD by 2025, enhance care quality and efficiency, expand support for people with AD and their families, enhance public awareness and engagement, and improve data to track progress (HHS, 2014).

Since the NAPA’s enactment, there have been some breakthroughs in AD research. Clinical trials are under way to find a more permanent solution to AD such as studies targeting the plaques formed by the beta-amyloids by immunizing the body against beta-amyloids and preventing the production of beta-amyloids (Mayoclinic, 2013). Other trials are attempting to reduce the amount of brain inflammation experienced during AD (Mayoclinic, 2013). Experimental drugs and treatments are also undergoing clinical trials to test their effectiveness, but require more volunteers for testing and additional funds for research (NIA, 2014c). Even if a surgery or drug is found to permanently remove AD and its symptoms, the new treatment would be expected to be very expensive. Researchers are attempting to identify ways to reduce the risk of contracting AD. So far, suggestions to prevent AD have been general, including live a healthy lifestyle by being physically and mentally active and maintaining a healthy diet (NIA, 2012). Lifestyle changes may reduce the prevalence of AD but only if potential patients actively choose to adopt and consistently apply these behaviors.

In order to increase the likelihood of discovering a cure to AD, additional dollars should be allocated to research and development. One way to increase the funding for research is to reduce funding from larger or more inefficient areas of AD spending and allocate it to research. For instance, spending on formal care could be reduced and reallocated to research. The U.S. government, particularly via Medicare policies, can incentivize patients to utilize hospice care or other low-cost in-home services rather than being admitted to a nursing home. Another source of funds could be to redistributed from the money spent on medications. Research suggests that medications do very little for alleviating the symptoms of AD and that there is considerable price variation. Medicare could negotiate lower prices for the drugs that aim to alleviate the symptoms but do not eliminate the cause. This would be particularly important for lifestyle drugs. By reducing the costs of the drugs to customers, the company may be able to sell more product and obtain additional funds. These funds could be allocated to research on more effective drugs. The pharmaceutical companies, however, would most likely prefer to keep their stream of revenue from the drugs already developed instead of having it diverted to research and development for a cure. If cheaper drugs could be developed, then more money could be spent on research. Even if some spending from long-term care and pharmaceuticals is moved to AD research, it may not be enough to develop a cure of permanent treatment as quick as is necessary.

There are problems to these suggestions, however. It is highly unlikely that people will take money from spent on formal care and donate it to research since their family members still would need to be taken care of. However, one of NAPA’s goals is to make long-term care more efficient or less costly without reducing the benefits. NAPA hopes to achieve increased efficiency by eliminating duplications and errors in care, but have yet to establish how this will be achieved (HHS, 2014). A second area funding could be the research funding from other diseases by taking money from diseases less in need of research funding and applying it to AD research. Two such areas could be cancer or heart disease research. In our analysis, it was noted that the amount allotted to research on cancer and heart disease was much larger than research for spending for AD. If one percent of research spending was moved from both heart disease and cancer to AD research, funding for AD would increase by almost 22 percent. Some evidence supporting this action is that the percent of deaths caused by AD has also been increasing faster than the other two afflictions. Since 2000, the percent of total deaths caused by AD has increased by 1.3 percent from 2.1 percent in 2000 to 3.4 percent in 2010. Cancer increased by only 0.3 percent over this time period and heart disease actually decreased by 5.4 percent (Miniño, 2000; Murphy, 2010).

Our findings suggest that AD is and will continue to be a financial strain on our economy. The lack of treatments and medications which actually help to correct the damage caused by AD are non-existent and there are only a handful of medications which are designed to alleviate the symptoms of AD, if only slightly. Instead most money is being spent on placing the afflicted individuals in formal care institutions. If there is no progress in the research and development in cures and effective treatments for AD, costs will only continue to rise to extortionate levels.

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Figure 1: Amount of spending per death for heart disease, cancer, and Alzheimer’s disease (In thousands of 2010 dollars)

Source: Author’s calculations.

Figure 2: Projected average annual costs per patient (In 2010 dollars)

Figure 3: Projected total costs of AD over time (In billions of 2010 dollars)

Figure 4: Predicted proportion of 2050 spending per health-care service (In billions of 2010 dollars)

**HOW EXPENSIVE WILL MEDICAL COSTS BE FOR THE LARGEST AND LONGEST LIVING GENERATION?**

08

**Fall**

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***ABSTRACT***

*Our paper examines how expensive medical costs will be for the Baby Boomer generation. We first present how life expectancy has increased over the last century and why. Next, we apply this increase to the Baby Boomer generation to estimate how this affects medical costs. In addition to costs to the patient, we analyze costs to government via Medicare. Our “cost analysis” methodology is derived be estimating the number of Boomers, presenting per beneficiary costs and discussing the leading drivers of costs for this group. We conclude with recommendations on how to alleviate high costs for the largest and longest living generation in American history.*

**INTRODUCTION**

Since 1840, life expectancy has increased by three months each year (Easterbrook, 2014). Increased life expectancy means medical costs will likely burden patients for longer periods of time. For example, at the beginning of the 20th century, when life expectancy was 47 years old, an American diagnosed with heart disease at thirty years old, would pay for treatments for an average of 17 years. By the middle of this century, however, life expectancy is expected to increase to 88 years old, meaning that the same American with heart disease would pay for treatments for an extra 41 years. Can U.S. health care markets sustain such an increase in demand for healthcare?

Americans are eligible to collect Medicare at age 66 and full Social Security benefits at age 65. In 2030, when the last wave of Baby Boomers retires, there will be 77 million people on Medicare, up from 47 million today (Roy, 2011). Can Medicare and Social Security afford to supplement the largest and longest living generation of Americans?

Our paper will investigate how expensive medical costs will be for the Baby Boomer generation. We consider both costs incurred by patients and the government. Firstly, we discuss the reasons for the rising life expectancy and how this has changed overtime. Then, we predict how this increased longevity affects medical care markets, like Medicare and end of life care costs. Following, we conclude with recommendations on how to minimize the additional costs associated with the largest and longest living generation in American history.

**DESCRIPTION OF THE ISSUE**

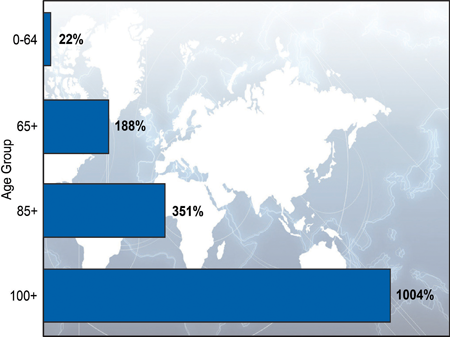
Since 1900, life expectancy has increased from below fifty years old, to exceeding eighty years old currently (NIA, 2011). The effect of greater life expectancy is even more daunting when the Baby Boomer generation is considered. Baby Boomers are the largest generation of Americans at more than 77 million Americans, or 24.3% of the U.S. population (CNN, 2014). Compared to the generations prior, born 1909 through 1928 and 1929 through 1945, the Baby Boomer generation nearly doubled (Carlson, 2009, p. 3).

Average life expectancy has increased greatly throughout the twentieth century across all demographics and countries. This substantial increase is a product of multi-disciplinary advancements. While the field of science was formalizing the theory of the germ, medical researchers were developing new vaccinations and antibiotics (Aziz, 2014). These discoveries occurred as sanitation and sewage treatment were becoming more efficient, improving overall living standards (Aziz, 2014). Public health projects alone were instrumental, as they immunized millions against smallpox, polio, measles, and other diseases that most often resulted in childhood death. “More than 60 percent of the improvement in female life expectancy at birth in developed countries between 1850 and 1900 occurred because more children were living to age 15, not because more adults were reaching old age” (NIA, 2011). Public health programs, with the additive of better living standards and scientific developments, paved the road to greater life expectancy.

The UN predicts increases in life expectancy to continue through 2050, with the most robust increase in the age brackets eligible for government-funded public programs (UN, 2010). According to the *World Population Prospects,* the largest increase in life expectancy will be in the “85 and older” and “100 and older” age brackets, at 351 percent and 1,004 percent respectively. Large increases are also expected in the “65 and older” age bracket at 188 percent. Thus, this trend largely attributed to advancements in science and the health field, will continue in the decades to come.

This is especially vital when analyzing systems constructed for the elderly. The immensity of this generation was never considered when establishing these acts, creating a conundrum as they approach retirement. President Roosevelt signed the Social Security Act in 1935 and President Johnson signed the Medicare amendment to the Social Security Act in 1965 (Social Security, 2014). When the original Social Security act was signed, the Baby Boomers would not be born for another ten years. When the Medicare amendment was added, the last of the Boomers were born one year before. The largest generation will soon age into public programs that were not designed for them demographically.

By December 31, 2029, when the last of the Boomers turns sixty-five, projections estimate the population to double to between 71.5 and 77 million (Roy, 2011), and 86.7 million by 2050 (CNN, 2014). After 2029, more than 80 million Americans will be eligible for Social Security and Medicare. With 9 out of 10 individuals age 65 and older receiving Social Security benefits (Social Security, 2014), and the amount of people on Medicare are anticipated to increase by 63.83% (Roy, 2011), there will be a fiscal shortfall for individuals in the aging population, as well as the United States government. The Congressional Budget Office projects that in 2039, there will be a 55 percent projected growth in federal spending due to the aging population and an additional 24 percent due to growth in spending capita on health care (CBO, 2014). Also by 2039, federal spending on major health care programs is anticipated to exceed other noninterest spending, social security and net interest (CBO, 2014). Aging is a key driver of spending over the long-term, especially when considering life expectancy increases, Baby Boomers retirement, and rising health care spending per beneficiary coupled with escalating medical costs per capita (Niu, 2014).



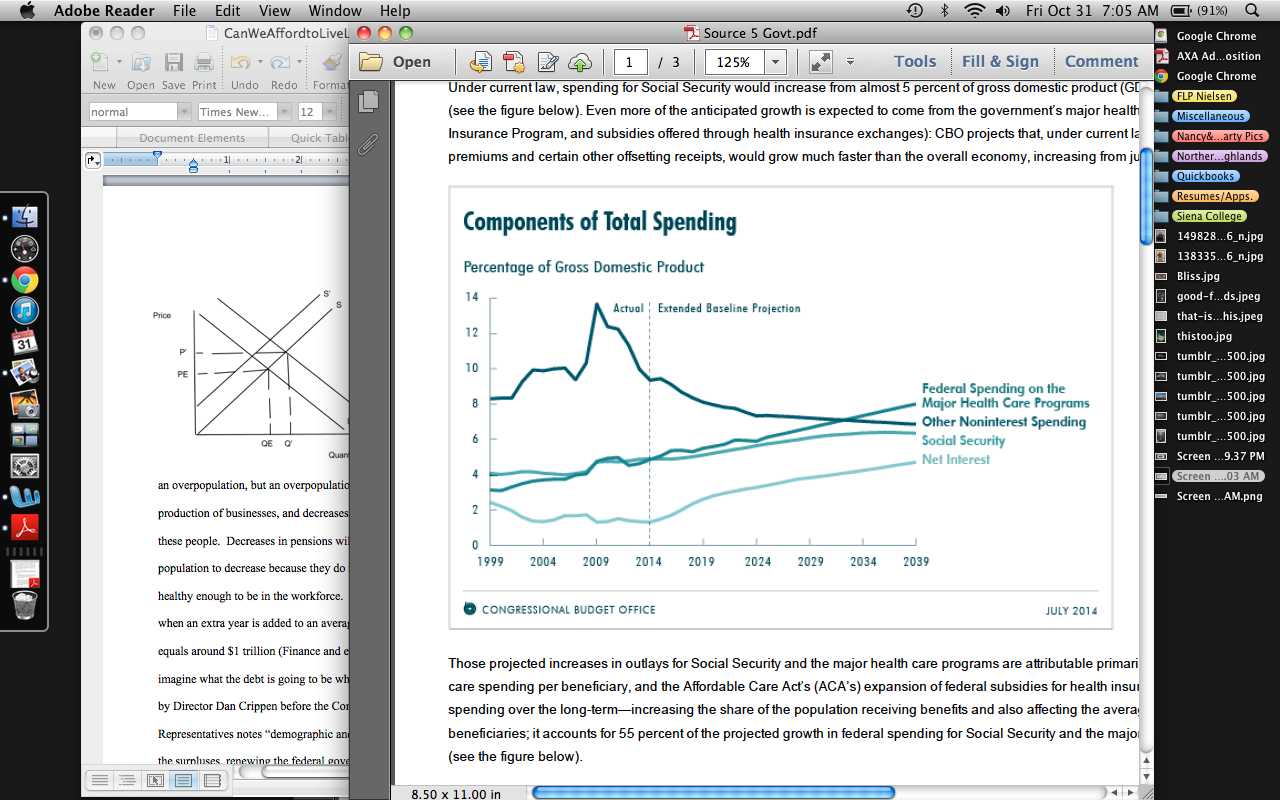
**Figure 1: Percentage Change in the World’s Population by Age: 2010-2050**

Source: (UN, 2010)

**ECONOMIC ANALYSIS**

To answer our research question of how expensive will medical costs be for Baby Boomers, we first estimate the number of Boomers, as stated in the previous section. The next step in our analysis is presenting per beneficiary costs.

Medicare is a federally funded initiative that arose from the premise, “for most retired people, cost of adequate health insurance was too high to pay out of retirement income or savings, [thus] a new prepayment approach and government aid were required” (Social Security, 2014). In 2013, of the 34.3% of Americans insured by a government health insurance program, 93.6% were aged 65 or older (United States Census Bureau, 2013). As mentioned, in the years to come, a larger percent of Americans are expected to enroll in Medicare.



**Figure 4: Components of Total Spending**

Source: (CBO, 2014)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Type of Health Insurance Coverage by Age: 2013**  Source: (United States Census Bureau, 2013). | | | | | |
| **Characteristic** | **Total** | **Any health insurance [Percent]** | **Private health insurance**  **[Percent]** | **Government health insurance**  **[Percent]** | **Uninsured**  **[Percent]** |
| Total | 313,395 | 86.6 | 64.2 | 34.3 | 13.4 |
| Age 65 & older | 43,815 | 98.4 | 54.0 | 93.6 | 1.6 |

Using 2013 Census Estimates of Health Insurance coverage shown in Table 1 and applying the expected Medicare percentage from (Roy, 2011), the percent of Americans insured by a government health insurance program would increase from 34.3% of Americans to 56.24%. Despite the lack of consideration to changes in other health insurance trends or population change, Federal government spending on the elderly will require more robust budget allocation as greater percentages of Americans qualify for Medicare.

The cost of adequate health insurance for the elderly, aforementioned in the premise for Medicare, is disproportionately more expensive than other ages or services. The costs are also concentrated greatly on the final years of life. The 2008 Dartmouth Atlas measured inpatient costs of Medicare beneficiaries with serious chronic illnesses in the last two years of life (Neuberg, 2009, p.127). The study concluded that end-of-life spending varied greatly across hospitals from $53,432 per patient to $105,000 per patient (Neuberg, 2009, p. 127). Out-of-pocket costs per patient also ranged from $1,547 to $5,544 (Neuberg, 2009, p. 130). Of Medicare’s $327 billion budget, about 27 percent is spent on care in a patient’s final year of life (Vivian, 2009). These high end-of-life costs are a leading driver of costs, anticipated to contribute to the fiscal shortfall because there will be more Medicare enrollees seeking the most expensive class of care.

Another leading driver of costs is the overall health of the generation. The Baby Boomers are also not the healthiest generation with 72 percent experiencing hypertension, 51 percent experiencing arthritis and 31 percent with heart disease (Huffington Post, 2013). These chronic conditions increase the likelihood of consuming high quantities of care for longer periods of time, increasing costs further.

Financing long-term care presents further costs as the federal government pays for 42% of nursing home costs (Schulz, 2001, p. 215) because 70-80 percent of the elderly cannot afford out of current income a stay of even one year at a nursing home (Schulz, 2001, p. 207). In fact, 70 percent cannot afford beyond 13 weeks (Schulz, 2001, p. 207). “Of those who enter a nursing home, about one-third will spend less than three months, but 20 percent will spend five or more years” (Schulz, 2001, p. 213). The claim that federal spending is roughly 7 to 8.5 times that of a child (Crippen, 2000), is evidenced by looking at end-of-life and long-term care costs.

A different contributor to the fiscal shortfall is an increased elderly-dependency ratio. This ratio measures the number of older adults to younger adults (Population Council, 2004, p. 780). “The growth rate of the U.S. working-age population is expected to decline substantially over the next two decades and to remain low thereafter” (Population Council, 2004, p. 781). This means that there will be fewer workers contributing Medicare taxes relative to those receiving. This is problematic, especially when the high demand of costly medical treatments is considered.

**RECOMMENDATIONS**

The crux of economic concern is budgetary constraints and how these constraints can affect the overall economy. Deficits will appear, as the emerging demographics do not fit the market structure. There will be too few people paying Medicare taxes relative to the number of Medicare beneficiaries. Our recommendation is to not focus on the elevate dependency ratio, but instead the high costs of health care services for the elderly. By adopting more palliative care and undergoing extensive evaluation of medical services, the Federal government could reduce spending, not only for themselves, but also the elderly via their out-of-pocket expenses.

Palliative care aims to improve the quality of life for the patient and the patient’s family by focusing on relief from symptoms, pain and stress of serious illness (CAPC, 2012). It is a more comprehensive medical subspecialty that incorporates multiple avenues for treating illness. This type of care has been linked to reducing overall medical costs, mainly by helping patients get the care they need to avoid unnecessary emergency department and hospital stays (Meier, 2011). A recent study of four New York State hospitals found palliative care to save hospitals an average of $6,900 per admission and patients receiving palliative care spent on average 3.6 fewer days in intensive care (CAPC, 2012). Palliative care accommodates for the complexities of treatment, attempting to prevent patients’ reentry to medical facilities. This care is economically efficient as it reduces overall time spent in hospitals and other medical centers as well as lowers the probability of reentry.

Palliative care can also help curve out-of-pocket medical expenses for Medicare patients. A recent Mount Sinai School of Medicine study found that out-of-pocket expenses for Medicare recipients during the five years before their death averaged about $39,000 for individuals, $51,000 for couples, and up to $66,000 for people with long-term illnesses like Alzheimer’s (Wang, 2012). For more than 40% of these households, the bills exceeded their financial assets. Hospice care can reduce total health care costs for the majority of Medicare beneficiaries receiving it, by an estimated $2,300 per hospice beneficiary and an overall savings of more than $3.5 billion a year (Meier, 2011, p. 351). Patients enrolled in Medicaid who received palliative care incurred $6,900 less in hospital costs than a matched group receiving usual care (CAPC, 2012). Palliative care and hospice care also has the potential to reduce out-of-pocket expenditures of government insured enrollees.

A point of improvement could stem from the amount of medical services provided to the elderly from a physician perspective. “Most of our ‘miracles’ of medicine set us up for more expensive health care down the line” (Forti, Johnson, Graber, 2000, p. 206). If discretionary measures are reduced to needed, life-or-death measures, fewer procedures would be prescribed and less health care costs would be shed.

This proposal greatly resembles the IPAB, independent payment advisory board, and CER, comparative effectiveness research, of the Affordable Care Act. The IPAB is responsible for recommending cost-saving measures to the Secretary of Health and Human Services (Ubel, 2013). This committee is required by law to be independent healthcare experts, void of self-interest (Ubel, 2013). Their role is to educate the Secretary, not impose policy.

CER is included in the Affordable Care Act to “assist consumers, clinicians, purchasers, and policy makers to make informed decisions that will improve health care at both the individual and population levels” (Altman and Shactman, 2011, p.282). United States policy prevents the refusal of treatment based on cost. The research conducted via the CER would not prevent people from attaining care because it is too expensive, but rather compare methods to prevent, diagnose, treat and monitor a clinical condition (Altman and Shactman, 2011, p. 282). Cost effectiveness analyses are used in other countries, like the United Kingdom. The United Kingdom National Institute for Clinical Effectiveness states,

“with the rapid advances In modern medicine, most people accept that no publicly funded health care system can possibly pay for every new medical treatment which becomes available. The enormous costs involved mean that choices have to be made” (Altman and Shactman, 2011, p. 239)

When the political ideology and uninformed outrage is stripped away, the CER is a basic cost-benefit analysis, incorporating all factors.

**CONCLUSIONS**

Our recommendations stem from the premise that the structure of the health care market can not be altered drastically enough to accommodate for the influx of baby boomers, thus smaller measures must be taken to add to effective change on a larger scale. Reducing discretionary medicine, analyzing the most effective medical procedures and the government bearing more of the burden of increased health care costs can begin to alleviate the fiscal shortfall ahead. These recommendations, however, are not permanent and the system needs be altered in more of a structural manner in the future. As Presidents Roosevelt and Kennedy said in their comments about Social Security, these structures are by no means complete and cannot remain static (Social Security, 2014).

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**A COMPARISON ACROSS OECD COUNTRIES: A PREDICTION OF THE FUTURE FOR HEALTH CARE IN THE UNITED STATES**

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***ABSTRACT***

*The passage of the Patient Protection and Affordable Care Act in the United States has changed the landscape of the health care market and the government’s contribution to towards many Americans’ demand for health care. We wanted to determine if an increase in government expenditure contributed to better health outcomes. We compared government health expenditures, inequality, and technology to health outcomes of ten randomly selected OECD countries to those of the U.S. to determine the impact of each variable. Results show increased public spending and inequality have negative effects on health outcomes, while technology positively influenced outcomes.*

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**INTRODUCTION**

Health care has been an important part of human history. Nearly every culture has had some kind of healer, medicine man, shaman, or ritual to turn to when people are ill. Not only has health care been instrumental in human history, but has been implicated to be a necessity for developing economies to flourish. (Sen, 1999).

The idea of pooling risk, through the implementation of health insurance, has been a standard development in all of the OECD nations.  The United Kingdom utilizes taxes to pay for medical care. Australia uses a fusion of both private and public institutions to obtain health care needs, and the United States fuels its healthcare industry by covering a vast array of recipients through the country's two largest health care budgets: Medicaid and Medicare, as well as smaller private insurance companies. Medicare alone covers 49 million elderly people (Kaiser, 2012), and Medicaid spends approximately half a trillion dollars on health services annually for the poor (Kaiser, 2013). Healthcare is currently the single biggest drag on the United States economy.

With the passage of the affordable care act, the increasing role of the federal government has lead to an increase in health insurance for millions of Americans. The role of a strong government is crucial to obtaining our health care resources, but how important is it? In the end, does the involvement of the government truly play a major role in influencing health outcomes?

In this research paper we will examine three data relationships to address the differences between the two payer systems in the developed world. We wish determine if the amount of government involvement, represented by spending, contributes to a longer life expectancy and more desirable health outcomes. This research will also conclude with policy recommendations in an attempt to help explain what may be the correct economic course of action for the United States to take in the direction of improving outcomes, similar to those of other OECD nations.

**GOVERNMENT INVOLVEMENT AND HEALTH: WHAT WE KNOW AND THE PAYER SYSTEMS**

Compared to other markets within the economy, health care has some distinguishing characteristics, and varies from country to country. It is important to note that health care in its general context differs from familiar economic sectors as it contains elements  of risk and uncertainty, problems of asymmetric information, and production of homogenous goods and services. Health care is also one of the largest industries in the global market, spending a total global expenditure of $6.5 trillion (WHO, 2012), with costs expected to rise.

Across all OECD countries there is a variation of government involvement, this is classified by the type of health care *system* in which a country holds. Single payer systems tend to lean towards a more universal approach covering almost all health care costs of most, if not all of its citizens. Multi payer systems tend to favor the private sector, allowing for more market control and less government intervention; however, it should be noted that multi-payer systems have assistance from both public and private contributors.

Within this research paper we will analyze data from several sources to determine where the United States stands compared to its health care counterparts, and why it may be in the position it is in. We will address the question of whether payer systems, both single and multi, truly has a significant impact on people’s health outcome. Since it is difficult to quantitatively measure the effectiveness of a payer system, we will compare health outcomes that are directly related to the payer systems. These variables include: access to medical technology, inequality and public health expenditure. A list of the OECD countries used in this study and their respective health care funding systems is listed in Table 1.

**Table 1**Classification of Selected Countries by Payer Systems

|  |  |
| --- | --- |
| **Single Payer** | **Multi Payer** |
| Canada | Netherlands |
| United Kingdom | France |
| Denmark | United States |
| Australia | Japan |
| New Zealand | Germany |
| --- | Switzerland |

**VARIABLES**

To assist in our analysis of whether public health involvement and access contribute to health outcomes within a country we will be using data from several sources. Data for this study was taken from the Organization for Economic Co-operation and Development (OECD), the World Bank, and the World Peace Index (WPI). Life expectancy at birth and infant mortality per 1,000 were used as health indicators in this study. Variables used to determine the effect on the health indicators, as listed, were MRI units per million, CT units per million, percent of public health care expenditure by government, and Gini coefficient. MRI and CT units per million were used as an indicator of availability and access to medical technology. Percent of public health care expenditure by government was used as an indicator of public funding in health care. Gini coefficient was used as an indicator of inequality, and therefore access due to affordability, in its respective country. Data was taken from a sample size of 11 OECD countries, of which, one was the United States.

**Choice of Variables**

Our choice of countries, with the exception of the United States, was randomly selected. Countries were categorized as single payer or multi payer based on whether or not some or all health care services are available to *all* citizens regardless of income. Those that have some sort of health care guaranteed to all its citizens were placed in the single-payer system, while those that did not have publicly funded medical services available to all its citizens were placed in the multi payer system category. X’s in the graphs will represent single payer countries, while blue diamonds represent countries with multi-payer systems.

**ANALYSIS OF THE PAYER SYSTEMS**

**The Single Payer Model**

The single payer system, which is widely known as universal health care, is typically run by a single public agency--namely the federal government. In this health structure, providers only bear the administrative costs, for the services that they provide from one insurer. The public agency provides all health coverage within the country, and all citizens are placed within a single risk pool, allowing them to all be treated equally (Schiff,1994). General taxation is the primary form of financing in single payer countries. This financing is unique because the taxes are directly put into a designated health care fund to then be distributed to citizens most in need of health services.

All health care workers in the single payer system are seen and treated as government employees, with a majority of the hospitals being owned by the government as well. Regardless of a patient's financial status, under the single payer model, they are able to seek care and choose their own provider, even in tough economic times. This continuity of doctors and nurses who can get to know and care about patients is critical to quality, but is rapidly disappearing from the medical landscape (more specifically in multi-payer systems). As Health Maintenance Organizations (HMO)  and insurers hire and fire physicians, employers’ shift plans to take advantage of the lowest price each year (Schiff, 1994).

Despite all the positive factors that allow for increased quality of care, the Single Payer system also has the tendency to disrupt quality of care. Due to the system’s structure, there is no individual incentive to provide information of quality of care for a hospital or physician (Greenberg, 2008). There is also no push to receive annual checkups because there is no limit on how many times a patient may visit their provider. consequently, many patients take advantage of this system and practice poor preventive measures, thus creating more risk. This, in the end, causes a buildup of patients seeking medical care, resulting in longer waiting times.

**The Multi-Payer Model**

The multi-payer system is a mixed model of health financing, which relies on several organizations to provide medical care to the population. In a multi-payer system, there is support from both public and private contributors, however the structure of funding burden split between these two varies from country to country. Under a multi-payer system, health insurance plans are able to provide financial incentives to the best doctors and hospitals. This incentive allows these physicians and hospitals to contract with insurance companies in order to provide the best possible healthcare for their patients, leading to an increase in quality of care (Greenberg, 2008). Unlike single payer systems, insurance companies in multi-payer systems are diverse and set their patients at different risk levels. Based on their financial limitations, patients typically have little to no choice in their choice of insurance. This can cause conflict; specifically if a patient is lacking adequate finances, they are in turn unable to obtain reliable insurance coverage, an important variable which leads to a better quality of care. However, under certain circumstances, the government may be able to provide subsidized assistance. For example, in the United States, based on the number of people in the household, and level of income, individuals may qualify for lower premiums. In Switzerland, the government subsidizes the needy as well, and ensures that people in need of medical services do not pay more for health insurance than those who are better off. Additionally in France, “children and people with low incomes are exempt from paying non reimbursable copayments. Since 2000, people with low incomes are entitled to free or subsidized PHI (CMU-C) and free eye and dental care, and cannot be extra-billed by doctors.” (Thomson, 2012).

The key component in the multi-payer system is that insurance companies are seen as the backbone of the system, while also being subject to a large level of variation. This variation opens up the healthcare market and allows for competition. The type of insurance the consumer decides to purchase is also indicative of the level of care the patient will receive, unless some sort of government involvement is also included within the healthcare structure. Health care workers, as well as the institutions that they work for, are all privatized with the exception of a few government run facilities.

**ECONOMIC ANALYSIS: DIFFERENCES IN HEALTH OUTCOMES BY HEALTH SYSTEM**

Even though all countries in this study hold OECD status, this is not indicative of homogeneity within their economic strengths and weaknesses.  For example, the United States boasts the highest health care expenditure as percentage of GDP at 17.9%. (Barton, 2009). The only other country that comes close to comparison is the single payer country of Canada with a percentage of 10.9. During this analysis we will be addressing the health outcomes by both Life Expectancy and Infant Mortality. Of the countries selected, the life expectancy ranged from 78.3 to 83, with the United States exhibiting the lowest and Japan exhibiting the highest. In terms of Infant Mortality per 1,000 births, the numbers within the OECD countries list a range from 2 to 6.1 with Japan once again holding the latter figure.

**Life Expectancy and Medical Technology**

Life expectancy is the average period a person is predicted to live taking into account contextual influence. All countries within the OECD exhibit differences in life expectancy (Graph 1). Life expectancy can be impacted due to several reasons, some outside the control of human intervention.. From an economic standpoint, life expectancy is also a factor used to measure human development. Typically, a higher life expectancy is associated with a higher standard of living.

Within the healthcare sector, access to technology has tremendous benefits and can lead to better health outcomes. The question here is where do other countries stand? Graph 1 illustrates the health outcome of life expectancy with Magnetic Resonance Imaging (MRI) Machines. Graph 2 illustrates the health outcome of life expectancy with Computerized Axial Tomography (CT) Scans. According to studies done in the United States by the Mayo Clinic, “Medical imaging exams — including CT scans — have been directly linked to greater life expectancy and declining cancer death rates” (McCollough, 2012). The promotion of health information technology could save “$81 billion or more through the improvement of health care delivery efficiencies through electronic health records” (Hillestand, 2005).

Analyzing Graph 1, an illustration of MRI Units and life expectancy, it is clear to see that two multi payer systems, Japan and the United States are heavy outliers. Although Japan has the highest life expectancy, it also utilizes the largest use of MRI machines. Based on Graphs 1 and 2, increasing the number of MRI and CT units increases life expectancy. The typical average for both single and multi-payer countries lies around 20 CT units per million population and 10 MRI units per million population. What is unusual is that population size and location is relevant to this study. Many of the European countries are close within range, despite having a difference in payer systems. The United States uses twice as much CT and MRI machines, yet attains a lower life expectancy and higher infant mortality. This comes to suggest that it may have to do with cultural distinctions, as well as economic ones. Many physicians in the United States practice defensive medicine and constantly order tests in an attempt to legally cover themselves from the possibility of malpractice suits. This type of rational behavior is virtually absent in many European countries. Even if it is available to the public, the costs are well below a typical Americans.

Overall, it appears that access to technology does, to some extent, increase life expectancy. The differentiation between payer systems was not as significant as we previously thought. The data presented is well scattered, with European countries showing the most significance. One may argue that an extremely high technological output creates healthier outcomes based on Japan’s figure, but results within the United States, a country that shows figures twice as much than any European country but far less than Japan’s, shows to be contrary to this. Health technology creates advancements in medicine, and gains in efficiency, but the use of CT and MRI machines are limited because they typically are used for certain types of medical procedures, making this more related to exposure rather than quality of care. If more patients are less likely to be infected with diseases that make use of these machines, not only will their life expectancy be higher, but their use of these kinds of machines will be reduced. This also seems to suggest that this is also a public health issue in terms of *prevention*, an area the United States overlooks compared to its counterparts (Woolf et al., 2009), thus far exceeding the data represented in these graphs.

**Infant Mortality and Inequality**

Infant mortality is another way to quantitatively measure a health outcome. In theory, better access to professional services and technology can reduce the amount of infant deaths. Inequality can contribute to infant mortality especially through a private market setting found in the United States. In the U.S.as most insurance is privately covered more money typically means better insurance, leading to better health outcomes. If there is no insurance involved, health outcomes are often determined through out-of-pocket expenditures. Prenatal care and postnatal care can often be expensive, so wealthier patients are able to afford more or better care through out-of-pocket expenditures or through an insurance plan that covers maternity. According to a price study done by the International Federation of Health Plans, the total physician and hospital cost of a normal delivery is on average $16,653 in the United States. In Switzerland, that same procedure was $4,039, in France it was $3,541, and finally in the United Kingdom, $2,641(IFHP, 2012). Cesarean delivery didn’t fare well in the United States either. In 2012, the average price for C-section delivery was $26,305 on average, the only country that came close to its price was Australia at $10,566, at approximately half the price. The cheapest procedure done in their study was in the single payer system country of the United Kingdom, where a C-section procedure cost the patient $4,435. It should also be noted that there is a significant correlation between infant mortality and inequality; as inequality measured by the Gini coefficient goes up, infant mortality also goes up (Graph 3). Based on the data collected, it was found that Single Payer systems existed in countries with higher levels of inequality, leading to increased levels of infant mortality.

**Life Expectancy and Public Health Expenditure**

Our third and final analysis involves the comparison of life expectancy and public health expenditure. Public health expenditure consists of capital spending from government sources, external grants, and health insurance funds. When measuring the health economy as a whole total health expenditure is the sum of both public and private expenditures. A country with a single payer system is more likely to have increased public health expenditure compared to a country with a multi-payer system. The United States, for example due to its involvement with the Medicaid and Medicare government programs, exhibits a public expenditure of only 46.3 percent. Life expectancy is an important indicator because an increased amount of public health expenditure may allow for a greater access of resources. It may also, on another note, have the ability to lessen the financial burden of individuals who are struck with high medical payments. Public expenditure may also come into play in the long run due to its impact in the promotion of safe and healthy habits. In the United States, the care is primarily treatment driven not preventative driven however, numerous studies have found it is more cost effective to prevent rather than treat. “It is essential to have a coordinated, strategic prevention approach that promotes healthy behaviors, expands early detection and diagnosis of disease, supports people of every age, and eliminates health disparities” (CDC and HHS 2009).

To push this point further, a study done by the New England Journal of Medicine revealed, “health promotion efforts aimed at persons under 65 of age may improve the health and longevity without increasing health expenditures” (Lubitz, 2003). Observing graphs 4 and 5, we observe two important things. The first noticeable thing about this graph is that the United States is a complete outlier compared to its other counterparts. The second noticeable thing about this graph is there seems to be a downward sloping correlation related to life expectancy and government contribution, but a somewhat strong relationship nonetheless. As more public funding is provided, life expectancy is expected to rise. It is important to note that on the surface, government involvement is important, but is not the only factor causing variation in life expectancy. Factors such as genetics, nutritional intake, and exercise participation are not measured in these graphs but obviously play a large role. The more of an individual’s medical expense is covered by the government, the more likely individuals are to seek medical attention, which may lead to overconsumption, or individuals are less likely to take better care of themselves due to the low financial cost of seeking medical care. These graphs are primarily designed to show *how large* of an impact public funding can have on life expectancy.

**POLICY RECOMMENDATIONS**

There are several policy recommendations that can be implemented to allow the United States to achieve similar health outcomes to that of the other measured countries. First, inequality appeared to have the greatest correlation with infant mortality. To combat inequality on a basic level we propose an increase in the minimum wage nationally. This in turn would allow for prenatal and postnatal care to be more affordable or make taking days off from work a more viable option, making it easier and more cost efficient to raise a child. A second policy recommendation would be to reallocate more public funding towards programs such as Children’s Health Insurance Program (CHIP) and Women, Infants, and Children (WIC), or lower the minimum income required to qualify for such public programs. A third policy recommendation would be to expand the Medicare program shifting the country towards a single payer system. Medicare is a variable that retains single payer properties, while still existing within a multi-payer market. By expanding Medicare and allowing more individual access through the use of taxation, this has the ability to reduce costs as they would be controlled through negotiated fees, global budgeting and bulk purchasing. It would also allow for a single risk pooling mechanism which will allow equality. Patients would no longer be faced with financial barriers and physicians would be allowed to retain control of the market. The fourth and final policy recommendation would be the improvement of the pay for performance mechanism. This mechanism creates a financial incentive to physicians who are able to improve the health outcomes of their patients. An economic study, funded by the Center For Medicaid and Medicare, found that hospitals and healthcare institutions engaged in both public reporting and pay for performance achieved moderately greater improvements in quality and health outcomes than did hospitals just engaged only in public reporting (Lindenauer, 2007). A similar study was also done in the United Kingdom. It was targeted towards general practitioners (GP), and resulted in improved care for about 83 percent of patients with chronic illnesses (Doran, 2006). We think that the promising results from these studies performed in both the United States and United Kingdom will translate into comparable results if implemented on a nationwide level.

Policy could also be implemented in order to increase health outcomes based on diet. A tax on high calorie, low nutrient food could be used to subsidize low calorie, high nutrition foods. This would encourage more Americans to eat healthier, thus improving health outcomes.

**LIMITATIONS**

We ran into several limitations when we conducted our study. First and foremost, our sample size was very small, due to incomplete data sets for some countries.. A second limitation of this study is the unique dietary and genetic components of each country used; genetics could also factor into longer life expectancies of one country, while taking away life expectancy from others. Cultural values in individual countries could also play a role in determining the amount of treatment being sought and received in different countries, possibly relating to different health outcomes. Another limitation of this study was the data used were all 2012 data; there is no more data as recent as 2012 obtainable for all the variables and indicators selected for this study.

**CONCLUSIONS**

Throughout this analysis we have seen that both single and multi-payer systems exhibit strengths and weaknesses in regard to health outcomes. We also showed the ways in which payment systems affect the incentives of patients. Our study found that when compared to other countries in the same caliber, the United States stands out as an outlier, not because of its multi-payer system foundation, but more so because of the direction it takes towards its health care. The system in the United States is expensive, unorganized, and lacks equality. However, this should not be seen as the motive of the multi-payer system. The role of an ideal multi-payer system should be to split the financial burden between both public and private sectors, as equally and as effectively as possible. However, in this capitalistic society it is difficult to do this given task, due to the fact that many private industries are primarily profit-seeking, especially in the health sector. Also, due to the United States economic past, the country largely supports “laissez-faire” policy which supports individuality and risk taking.

The primary role of the healthcare industry should not be looked upon as risk taking, instead it should be promoted as a public good. If not, the United States is destined to fall behind while other developed countries continue to make giant leaps in patient quality care, health promotion, and public health initiatives. Many developed countries have found ways to balance out profit accumulation and efficient distribution of health resources. The United States already has the financial resources to expand its exceptionally large government health programs, but it just chooses not too due to political disagreement, societal inequality, and failure to implement its bargaining power. With the enactment of the Affordable Care Act, the United States has opened its doors towards some single payer mechanisms and more public money going towards health care. For instance the expansion of the Medicaid program has allowed for greater access to health care, but this country still has a long way to go to catch up to its health care counterparts in Europe. Finally the improvement of a healthy society would also lead to more productive one. This productivity would allow for more input in the economy leading to long term economic growth.

No health care model is perfect, all of them will have flaws that will be difficult to fix. However, in this interconnected world, health is publicized as an individual’s well-being. This is untrue, as health affects us all; it is a public good. In order to improve quality, there must be a balance of efficiency, affordability and access. Health care systems must and can learn to connect ideas and values. This, in the end, could be the only missing ingredient that leads to stronger quality of care, and thus better health outcomes for all.

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**APPENDIX**

**Graph 1**

Author’s Calculations. Data compiled from OECD (2015).

**Graph 2**

Author’s Calculations. Data compiled from OECD (2015).

**Graph 3**

Author’s Calculations. Data compiled from WPI (2015) and The World Bank (2015).

**Graph 4**

Author’s Calculations. Data compiled from OECD (2015) and The World Bank (2015).

**Graph 5**

Author’s Calculations. Data compiled from OECD (2015) and The World Bank (2015).

**Mobile Application Valuation, Development and the Life Behind a**

**Tech Startup**

***Edward Moran, Siena College***

***Eric Girard, Siena College***

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***ABSTRACT***

*In today's society, social media start-up applications are being valued using multiples that are higher than anyone in business can understand.  For companies that just formed, billion dollar valuations (aka Unicorns) are popping up left and right.  This presentation will explore the reasoning behind such billion dollar valuations and how an app that the presenter has developed can relate to the valuations of these Silicon Valley start-ups.*

*Instagram, SnapChat and WhatsApp are explored and how these companies received their billion dollar valuations will be examined.  In addition to explaining the value of these apps, I will also present the app I am currently launching -- "MySport."  I will describe the process I undertook to develop it, bring it to market, and how I will work towards becoming a Silicon Valley Unicorn.*

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**LIEF SPRING FARMS, DEVELOPMENT OF A**

**FARM BREWERY**

***Megan Meyers, Siena College***

***Donald Seebald, Siena College***

***Michael Hickey, Siena College***

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***ABSTRACT***

*Today, the Craft beer industry is rapidly growing nationwide and here in New York, there is more of a demand for locally grown ingredients for brewing. The Farm Brewery License of 2012 enables NY farm brewers to eliminate distribution costs and maximize on grain to glass profits is in effect and will require all NY breweries and distilleries to have 90% of their ingredients from NY sources by 2024.*

*In this presentation, our approach to the growth trends of the Craft beer industry and how NY breweries will be affected by the Farm Brewery law will be examined and what that means for the future opportunities of farms, breweries, distilleries and investors.*

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**Entrepreneurial Process and Product to**

**Business Development**

***Dan Greagan, Siena College***

***Jake Wronoski, Siena College***

***Michael Hickey, Siena College***

***ABSTRACT***

*Entrepreneurial ventures can be one of the most rewarding journeys a person can experience. Regardless if an innovative idea makes millions or if it fails and wastes resources just to figure out that an idea is worthless, entrepreneurship is an independent and extremely valuable educational process.*

*In this presentation, we will explain how potential entrepreneurial ventures can be broken down into a step by step process and how we used this developmental method to create our business venture concept, BankSmart.*

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bitcoin’s long term viability as a payment Process in terms of transaction

fees and mining

***Matthew Beyer, Siena College***

***Dr. Kopp, Siena College***

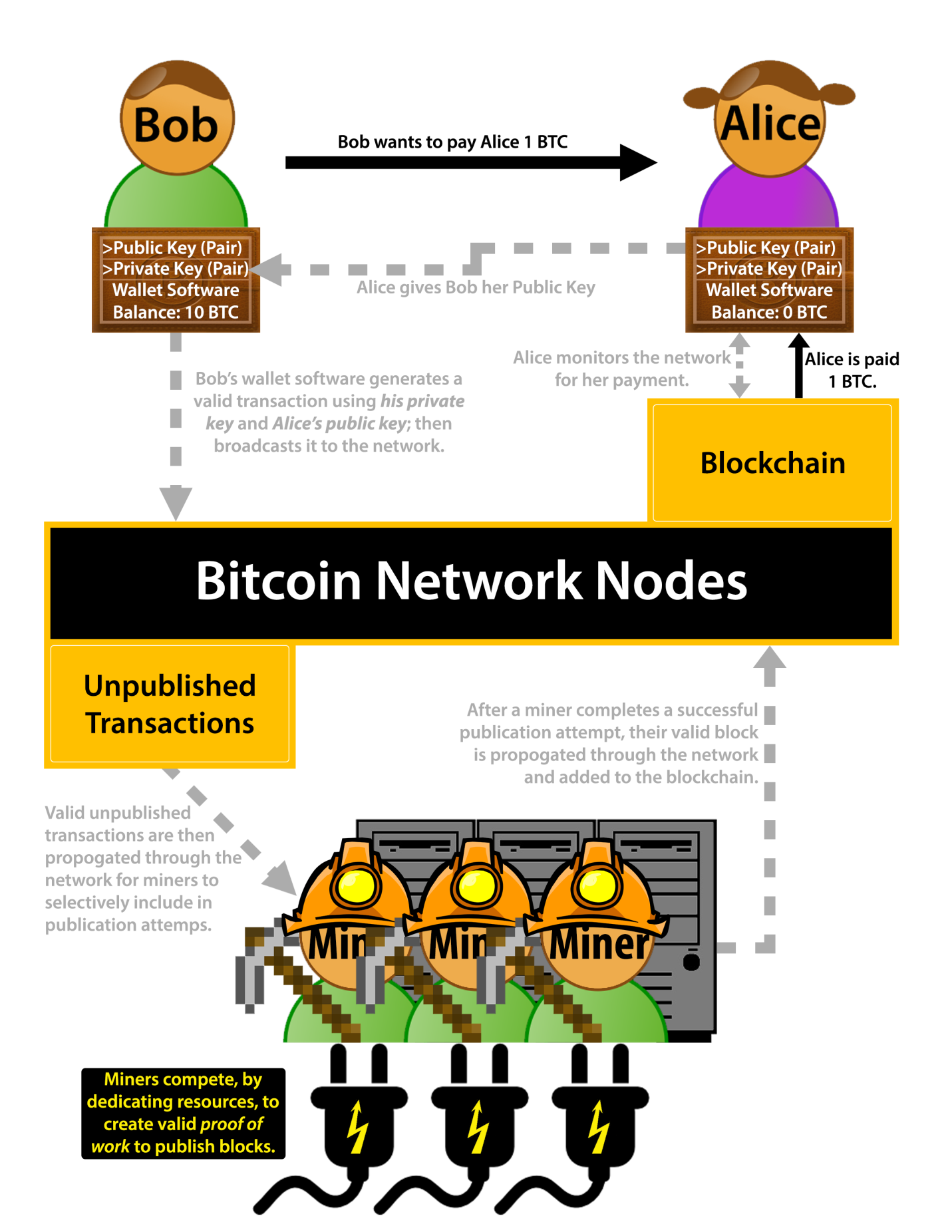
**Biticoin’s definition, history and functionings**

Bitcoin is a type of digital currency in which encryption techniques are used to regulate the generation of units of currency and verify the transfer of funds, operating independently of a central bank.[[2]](#footnote-2) The concept of Bitcoin was originally published by an individual(s) under the pseudonym Satoshi Nakamoto as a white paper titled Bitcoin: A Peer-to-Peer Electronic Cash System[[3]](#footnote-3) in a cryptography newsletter, which provided a practical solution to the Two Generals’ Problem in the form of a proof-of-work chain and thereby created a framework for decentralized entities to safely agree on an order of events. This concept, which prevents double-spending and forgery, was then developed on SourceForge.net into the open-source protocol bitcoind, the first Bitcoin client, which created Bitcoin by starting the blockchain, Bitcoin’s ledger, with the Genesis Block on January 3, 2009 18:15:05 GMT.[[4]](#footnote-4) The original bitcoind client fulfilled all of the Bitcoin network’s functions by acting as the protocol to verify network compliance, a wallet to generate transactions, a node to host the blockchain, and a miner to publish transactions by solving blocks. The Bitcoin protocol essentially provides a set of rules and regulations for network participants to comply with, if users are not in compliance then the network simply ignores their contributions (transactions, blocks, ect…) by declaring them as invalid and refusing to propagate them. Bitcoin has continued to evolve since its inception through various updates to its protocol known as forks. The current iteration of the Bitcoin protocol is known as Bitcoin Core version 0.9.3, release on 09/27/14.[[5]](#footnote-5) All iterations of the Bitcoin protocol have been open-source, which has allowed users to verify that updates and changes to the Bitcoin Core have been made in a good faith effort to benefit all network participants.

**how Biticoin functions as a currency**

Bitcoin is divisible up to 8 decimal places, where the smallest unit of Bitcoin is called a Satoshi. Bitcoin has a controlled supply, with a predetermined rate of inflation governed by the Bitcoin Core, which uses mining to distribute (create) new coins in the form of coinbase as a transaction within published blocks ass a reward to the publishing miner. Coinbase began at 50 BTC in the genesis block, and halves every 210,000 blocks. Each block contains a header and a number of transactions, which must total less than 1MB in size to comply with the current Bitcoin Core. The rate at which blocks are published is determined by the network’s global block difficulty, which is readjusted every 2,016 blocks (an average of every 2 weeks) to target an average publication rate of 1 block per 10 minutes based on the network’s current hash rate—which varies as miners enter and exit the network thereby changing the network’s hashrate. Therefore Bitcoin has a cap of 21 million coins, which is predicted to be 90% mined by 2022 and fully mined by 2140 when coinbase is halved to less than 8 decimal places and recorded as 0 BTC. Furthermore if Bitcoin are lost, then they cannot feasibly be recovered, which essentially creates deflationary pressure.

**Figure 1: Bitcoin Infographic**



**Ownership of Biticoin**

Bitcoin does not rely on an account system, which traditionally requires an identity in order to restore access to an appropriate user if lost, and instead utilizes public-key cryptography where secret private keys can be generated and used in place of accounts to manage funds. Ownership of Bitcoin cannot be understood in terms of Bitcoin attributed to an identity, but rather as private key(s) containing Bitcoin in a user’s possession. Users are not limited in the number of keypairs they possess, nor are keypairs necessarily tied to an identity, which means Bitcoin ownership can be considered pseudo-anonymous. Keys are pairs of case-sensitive and exact alphanumerical strings with unique properties which can be used to form a Bitcoin address, where a secret private key can be used to spend Bitcoin and generate a unique public key which can be used to receive Bitcoin. Key pairs are considered cryptographically secure because the most efficient way to determine a private key from a public key is through brute force, which is essentially guessing every possible solution. Since Bitcoin Core relies on RIPE-MD160 there are 2160 private keys with non-repeating public keys, so the risk of any one private key being guessed is 1/2160. Therefore public keys can be given freely and without worry of exposing the funds within their associated addresses to theft, and randomly generated private keys can be used with relative certainty that they were previously unknown. The Bitcoin Core will accept any valid Bitcoin address as a transaction parameter regardless of a user having access to that address’s associated private key.

**Transacting in Bitcoin**

Transactions, from the user’s perspective, are handled by their Bitcoin client—which manages their keypairs in a wallet. Bitcoin clients are software that can connect to the network (implement the p2p protocol), download the blockchain, manage wallets, and send or receive Bitcoins; these clients intend to be alternatives to the original bitcoind Bitcoin client.[[6]](#footnote-6) The block chain does not contain balances, only historical transactions—which contain a transaction fee, at least one input, and at least one output. The Bitcoin Core will only accept unspent outputs as inputs (to spend) in valid transactions. An unspent output is any (received) output from a published transaction which has not yet been used as the input (spent) in another published transaction. Unspent outputs are determined by parsing through the blockchain. Generating a valid transaction requires a valid private key with sufficient known unspent outputs to include as references for transaction inputs, and the public key of the receiver. An unspent output cannot be partially referenced. If a Bitcoin address contains one unspent output of 20 BTC and spends 10 BTC in a transaction, then the transaction consumes the entire 20 BTC unspent output and has two outputs of 10 BTC where one is spent and the other is returned as change. Traditional wallets maintain a valid copy of the blockchain to find and therefore spend unspent outputs. Light wallets reference servers which store the block chain, allowing users to access their unspent outputs without downloading the cumbersome, 22GB (footnote: as of September 2014) and growing, blockchain.

**the two generals’ problem & proof-of-work**

Bitcoin transactions are secured by the blockchain’s proof-of-work function, which provides a practical solution to the Two Generals’ Problem. The Two Generals’ Problem details a scenario where information shared between two or more parties cannot be trusted and therefore requires a mechanism for verification. In terms of currency and the banking system, this problem was solved through centralization; counterfeiting (double-spending) is both difficult and illegal, and ownership is determined by either possessing physical currency or having currency attributed to an identity (i.e. a bank account.) Centralization provides a trusted way to determine a singular order of events, which allows for the safe transfer of ownership of currency between users while preventing double-spending. Bitcoin’s blockchain provides a decentralized alternative where the network dedicates processing power towards brute-force guessing mathematically difficult problems which back reference and add onto previous work in the form of blocks, thereby creating a proof-of-work chain enforcing a singular accepted order of events. The network will only accept the longest, most difficult blockchain; which, by definition, requires at least 51% of the network’s processing power to create and therefore ensures that the majority of the network agrees on a single transaction record. As long as one valid copy of the blockchain exists, the network can function. The network can be considered healthy if there are many participants propagating the blockchain, and no single miner accounts for more than 50% of the network’s processing power, measured as its hash rate. If a single miner publishes more than 50% of the blocks, then that miner is capable of creating the longest blockchain despite the efforts of the rest of the network, and can therefore create a monopoly on publication.

**Incentives, Forks, and evolution of the protocol**

Bitcoin’s functionings are determined by its protocol, the Bitcoin Core. However network participation is voluntary, which means there are no barriers to entry or exit. There are two types of updates, or changes, which can be made to the protocol: Soft Forks and Hard Forks. A soft fork is a change to the core which is backwards compatible with previous versions, where blocks created under the new Core version are considered valid by older Core versions. A hard fork, which can be an accidental fork, is a change to the core which is not backwards compatible with previous versions, and therefore causes the blockchain to split—which effectively creates a separate transaction ledgers for those network participants who updated their core version and those who didn’t. A new version of the ledger essentially creates a new, independent Bitcoin currency; the fundamental problem with this is the fact that when the network abandons a fork, that currency and any transactions on that fork will likely becomes worthless and the majority of Bitcoin’s value will shift to its successor. Miners lock in their profit, as Bitcoin, in reward transactions within the blocks they publish. If their block is not in the accepted into the longest blockchain, then their reward does not exist in the ledger. Hard forks are considered destabilizing events; out of self-interest the network will quickly determine which split in the blockchain will succeed, and then abandon the other like a sinking ship.

Bitcoin Network participation is voluntary, and therefore largely governed by self-interest. Participants have a stake in Bitcoin, and are therefore expected to act rationally in order to maximize their individual profits; where a stake in Bitcoin is considered ownership of coins and a stake in the network is measured as a miner’s processing power. Therefore network participants, who are by definition stake holders, will choose to follow the same protocol and will not adopt changes to the protocol unless those changes are beneficial for at least 51% of the network. The Bitcoin network works on the basis of self-preservation.

Example: An accidental fork occurred on March 12, 2013 starting from block 225,430 when bitcoind updated to version 0.8 and switched databases from BerkeleyDB to LevelDB in an effort to reduce blockchain synchronization time; causing the blockchain to split. Although the updates in bitcoind 0.8 were considered necessary and initially had the majority of the network’s support, supporting this blockchain would essentially force stakeholders to upgrade in order to use Bitcoin at all. Therefore the developers and the community collaborated to establish bitcoind 0.7 as the dominant fork and orphan the version 0.8 split over the course of 24 blocks (approximately 6 hours.)

If the network collaborates, a hard fork can be used to change even the most fundamental aspects of the Bitcoin protocol—like the 1 MB block limit, or Bitcoin’s 8 decimal divisibility limit. Likewise, this means that Bitcoin is capable of subsuming the functions of competing cryptocurrencies, known as altcoins.

**Incentive to use Bitcoin as a Payment Processor:** Bitcoin was conceived as a cheaper alternative to centralized payment processors, primarily through its fundamentally non-reversible transactions and the consequent fact that a decentralized system cannot be forced into the role of a payment dispute mediator. Therefore, compared to traditional payment processors like credit cards and PayPal who are forced by users to bear the costs of mediation, Bitcoin has a fundamentally lower transaction cost.

**Incentives for Users:** Theoretically these lower transaction costs can be passed on to users, thereby allowing Bitcoin to subsume the role of traditional currencies and appreciate against them. As Bitcoin appreciates in value, stabilizes, and becomes widespread, it becomes more able to compete with traditional financial institutions—by allowing large corporations to facilitate overseas wire transfers for instance, which would be impractical at lower market caps.

More details and specific questions can be answered at https://en.bitcoin.it/wiki/FAQ

**Figure 2 – Transaction as a percentage of Miner’s Revenue**

**The need for analysis**

For Bitcoin to sustain itself in the long run, miners need to continue to dedicate computational power to the network after coinbase becomes negligible. Mining is the process that secures the blockchain, and it is funded in Bitcoin through block publication rewards consisting of coinbase and transaction fees. Therefore, if the network is perfectly competitive, the blockchain is secured by processing power equivalent to the exchange rate of the block reward. However the protocol has been designed in such a way that coinbase halves every 210,000 blocks, which essentially halves miners’ revenue and therefore halves the amount of processing power used to secure the blockchain. As the processing power dedicated to block publication diminishes, the blockchain becomes vulnerable to short term exploitation and vandalism, where a malicious user can obtain 51% control of the network and essentially extort higher transaction fees by monopolizing publication to the longest blockchain and selectively denying low fee transactions. Various Altcoins have been subjected to these kinds of attacks, for instance malicious miners entered Auroracoin’s network and purposefully forked its blockchain—causing exchanges and trading to temporarily freeze, since the network could not agree upon a singular transaction history. In order for Bitcoin’s network to remain healthy, as long as Bitcoin relies on proof-of-work, mining fees must generate enough revenue to secure the blockchain after coinbase becomes negligible. Therefore the question becomes, where will and what should mining fees settle at? As Figure 2 shows, 99% of current mining revenue comes from coinbase, accounting for approximately 3,600 Bitcoin per day. Since the costs associated with mining (hardware, electricity, rent, taxes) are not measured in Bitcoin, but in national currencies, the network’s processing power can be maintained if either Bitcoin’s exchange rate increases, transaction volume increases, or transaction fees increase to compensate for lost coinbase revenue. However there is a further question as to whether or not miners are capable of demanding higher transaction fees, and, more specifically, whether users respond by increasing their transaction fee bids for their transactions to be published in a timely manner. Bitcoin prices, and consequentially the network’s hash rate, have remained relatively constant for the past month. If the network is currently considered secure, and miners are currently operating within an acceptable profit range, then 286553312.2 Giga Hashes per second can be considered secure, requiring revenue equivalent to $1,346,087 USD. If transaction fees remain stagnant, then transaction volume must increase from its average of just under 100,000 per day to over 24,000,000 transactions per day ceteris paribus—which would consequentially require the block limit to increase to just under 100 Mb.[[7]](#footnote-7) The average fee per transaction over this same timeframe was equivalent to $0.055 USD or 0.000147968 Bitcoin; which is a flat fee based on a transaction’s memory size. For a merchant, who is charged 2% per credit card transaction, Bitcoin, with its flat fee, would be cheaper for any transaction over $2.75 USD. If Bitcoin’s currently (arguably) negligible fee were to double, the break-even point for that merchant would shift to $5.50 USD and the number of transactions required to maintain miners’ revenue after coinbase ends would be halved. The same would be true for Bitcoin’s price doubling; however if Bitcoin is infringing on the profits of other financial services, then the processing power used to secure the blockchain should be understood as a function of Bitcoin’s transaction volume in USD (which is a function of Bitcoin’s price.) Otherwise, at a certain price, it would become profitable for existing financial services to initiate a 51% attack to destabilize Bitcoin, or any other proof-of-work cryptocurrency, and effectively remove their competition. Therefore this analysis will primarily focus on transaction fees, assuming everything else ceteris paribus.

**analysis**

The developers can influence transaction fees three ways:

1. **The protocol’s built-in defaults** – The protocol’s defaults can affect both users and miners, but they merely acts as suggestions and can be easily overruled. Bitcoin clients will likely offer competing pricing algorithms for users to minimize transaction fees, and miners will likely act as free riders by publishing to maximize their total fee regardless of any suggestions; thereby putting downward pressure on fees.
2. **Changing the block size limit** – The law of supply and demand states that as quantity (block size) decreases, price increases. As fewer transactions can be published, users should offer higher transaction fees in order to ensure their transaction will be published in a timely manner.
3. **Changing the block publication rate** – If the average block publication time increases, even if the average rate of transaction publication remains constant, then transaction fees should increase in some form to compensate for users’ increased risk of not being successfully published in the current block and having an increased wait time.

**Figure 3 – Unpublished Transaction**

\*Total fee and total size data collected from [https://*blockchain*.info/unconfirmed-transactions](https://blockchain.info/unconfirmed-transactions); red lines indicate block publication, which is determined by simultaneous decreases in total size and fee.

**Figure 3** represents the normal unpublished transaction market over the course of 10/31/14, measured in one minute observations over the course of 1,440 minutes. Each point represents the average transaction Fee:Kb bid of the market at each given minute during the day. Although average fee per transaction was discussed earlier in this section due to data limitations, fee per kilobyte is a more appropriate measurement due to blocks being limited to 1 megabyte, or 1024 Kb. For example, a profit maximizing miner should choose to include a 1Kb 1 Bitcoin transaction with a 0.1 Bitcoin fee over a 1Kb 1,000 Bitcoin transaction with a 0.01 Bitcoin fee. In a perfect transaction market with over 1Mb of unpublished transactions, altruistic miners should choose to publish 1Mb blocks with the maximum potential fee:Kb ratio. Demanding miners, in an attempt to exert upwards pressure on the market’s fee structure, should choose to partially maximize their block attempt’s fee:Kb ratio, while ignoring transactions with negligible fees. However Bitcoin’s protocol has developed a problematic feature known as a soft ceiling on the block limit which masks miners’ theorized behavior, where block size has a negative correlation with network propagation and thus causes larger blocks to be less likely to be accepted by the network over competing blocks of a smaller size. Therefore, despite more than 1Mb of unpublished transactions being available at any given time, blocks tend to average around 0.3MB.[[8]](#footnote-8) It should be noted that the less-than-limit block size may or may not be at least partially attributed to demanding miners, but their influence cannot be easily differentiated from the commonly accepted soft ceiling theory.

The tower-like structures shown between block publications in **figure 3** demonstrate the market’s demand for transaction inclusion in the next block. However, the clustering observations towards the top of the towers could indicate slowing rather than increasing bids, which could be attributed to a relatively flat fee pulling up the low average fee:Kb of leftover unpublished transactions which were not published in the previous block.

**Figure 4: Unpublished Transaction First Differencing Analysis**

\* Calculated using Figure 3’s data, sourced from <https://blockchain.info/unconfirmed-transactions>.

**Figure 4** shows the average new fee bids added to the network in each consecutive minute of block publication. The negative slope suggests that the network participants do not engage in bidding war-like behavior to be included current block publication attempts and instead become increasingly elastic regarding fees as the current block takes longer to publish. Elasticity, in this sense, likely masks a flat-fee rate that users offer that cannot be distinguished by viewing aggregate data. This selection of data leads to three possible **conclusions**:

1. The sample size is too small to demonstrate the market’s normal behavior, **Figure 4** is an abnormality. Demand for quick transactions may vary based on the time of day influencing the types of purchases made; as an example, if Bitcoin is majorly used in the Eastern Standard Timezone, then at noon EST transactions may primarily be used to buy lunch—where a user must pay after their meal and before leaving the restaurant, which may affect the market’s fee structure. The timeframe measured in **Figure 4** was over the course of an entire day.
2. The market may be clearing too quickly or may otherwise be too immature for the theorized, or even rational, behavior to manifest. This could be attributed to the types of transactions Bitcoin is used for; users may not require a transaction for an online purchase to clear as quickly as an in-person transaction, like buying lunch. As transaction demand increases, the network should begin demonstrating more rational pricing behavior.
3. This may demonstrate a fundamental flaw in Bitcoin’s current core, where coinbase (inflation) is necessary to maintain miners’ revenue and secure the blockchain, as previously discussed.

**Regression 1** was run and documented on the following page to further analyze the data discussed in **Figures 3 & 4** and provide insight into the factors that go into fee pricing.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Regression 1 - Model Summaryb** | | | | | | | | | | | | | | | | | | | | |
| Model | | R | R Square | | Adjusted R Square | | Std. Error of the Estimate | | | Change Statistics | | | | | | | | | Durbin-Watson | |
| R Square Change | | F Change | | df1 | | df2 | | Sig. F Change |
| 1 | | .347a | .120 | | .098 | | .000068456712605 | | | .120 | | 5.467 | | 5 | | 200 | | .000 | 2.030 | |
| a. Predictors: (Constant), Over1Mb, AvgNewBid, BlockMin, BitstampUSD, TotalSize | | | | | | | | | | | | | | | | | | | | |
| b. Dependent Variable: FirstDiff | | | | | | | | | | | | | | | | | | | | |
| **Regression 1 - Coefficientsa** | | | | | | | | | | | | | | | | | | | | | |
| Model | | | | Unstandardized Coefficients | | | | Standardized Coefficients | t | | Sig. | | 95.0% Confidence Interval for B | | | | Collinearity Statistics | | | | |
| B | | Std. Error | | Beta | Lower Bound | | Upper Bound | | Tolerance | | | VIF | |
| 1 | (Constant) | | | .001 | | .000 | |  | 4.064 | | .000 | | .000 | | .001 | |  | | |  | |
| BlockMin | | | 2.256E-006 | | .000 | | .170 | 2.286 | | .023 | | .000 | | .000 | | .793 | | | 1.261 | |
| TotalSize | | | 1.728E-008 | | .000 | | .096 | .716 | | .475 | | .000 | | .000 | | .243 | | | 4.111 | |
| AvgNewBid | | | .071 | | .022 | | .217 | 3.185 | | .002 | | .027 | | .116 | | .949 | | | 1.054 | |
| BitstampUSD | | | -8.173E-007 | | .000 | | -.215 | -2.432 | | .016 | | .000 | | .000 | | .563 | | | 1.777 | |
| Over1Mb | | | -3.151E-005 | | .000 | | -.218 | -1.809 | | .072 | | .000 | | .000 | | .304 | | | 3.287 | |
| a. Dependent Variable: FirstDiff | | | | | | | | | | | | | | | | | | | | | |

**FirstDiff** – The dependent variable; the average fee:kb of unpublished transactions added to the network since the last observation (48Kb on average.)

**TotalSize** – A measure the volume of competition during any given observation. Total size is equal to previous total size plus the size of newly added unpublished transactions.

**Over1Mb** – A dummy variable, included to demonstrate the effect of unpublished transaction overflow, where not all transactions can be published in the next block.

**AvgNewBid** – A direct proxy for competition, the average bid of all newly propagated unpublished transactions added since the last block publication.

**BlockMin** – The minute in the block publication, which should demonstrate the effect of any otherwise unincluded fee pricing pressures.

**BitstampUSD** – Bitstamp’s USD exchange rate for Bitcoin, to determine whether users fix transaction fees to an exchange rate.

**Regression 1** was only able to explain 12% of the variation in the average new transaction fee bid. Although three of the chosen variables (BlockMin, AvgNewBid, and BitstampUSD) were found to be significant at the 0.05 level and therefore reject the null hypothesis, they do not have much explanatory power. This analysis would suggest that users’ fee pricing behavior is not significantly influenced by the current state of the unpublished transaction fee market, which supports **Conclusion 2** in that the market has not matured enough for rational fee pricing behavior to manifest significantly. Unfortunately **Regression 1** only consisted of 206 observations of the first 6 blocks after 1 PM EST over the course of 10/28/14, 10/30/14, 10/31/14, 11/16/14, and 11/18/14, to ensure the time of day did not become a confound. Therefore the sample, more likely due to the range of data gathered rather than the number of observations, may have led to results that do not accurately represent the unpublished transaction market. Although the analysis of the daily data failed to provide evidence for rational fee pricing behavior from which to model future market states, longer run data might. **Regression 2**, on the following page, has been designed with the intent to create a comparable longer run version of **Regression 1** and examines the influence of the USD exchange rate, the change in said exchange rate, transaction volume, the change in transaction volume, and Bitcoin days destroyed on the average daily fee per kb of published transactions. Unfortunately the daily micro-data of unpublished transactions collected and analyzed in **Regression 1** are not aggregated, so daily averages from comparable datasets were used in **Regression 2**.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Regression 2 - Model Summaryb** | | | | | | | | | | | | | | | | | | | | |
| Model | | R | R Square | | Adjusted R Square | | Std. Error of the Estimate | | Change Statistics | | | | | | | | | | Durbin-Watson | |
| R Square Change | | | F Change | | df1 | | df2 | Sig. F Change | |
| 1 | | .172a | .030 | | .001 | | .000096544798737 | | .030 | | | 1.053 | | 5 | | 173 | .388 | | 2.009 | |
| a. Predictors: (Constant), BTCDaysDestroyed, ChangeinVolume, USDExchangeRate, ChangeinUSD, TransactionVolumeperDay | | | | | | | | | | | | | | | | | | | | |
| b. Dependent Variable: FeeKb | | | | | | | | | | | | | | | | | | | | |
| **Regression 2 - Coefficientsa** | | | | | | | | | | | | | | | | | | | | | |
| Model | | | | Unstandardized Coefficients | | | | Standardized Coefficients | | t | Sig. | | 95.0% Confidence Interval for B | | | | | Collinearity Statistics | | | |
| B | | Std. Error | | Beta | | Lower Bound | | Upper Bound | | | Tolerance | | VIF | |
| 1 | (Constant) | | | .000 | | .000 | |  | | 3.904 | .000 | |  | |  | | |  | |  | |
| USDExchange  Rate | | | -4.700E-008 | | .000 | | -.047 | | -.434 | .665 | | .485 | | 2.060 | | | .485 | | 2.060 | |
| ChangeinUSD | | | -7.693E-005 | | .000 | | -.035 | | -.455 | .650 | | .958 | | 1.044 | | | .958 | | 1.044 | |
| TransactionVolume  perDay | | | -1.174E-009 | | .000 | | -.148 | | -1.315 | .190 | | .440 | | 2.272 | | | .440 | | 2.272 | |
| ChangeinVolume | | | -5.913E-005 | | .000 | | -.061 | | -.736 | .463 | | .813 | | 1.229 | | | .813 | | 1.229 | |
| BTCDaysDestroyed | | | -8.637E-013 | | .000 | | -.044 | | -.580 | .562 | | .960 | | 1.042 | | | .960 | | 1.042 | |
| a. Dependent Variable: FeeKb | | | | | | | | | | | | | | | | | | | | | |

**FeeKb** – The dependent variable; the average fee:kb of transactions published, includes block header.

**USDExchangeRate** – Bitcoin to USD exchange rate.

**ChangeinUSD** – Percent change In USD exchange rate from previous day.

**TransactionVolumeperDay** – The total number of unique Bitcoin transactions per day.

**ChangeinVolume** – Percent change in transaction volume from previous day.

**BTCDaysDestroyed** – The number of days each transaction Bitcoin had stagnated since its last transaction. A large number of days destroyed indicates either high transaction volume or the new movement of otherwise untouched Bitcoin, which might be tantamount to inflation.

All data for Regression 2 was gathered from Blockchain.info, spanning 07/26/14 to 01/20/15.

**Regression 2** was only able to explain 3% of the variation in the average published transaction fee. None of the chosen variables were found to be significant at the 0.05 level, including USDExchangeRate which was found to be significant in **Regression 1**. Although the inclusion of the block header in the dependent variable’s calculation, thereby resulting in a smaller fee:kb calculation than the actual published fee:kb, may skew the results of this regression, the difference is negligible in this instance. The block header and other non-transaction data was included in the calculation because of data limitations restricting this analysis to blockchain.info’s Average Block Size data set. This non-transaction data only accounts for approximately 100 bytes in each block, which is less than 1/100,000 of a block’s size on average. If the unpublished transaction fee market behaved in a rational, predictable way, then fees should logically vary with competition—measured by TotalSize in **Regression 1** and TransactionVolumeperDay in **Regression 2**. Neither of these analyses were able to sufficiently explain the variation in fee structures in the short or long term, therefore **Conclusion 2**—that fees are currently insignificant and therefore the market acts relatively irrationally—seems to be the likely state of the unpublished transaction fee market.

**Forecasting**

The fee structure analysis in the previous section was inconclusive. Although **Regressions 1 & 2** essentially rule out the effects of any obvious influences on the market pricing fees, we cannot necessarily conclude that the market is entirely unresponsive or will remain so. Therefore this forecast shall detail unresponsive fee structures, using a series of justified assumptions to create a realistic model of mining activity as coinbase continues to halve into the future.

**Assumption 1** — The market is unresponsive, fees are inelastic. The average transaction fee of 0.000174 BTC from the past year (02/28/14 to 02/28/15) is representative of the market’s normal, flat fee rate.

**Assumption 2** — Ceteris paribus, miners’ revenue is dependent on transaction volume after coinbase becomes negligible. Therefore a simple forecast, to predict transaction volume after halvings, is necessary to forecast miners’ revenue.

**Figure 5: Transaction Volume, 28 Day Moving Average**

**Figure 5**’s blue line represents the number of unique Bitcoin transactions on a given day, while the red and green lines represent exponential and linear regressions of that data respectively. The purpose of these simple regressions is to create a simple model to predict transaction volume, with a preference for plausibility over precision. Both of these regressions were run with only a simple count as the X variable.

**Exponential** R2 = 0.79 Transaction Volume = 10 ^ [-3.55972 + 2.480152 \* Log(Day)]

**Linear**  R2 = 0.83 Transaction Volume = -20540.2 + 42.40424 \* Day

**Figure 6 – Miner Revenue per GHash/Second**

**Figure 6**’s blue line, Revenue/Hash, demonstrates miners’ revenue per unit of operation while the red line demonstrates the market’s total operation. As Bitcoin has become more popular, competition for miners has grown and continually forced more efficient mining—where efficiency describes higher hash rates for less revenue. Only recently, since around October 2014, has miners’ revenue per hash begun to bottom out, signified by the hash rate ceasing its exponential growth as miners drop out of the network.

**Assumption 3** — The period of stagnation at approximately 0.004 USD per GH/Sec[[9]](#footnote-9) is representative of the lowest sustainable revenue per hash for miners, ceteris paribus.

**Assumption 4** —The long run average for block publication is 10 minutes, as the Bitcoin Core is designed to achieve. Any short run deviation from this average, due to rapid acceleration or deceleration in mining will average out over time and therefore does not need to be accounted for in longer term forecasts such as this.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Year** | **Coinbase** | **Exponential Transaction Volume (Daily)** | **Linear Transaction Volume (Daily)** | **Miner Revenue**  **Exponential\***  **(BTC & Daily)** | **Miner Revenue Linear\***  **(BTC & Daily)** |
| 2009 | 50 | 0 | (0) | 7200 | 7200 |
| 2013 | 25 | 19,424 | 41,369 | 3603 | 3607 |
| 2017 | 12.5 | 108,380 | 103,280 | 1819 | 1818 |
| 2021 | 6.25 | 296,268 | 165,190 | 952 | 929 |
| 2025 | 3.125 | 604,717 | 227,100 | 555 | 490 |
| 2029 | 1.5625 | 1,051,729 | 289,010 | 408 | 275 |
| 2033 | 0.78125 | 1,653,048 | 350,920 | 400 | 174 |
| 2037 | 0.390625 | 2,422,835 | 412,831 | 478 | 128 |
| 2041 | 0.195313 | 3,374,059 | 474,741 | 615 | 111 |
| 2045 | 0.097656 | 4,518,754 | 536,651 | 800 | 107 |

\*Revenue was calculated using the average Fee per Transaction of 0.000174 BTC and Coinbase \* 144, where 144 is equivalent to the average number of blocks published per day at a rate of one per 10 minutes.

**Assumption 5** —The average Bitcoin to USD exchange rate for the past 3 months (12/01/14 to 03/01/15) according to Coindesk has been approximately $275. For the sake of this forecast a 2.5%, 5%, and 10% annual growth rate shall be modeled from this starting point.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | **GH/Sec, Hash Rate, Exponential\*** | | | **GH/Sec, Hash Rate, Linear\*** | | |
| **Year** | **2.5%** | **5%** | **10%** | **2.5%** | **5%** | **10%** |
| 2013 | 247,732,367 | 247,732,367 | 247,732,367 | 247,994,888 | 247,994,888 | 247,994,888 |
| 2017 | 138,027,944 | 151,994,808 | 183,080,588 | 551,842 | 607,683 | 731,965 |
| 2021 | 79,706,834 | 96,653,821 | 140,231,674 | 311,185 | 377,349 | 547,482 |
| 2025 | 51,336,331 | 68,550,406 | 119,798,302 | 181,045 | 241,752 | 422,485 |
| 2029 | 41,640,475 | 61,229,768 | 128,889,278 | 112,383 | 165,253 | 347,859 |
| 2033 | 45,076,642 | 72,989,473 | 185,066,560 | 78,210 | 126,639 | 321,097 |
| 2037 | 59,417,274 | 105,945,650 | 323,567,128 | 63,708 | 113,597 | 346,934 |
| 2041 | 84,443,293 | 165,804,879 | 609,947,024 | 60,795 | 119,371 | 439,130 |
| 2045 | 121,255,967 | 262,178,454 | 1,161,730,397 | 65,112 | 140,785 | 623,827 |

\*Calculated by extrapolating exchange rates using **Assumption 5** and converting the resulting daily revenue data to hash rates using **Assumption 3**.

**Applying the Free cash flow to equity valuation model to pepsico**

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***Abstract***

*A detailed example of applying the free cash flow to equity valuation model proposed by Damodaran (2009) was provided in this paper. Damodaran (2009) proposes that the value of a stock is the discounted present value of the future free cash flow to equity discounted at the cost of equity. In this paper, the free cash flow to equity model and the super-normal growth model are combined to determine the current value of PepsiCo. In addition to computing free cash flow to equity, the calculation of the sustainable growth rate, the long-term growth rate, beta, and the cost of equity are also provided. The data are obtained from Bloomberg, SEC EDGAR and WRDS*.

**Free Cash Flow to Equity**

In this paper, we combine the concept of the super-normal growth rate model of stock valuation with the Free Cash Flow to Equity model from Damodaran (2009) (See Damodaran, Aswath. “Applied Corporate Finance,” Second Edition, John Wiley & Sons, Inc., 2009). Free cash flow to equity is the cash flow available to firm’s equity holders after all operating expenses, interest, and principal payments have been paid and necessary investments in working and fixed capital have been made. The FCFE model defines FCFE as net income minus net capital expenditures minus the change in working capital and plus net changes in the long-term debt position. Net income is taken from the income statement. Net capital expenditure equals capital expenditures minus depreciation both taken from the statement of cash flows. The change in working capital is the difference of accounts receivable plus inventory from one year to the next less the difference in accounts payable from one year to the next.

FCFE = NI – (CE-D) – (ΔWC) + (NDI-DR)

|  |  |
| --- | --- |
| **Model Variables** | **Definition** |
| FCFE | Free Cash Flow to Equity |
| NI | Net Income |
| CE | Capital Expenditure |
| D | Depreciation |
| (CE-D) | Net Capital Expenditures |
| (ΔWC) | Changes in non-cash working capital accounts: accounts receivable, inventory payables |
| (NDI-DR) | New debt issues are a cash inflow while the repayment of outstanding debt is a cash outflow. The difference is the net effect of debt financing on cash flow |
| NDI | New Debt Issued |
| DR | Debt Retired |

**Data**

Our data was collected via three sources: 1) Bloomberg terminals located in the Hickey Financial Technology Center; 2) SEC EDGAR; 3) Stock return data from WRDS. The data from Bloomberg was the data we focuses our model on, or our primary data source, and the SEC EDGAR site enabled us to essentially check that the data on Bloomberg was the same as Pepsico's financial statements through the Securities and Exchange Commission. We also download the PepsiCo’s stock return data and market return data to estimate the company’s beta.

**Estimating the Growth Rate**

We use three methods to estimate the growth rate on free cash flow to equity. First, we use the historical growth rate, which is so-called historical sales, earnings, or dividend trends method. We used sales in our analysis because it is less subject to accounting manipulations and thereby a more “pure” number to work with. We decided to use data for sales from the previous 5 years, or 2009 to 2013. Next we found the growth rate in this time period by dividing 2013 sales by 2009 sales, then taking that number to the ⅕ power, and finally taking the final number and subtracting out one to get a final percentage growth. The formula for this can be seen below.

g = (Sales in 2013/sales in 2009)^(1/5) -1 = 8.97%.

Second, we use retention growth model. Most firms pay out some of their net income as dividends and reinvest, or retain, the rest. The more they retain, and the higher the rate of return they can earn on those retained earnings, the larger their growth rate. PepsiCo, a mature company, has an averaged payout ratio of 41.95% over the past 15 years, so its retention rate has averaged 1-41.95%=58.049%. Also, Pepsico’s ROE has averaged 33.274% over the past 15 years. We know that, other things held constant, the earning’s growth rate depends on the amount of income the firm retains and the rate of return it earns on those retained earnings and PepsiCo’s retention growth rate=33.274% \* 58.049% =19.32%.

Third, we use security analysts’ forecasts. Analysts publish earnings’ growth rate estimates for most of the larger publicly owned companies. We use the growth forecast for PepsiCo from NASDAQ, which is 7.88%. We decided that the reasonable final estimate of the growth rate g would be the average of the three estimates as follows:

|  |  |
| --- | --- |
| **Method** | **Estimate** |
| Historical Growth Rate | 8.97% |
| Retention Growth Model | 19.32% |
| Analysts’ Forecasts | 7.88% |
| Average | 12.06% |

**Estimating the Cost of Equity**

Approach 1: CAPM

1. Risk free rate: For the risk free rate of CAPM, we used the yield on a 10-year Treasury bond from Federal Reserve Bulletin=2.3259
2. Return on Market =14.71% (5 year Average Monthly Return on SP 500 Index)
3. Adjusted Beta Estimation=.0.59
4. Putting it together: Re =2.32% + (14.71%-2.32%)\*0.59=9.63%

Approach 2: DCF Approach

Rs = 0.65/$80 +12.06% =0.8%+12.06% =12.87%

Approach 3: Own-Bond-Yield-Plus-Judgmental-Risk Premium

Rs = Rd+ Judgmental-Risk Premium = 2.40% +3% =5.4%

|  |  |
| --- | --- |
| **Method** | **Estimate** |
| CAPM | 9.63% |
| DCF | 12.87% |
| Own-Bond-Yield-Plus-Judgmental-Risk Premium | 5.40% |
| Average | 9.3% |

#### FCFE long term growth rate (g) implied by single-stage model

g = 100 × (Equity market value0 × r – FCFE0) ÷ (Equity market value0 + FCFE0)  
= 100 × (147,496 × 9.30% – 5,636) ÷ (147,496 + 5636) = **5.27%**

Where:  
Equity market value0 = current market value of PepsiCo's common stock (USD $ in millions)  
FCFE0 = last year PepsiCo's free cash flow to equity (USD $ in millions)  
r = required rate of return on PepsiCo's common stock

**Computing Free Cash Flow to equity for PepsiCO for 2008 to 2013**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Year | NI | Depr | Cap Exp | ∆WC\* | FCFE  (BD) | FCFE  (AD) |
| 2008 | 5142 | 1543 | 2446 | -992 | 8805 | 12320 |
| 2009 | 5946 | 1635 | 2128 | 176 | 11452 | 11265 |
| 2010 | 6320 | 2327 | 3253 | -2294 | 9762 | 18135 |
| 2011 | 6443 | 2763 | 3339 | -385 | 10155 | 11091 |
| 2012 | 6178 | 2689 | 2714 | 1038 | 13925 | 16014 |
| 2013 | 6740 | 2663 | 2795 | 1448 | 13931 | 15397 |

\*Average of Quarters

FCFE Estimation Results

|  |  |  |
| --- | --- | --- |
| **Year** | **FCFE** | **PV (FCFE)** |
| FCFE1 | 6316 | 5778 |
| FCFE2 | 7077 | 5924 |
| FCFE3 | 7931 | 6074 |
| FCFE4 | 8887 | 6227 |
| FCFE5 | 9959 | 6384 |
| Terminal value (TV5) | 260150 | 166772 |
| Intrinsic value of PepsiCo's common stock |  | 197160 |
| Number of shares outstanding | 1567.6 | 125.80 |

The current value of PepsiCo is the sum of the five anticipated free cash flow to equity plus the present value of the value of the firm at t=5. The discounted present value of the free cash flow to equity for the super-normal growth period for the five years from 2014 to 2018 is $30,387. And the present value of the terminal value is $166,772. The total value of PepsiCo is $197,160 million.

**Summary and Conclusions**

In this paper, we have combined the concepts of equity valuation, required return on equity, super normal growth, and sustainable growth to determine the long term value of PepsiCo. The value of the equity of a firm is defined as the present value of all future cash flows from the firm to the shareholders. Free cash flow to equity is defined as net income minus net capital expenditures minus the change in net working capital plus the net change in long term debt financing. We use three ways to estimate the expected growth rate including historical growth rate, retention growth model, and analysts’ forecasts. We also used three ways to estimate the required return on equity including capital asset pricing model (CAPM), discounted cash flow (DCF), and Own-Bond-Yield-Plus-Judgmental-Risk-Premium Approach. Beta for PepsiCo is also estimated using stock return and market return data from WRDS. Sustainable growth for the super-normal growth period is computed with the extended DuPont Analysis.

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The Financial Ecology of the Mortgage Market System

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**Introduction**

The 2008 financial crisis was the worst economic collapse since the great depression. Between 2007 and 2009, approximately 8.8 million jobs and  $19.2 trillion dollars in household wealth were lost (U.S. Department of the Treasury, 2012). At the center of this crisis was the home mortgage financial system. In the aftermath, it was evident that a better understanding of how the banks, mortgage brokers, home buyers, and investors interact is imperative. This would reveal the weakness that made the system unstable and the appropriate policy response to reduce future systemic risk. One approach is to study these interactions as if they are a complex biological system such as an ecosystem. Such research would explore how shocks to the mortgage market spread from firm to firm, causing a system-wide collapse, by utilizing our understanding of how and why ecosystems collapse. Researchers such as Robert May , Andrew Haldane, and Nimalan Arinaminpathy have thus far attempted to create quantitative mathematical models of finance which mimic biological and environmental models (Haldane and May, 2011; Arinaminpathy, et al, 2012). However, due to the need to specify exact relationships such approaches are highly abstracted from the actual financial structure of those markets.

        I will instead take a more qualitative approach in examining these markets by identifying the institutional relationships created by the existing regulations. Then I will analyze the dynamics of the system from the perspective of various biological ecosystems, identify the weaknesses in the structure that allowed the financial ecosystem to approach collapse, and the policy changes that attempted to make the system more stable.

Since the system that came under stress in 2008 was the result of earlier systems that were modified during periods of stress, I will begin by exploring the characteristics of the previous system and its bio-financial stability. Then I will examine the “2008” financial system and its financial ecology.

**A Financial Ecosystem**

When comparing any financial system to an ecosystem there are base analogies which need to be defined before modeling a specific financial system. A biological ecosystem is based on units of energy exchanged between the different trophic levels in the environment. (Krebs, 2008: ch 13). This energy allows an organism to grow, reproduce, and collect more energy from foraging for food. In a biological system an organism's success is not determined by its ability to collect and store energy, but rather by its ability to reproduce and pass its genes onto its offspring (H. Allen Orr, 2009: pg 531). It can be argued that financial entities act similar to biological organisms. Instead of energy, financial systems are based upon units of money. Entities can use this money to grow, such as "buying" more assets, "replicate" by opening new branches and hiring more employees, or it can store the money for future use. This is similar to how organisms use energy to hunt for food, reproduce, or store the energy for future use. If a population of organisms runs out of food or cannot absorb enough energy to survive or reproduce, the population becomes extinct. Similarly if a financial entity runs out of money and become insolvent, it becomes bankrupt and shuts down.

A financial entity is generally considered the most successful if it has the highest sustainable profit while biological success is determined by an organism's ability to reproduce and pass on its genetic code to surviving offspring. It may be that an entity generating the highest amount of profit in the short run is not the most successful in the long run. If an organism produces a large number of offspring, but they are too weak to survive, it is not considered successful. The size of an entity may also not correlate with its success just as the largest organisms are not always the most successful. If an environmental disturbance occurs in a biological system the largest organisms are often more severely affected than smaller organisms. This can also be similar in financial collapses. Entities which were generating the highest amount of profits may not have as much money in their reserves as other, more stable entities and become insolvent.

There are many traits which can affect the long run stability and survival of an organism or a population. Unstable populations are characterized by a low reproductive rate, specialized feeding habits, large size, low genetic diversity, and adaptation to a stable environment.

A low reproductive rate decreases the amount of offspring produced and reduces the chance of genes being passed on to future generations. A low reproduction rate is sometimes stable so long as the offspring have a high survival rate. This differs in a financial system where stability of an entity does not depend on its ability to produce other branches of itself or hire other employees, but rather to generate the most return for itself while minimizing its risk of insolvency.

Specialized feeding habits are unstable because an environmental disturbance which interrupts that specialized feeding habit prevents the population from acquiring energy since the population has no other secondary source of food. This has a very strong parallel in a financial system. If a financial entity specializes in only one type of investment vehicle, it puts itself at extreme risk should a problem arise with that type of vehicle. The solution to this risk is to invest in a variety of investments, diversifying the institution's portfolio and lowering the risk of bankruptcy if one type of vehicle fails.

Large organisms are prone to extinction and instability since these organisms need more energy to survive and there are fewer habitats which can support them. Although large financial entities are considered more stable than smaller entities, it has recently been argued that larger systems with many entities are more prone to instability than previously believed due to their increased complexity and systemic risk. Originally it was believed that larger systems were more stable by spreading the systemic risk across entities. This was also believed to be true with biological ecosystems with many organisms such as rainforests. The high number of organisms lessened the impact felt by the ecosystem if one species became extinct. This theory has since been disproven and it is now believed that the larger an ecosystem's complexity the higher the systemic risk (Haldane and May, 2011).

Low genetic diversity is unstable because it causes the population to be more vulnerable to diseases and other disturbances. If a population has a diverse genetic code, there is a possibility that one of the organisms has resistance or even immunity to a disease and can pass that resistance to its offspring. If the whole population has a similar genetic code, they are all equally vulnerable to the disease. This is similar to the previously described effect caused by investing in similar vehicles. However, this type of similarity is between multiple entities. A single entity can have a diverse investment portfolio limiting its own risk, but if a group of entities all have a similar investment portfolio, the systemic risk increases. If some change were to occur in the business cycle rendering one type of investment portfolio worthless and all financial entities have that portfolio there is a high risk of all entities becoming bankrupt.

An organism adapted to a stable environment cannot adapt to large fluctuations in environmental conditions. If these environmental changes occur then the population experiences reduced reproduction or even extinction. Financial entities must also adapt to new environments. If government regulation or some other barrier prevents firms from reacting to a change in the financial environment, then there is a higher chance the firm may experience a loss or go bankrupt.

**Banking before MBS**

To understand the modern mortgage market, it is useful to evaluate the market's development and evolution from previous systems. In the wake of the Great Depression, policy makers believed that stock speculation, market manipulation, and intense competition between banks led to the failure of many financial institutions. They concluded from these observations that defective regulation and the flawed structure of financial institutions were to blame for the financial collapse (Burton and Lombra, 2003: pg 297). To rectify these faults in the financial system, the government enacted a series of regulations and structural reforms. One of these reforms was the Glass-Steagall Act of 1933 which enacted federal deposit insurance, separated commercial and investment banks, and enacted what was known as Regulation Q (Burton & Lombra, 2003: pg 279). The creation of the government deposit insurance made banking safer by insuring deposits of up to $100,000. The stock market still promised a higher rate of return than banks, but many people invested in banks anyway because of the security of the investment. Regulation Q helped to reduce competition between banks by giving the government control over the interest rates offered by banks. It forbade interest rates on demand-deposit accounts and created an interest rate ceiling on savings deposits. While the goal of this ceiling was to reduce the risk seeking behavior of banks and increase stability of the financial system, its impact was more far reaching.

        The Glass-Steagall Act, created a financial system with two main components; commercial banks and savings banks. Commercial banks issued and held demand-deposits/checking accounts, made loans to commercial businesses and were insured by the Federal Deposit Insurance Corporation (FDIC). Their purpose was to serve the transaction needs of the economy. Savings institutions, which shall be referred to as Savings and Loan institutions (S&Ls), were regulated to focus on offering savings accounts and to provide home mortgage loans. The S&Ls were insured by the Federal Savings and Loan Insurance Corporation (FSLIC). Regulation Q selectively controlled the flow of credit in the economy by allowing S&Ls to have a slightly higher interest rate ceiling (.5 percent higher) than commercial banks. This strengthened the credit channel between savings and home construction. This flow of credit increased the construction of additional homes, increasing job opportunities, thereby increasing incomes and savings. These increased savings were drawn back into the S&Ls by high interest rates completing the cycle (Figure 1 adapted from: Sheila C. Bair, 2007). Increased employment and incomes led to the increased presence of the middle class after the second World War increasing home ownership by almost 20% from 1940 to 1970 (U.S. Census Bureau). Essentially the system was designed to foster growth in the housing sector of the economy by channeling credit to financing the construction and purchase of homes.

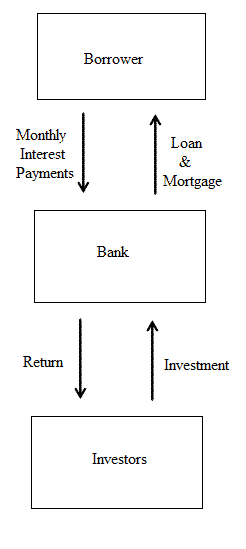


Figure 1: *The Pre-S&L Crisis Mortgage System*

Another product of the Depression era used to promote home ownership was the Federal National Mortgage Association (Fannie Mae). Fannie Mae was created in 1938 to purchase mortgages from lenders, freeing up capital for banks which could then be lent out again. Fannie Mae began as a federal government agency but in 1968 it became a for-profit company with shareholders. Private investors would buy stock on the market and Fannie Mae would then invest the money. The company, however, was required to retain its government mandated mission and charter causing it to be known as a government sponsored enterprise (GSE). During the 1970’s and 1980’s Fannie Mae used these investments to purchase mortgages from banks and other mortgage finance companies and hold the mortgages in its portfolio receiving the interest payments. Another housing agency created in 1970 was the Federal Home Loan Mortgage Corporation (Freddie Mac). Freddie Mac was created to prevent Fannie Mae from having a monopoly in the secondary mortgage market. The secondary mortgage market is where mortgages or collections of mortgages are exchanged between mortgage originators, mortgage securitizers, and investors. Although Freddie Mac also purchased mortgages, it purchased mortgages from S&Ls and reorganized the mortgages into mortgage backed securities (MBS) and sold them to investors. A MBS is a type of asset-backed security secured by a collection of similar mortgages instead of individual mortgages. Freddie Mac would then sell the MBS to a private investor replenishing Freddie Mac's funds.

        The interest rates on the mortgages held by the S&Ls and the GSEs were very low due to the ceiling rates set by Regulation Q which were fixed for the life of the loan (normally 30 years), the market forces of these constraints, and low inflation. The institution's interest rate ceiling would periodically be adjusted, but this adjustment only affected mortgages originated after the alteration. The older mortgages would keep their original interest rates while new mortgages would have the current interest rate. The value of these older mortgages decreased as the market interest rate increased above the mortgages' original interest rate. In an attempt to increase funds, S&Ls would keep issuing new mortgages with the new, higher interest rates to help counteract the decrease in asset values. This process worked, ensuring system stability, as long as the government's interest rate ceiling was set only slightly below the current market interest rate and the bank's mortgage portfolio produced an average return larger than the interest paid to the bank's depositors. The S&Ls compensated depositors for the slightly below market returns with safety and increased deposit liquidity.

**System Under Stress**

In the 1970’s, however, inflation was increasing rapidly resulting in higher market interest rates. The rapidly increasing market interest rates quickly surpassed the 5.5% ceiling installed by Regulation Q. As the spread between the market interest rate and the ceiling interest rate increased, two forces came into play. The S&L's real returns on deposits approached zero and eventually became negative outweighing the advantage of the government insurance and the other bank services. This caused depositors to withdraw their funds from the S&Ls and deposit them in non-government regulated institutions such as money market funds (MMFs). Since S&L assets were mostly held in mortgages, they did not have the liquidity to fund depositor withdrawals. To pay off withdrawals, the S&Ls had to sell their fixed rate mortgages in an increasing interest rate environment. Since, the value of these mortgages decreased as market interest rates increased losses occurred. As the S&Ls sold their mortgages at a loss, their net worth continued to decrease, moving them towards insolvency. During this period of stress, Fannie Mae also suffered from financial strain due to the large number of fixed-rate mortgages it was holding in its portfolio. Even with its weakened financial condition, Fannie Mae was able to continue making loans due to the government's guarantee on the debt it issued. Freddie Mac, on the other hand, experienced much less stress from the increased inflation and interest rates since most of its mortgages had been packaged into MBS and sold to investors (Federal Housing Finance Agency). By selling the MBSs to investors, Freddie Mac was able to avoid a large decrease in its assets since it was not holding the fixed-rate mortgages, the investors were.

**Attempt to Stabilize the System**

In order to decrease the deposit outflows and make S&Ls more competitive with other unregulated institutions, the government enacted the Depository Institutions Deregulation and Monetary Control Act (DIDMCA) in 1980. This statute had three main components that deregulated the system. First, it removed many of the regulations enacted during the Great Depression including Regulation Q. Second, it expanded the asset and liability powers of the institutions, allowing S&Ls to extend loans to businesses and allowed S&Ls to offer interest-bearing checkable deposits to customers. Third, it suspended usury ceilings and allowed financial institutions to charge higher interest rates on loans (Burton and Lombra, 2003: pg. 331). This allowed some competition to bloom among depository institutions. The second attempt at stabilizing the system was the Garn-St. Germain Depository Institutions Act in 1982.  This allowed S&Ls to offer two new types of deposit accounts to increase competition with MMFs. One of these new accounts were money market deposit accounts which had no interest rate restrictions. The second type of account was the Super NOW accounts which also had no rate ceiling and were fully checkable. The Garn-St. Germain Act also reduced the capital requirements allowing S&Ls to move into new lending areas (Burton and Lombra, 2003: pg. 313). Congress had hoped these changes would allow S&Ls to grow and overcome their problems through greater efficiency, reduction in costs, and improvement in the quality and quantity of services. As S&Ls began to offer higher interest rates on deposits, the outflows from the institution began to decrease. The S&Ls then used depositors' money to invest in speculative real estate and junk bonds to increase the average portfolio yield which was still low due to the large number of low return fixed-rate mortgages held. S&Ls needed this increased return to pay the higher interest payments to their investors. The investments made by the S&Ls were increasingly risky, but depositors kept their money in the institutions since the S&Ls were insured by the weakening FSLIC. This resulted in a moral hazard encouraging lenders to make high-risk loans while not concerning themselves with whether or not the loans defaulted since they were insured. As the risky loans began to default and banks began going bankrupt, the FSLIC began to run out of funds to pay back the bankrupt institutions' depositors. By the late 1980’s, the FSLIC had run out of funds to cover the losses and the government created the Resolution Trust Corporation (RTC) in 1989 through the Financial Institutions Reform, Recovery and Enforcement Act (FIRREA). The goal of the RTC was to evaluate the assets held by the bankrupt S&Ls. The S&Ls' assets which were deemed “good” were revalued and sold to surviving banks to cover the government’s costs of handling the failed banks. Assets which were considered "bad" were sold to recoup some of the losses. By 1995, the RTC had resolved the assets of 747 insolvent S&Ls to stop the continuing loss of funds (Curry and Shibut, 2001).

**The S&L Ecosystem**

In this system, the S&Ls could be considered to have a mutualistic relationship with their depositors similar to a symbiotic relationship between two organisms. A biological system which is similar to the S&L system is a modified version of leaf-cutter ants from South America. In the natural world leaf-cutter ants collect fresh vegetation from various trees in the area around the ant's colony. The ants then bring the harvested vegetation underground into their nest and use it as a nutrient source for "gardens" of fungi. In turn, the fungus produces food for the ants and their larvae in the form of protein-rich fungal strands called gondylidia. Dead vegetation and other wastes are then disposed of in special waste chambers within the underground ant nest. The ants cultivate this fungus not only with fresh vegetation, but also by repressing the growth of a mold which negatively affects the growth of the desired fungus. The ants repress this mold using antimicrobial substances from microscopic actinobacteria which reside in the metapleural gland of the ants.

A comparison can be built between this biological system and the S&L financial system by substituting the entities of the financial system with the organisms of the biological system. Trees are analogous to investors, ants are analogous to the S&Ls, and the borrowers are analogous to the fungi grown by the ants. In order for this comparison to work, one of the relationships in the biological system must be modified. In the actual leaf-cutter ant system, there are two main relationships. The mutualistic relationship between the ant and the fungus where the ant provides nutrients for the fungus to grow and the fungus provides food for the ant. The second relationship is a negative relationship between the ants and the trees which have their leaves removed by the ants while not receiving any benefit from the ants in turn. To model the S&L system, this negative relationship must be changed to a mutualistic relationship where both the trees and ants receive a benefit from one another.

The resulting system can be seen in figure 2. The ants take the leaves from the trees similar to how the S&Ls take deposits from investors. The ants bring the leaf pieces back to their colony and use the leaves to grow their fungus gardens. This is similar to how S&Ls use their investments to "cultivate" mortgages. The ants then eat portions of their cultivated fungus just as the S&Ls receive interest payments from their borrowers. To represent the S&Ls paying returns to their investors, the theoretical relationship of ants using their expelled waste to fertilize the trees they harvest from helping the trees grow. The ant's waste is nutrient rich from the fungus just as the investor's returns are essentially increased by the mortgage payments from the borrowers.

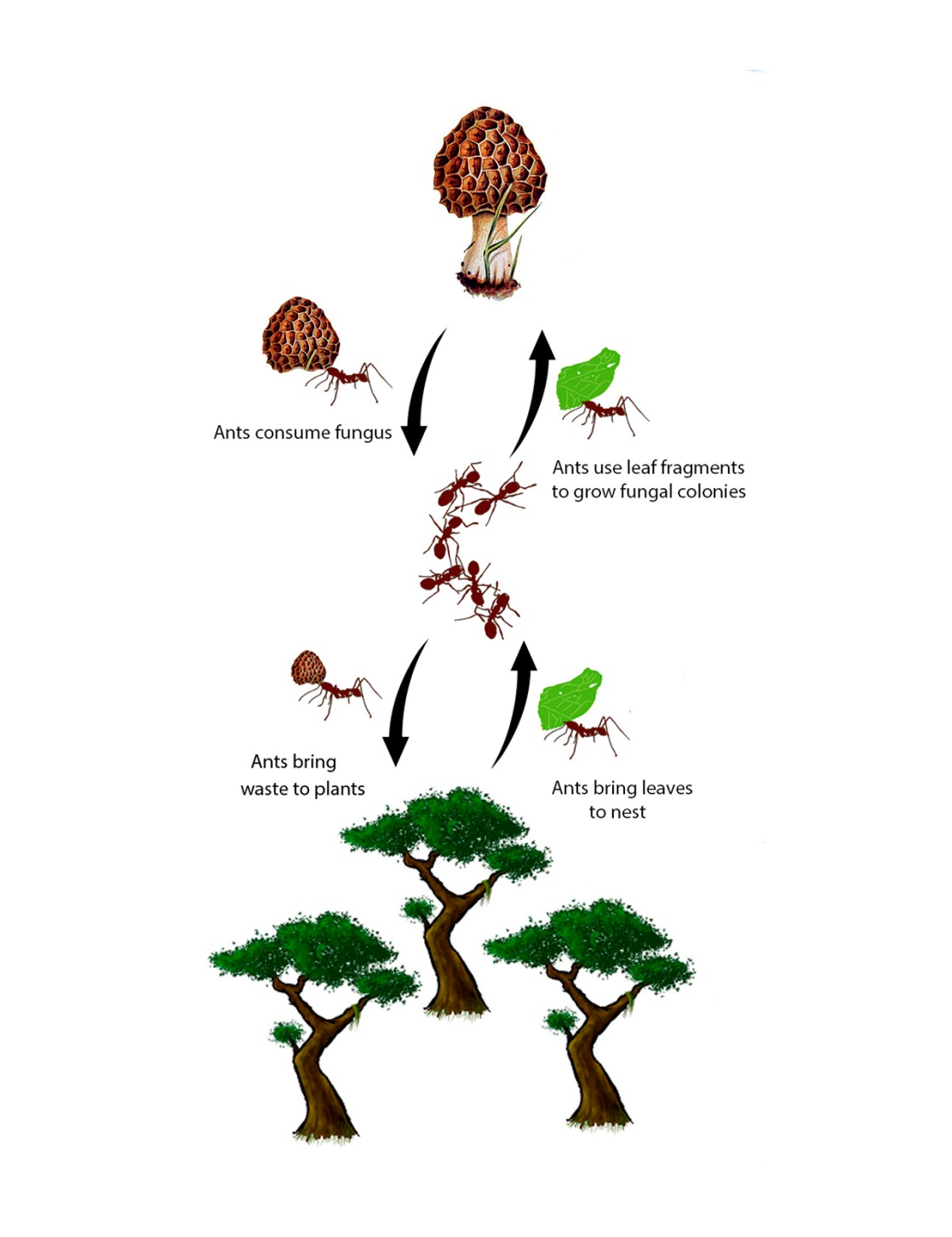
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Figure 2: *The Biological S&L system*

This same model can be used to examine the stress and resulting crash the S&L system experienced during the 1980's. A second colony of ants must then be created to represent financial entities besides S&Ls which participated in other investments besides mortgages which were not insured by the Federal Government. This new colony is represented by the black ants in the model (Figure 2A). These ants cultivate a different kind of fungus from the S&L (red) ants. This new type of fungus has a higher chance to be tainted by a blight of mold which kills some of the ants' fungus just as the loans the other financial entities make have a chance to default resulting in losses since these loans are not insured by the Government. In the financial system these loans have higher returns due to their increased risk. The analogy in the biological system could be that the "riskier" fungus is more prone to mold because it has a higher nutrient content than the fungus grown by the red ants. The black ants still grow this "risky" fungus even with the chance of blight because this risk is counteracted by the increased nutrients the ants receive from the fungus. There are also the government regulations which make it more difficult for investors to participate in market activities uninsured by the Federal Government. This is represented by a river separating the two ant colonies. This river makes it difficult for trees to move to the right area of the ecosystem where the black ants reside, making the trees more abundant on the left side of the river where the red ants live. There is also a third type of fungus that exists on the right side of the river. This fungus represents extremely risky loans which the other financial entities have learned to avoid and similarly the black ants avoid this fungus since it is very prone to blights of mold. The river also blocks the red ants from interacting with this third fungus type just as government regulation prevented the S&Ls from participating in loans other than mortgages.

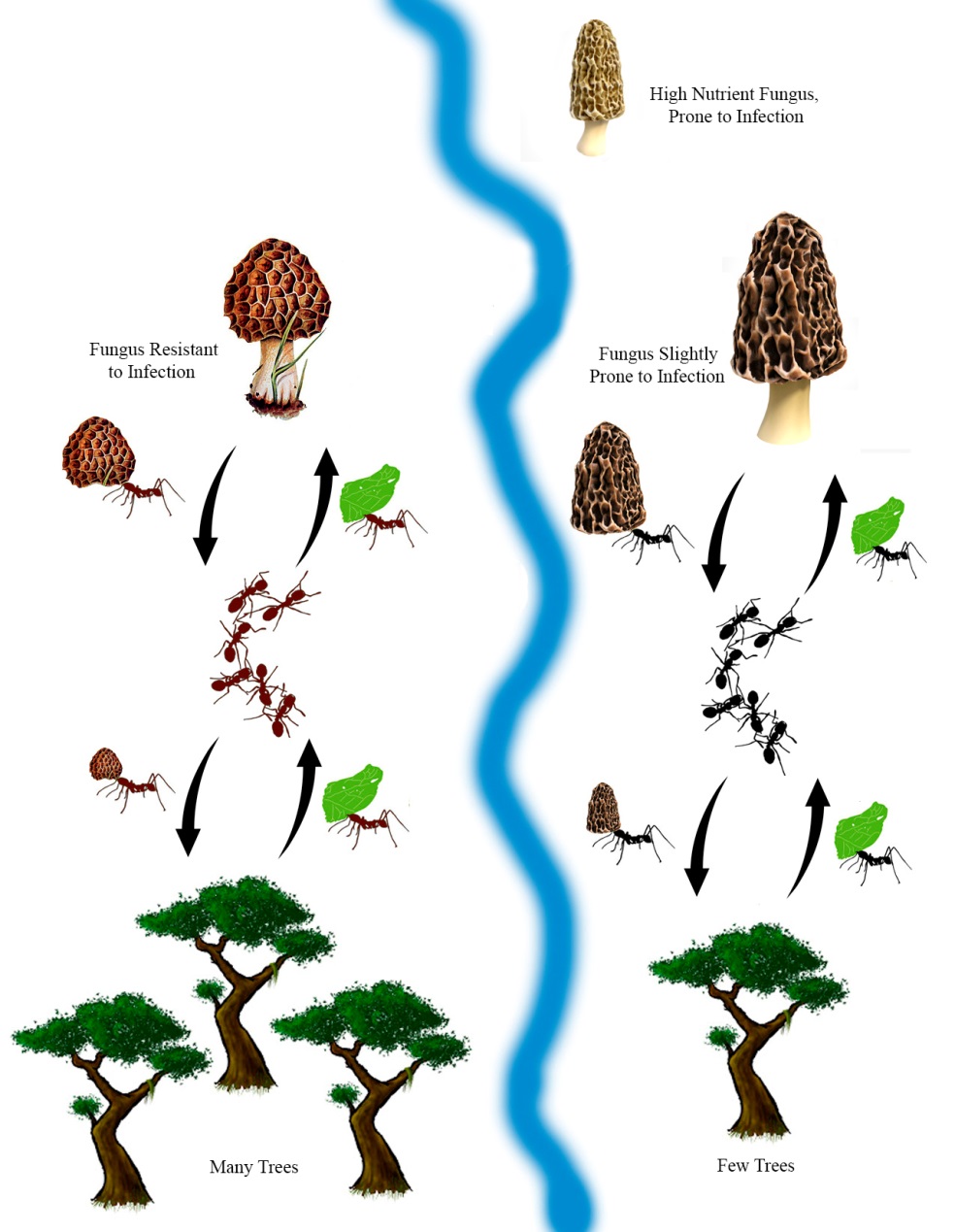


Figure 2A: *S&L System Before Stress*

The S&L system came under stress from high levels of inflation resulting in the fixed rate mortgages held by the S&Ls being reduced in value while the interest rate limits set by Regulation Q also prevented the S&Ls from providing increased returns to their investors. This can be analogous to an increase in temperatures in the biological system. The analogous increase in temperature in the biological system can result in the ants and the trees requiring more energy while the energy provided by the red ants' fungus remains the same even with the increase in temperature. The fungus harvested by the black ants is able to adapt and increase its nutritional value in response to the increasing environmental temperature. As the temperature increases, the difference between the amount of nutrients required by the trees and the nutrients the fungi are able to provide continues to increase. As it increases, the trees no longer benefit from their relationship as the nutrient content of the ant's waste is decreasing due to the fungi producing less energy (Figure 2B). This changes the relationship between the ants from a mutualistic relationship to a herbivorous-like relationship where the ants harvest the leaves while providing little benefit to the trees.

In the financial system, the investors were receiving less and less returns from investing in S&Ls. Instead it became more beneficial to invest in the other financial entities even with the government regulations making it more difficult than investing in S&Ls. The investors began withdrawing their deposits from the S&Ls. To cover these withdrawals, the S&Ls sold their mortgages, but at new low market prices resulting in a loss for the S&Ls and an overall decrease in net worth. The S&Ls were brought to the brink of bankruptcy before the government intervened. The model's analogy for this is that the trees receive no benefit, so they have no reason to allow the ants to take their leaves. Instead the trees put their energy into reproducing and creating seeds. These seeds are wind-dispersed and are able cross the river. The increase in temperature has decreased the width of the river making it easier for the seeds to make it across. As the seeds are produced, the trees die leaving no leaves for the ants to harvest (Figure 2C). There is no direct analogy in the biological system for depositors removing their funds from the S&Ls. However, a similar effect can be seen if the ants sensed the trees dying and began directly placing fungus in the soil around the tree in an attempt to provide additional nutrients to the trees and keep them alive even at the cost of starving the colony

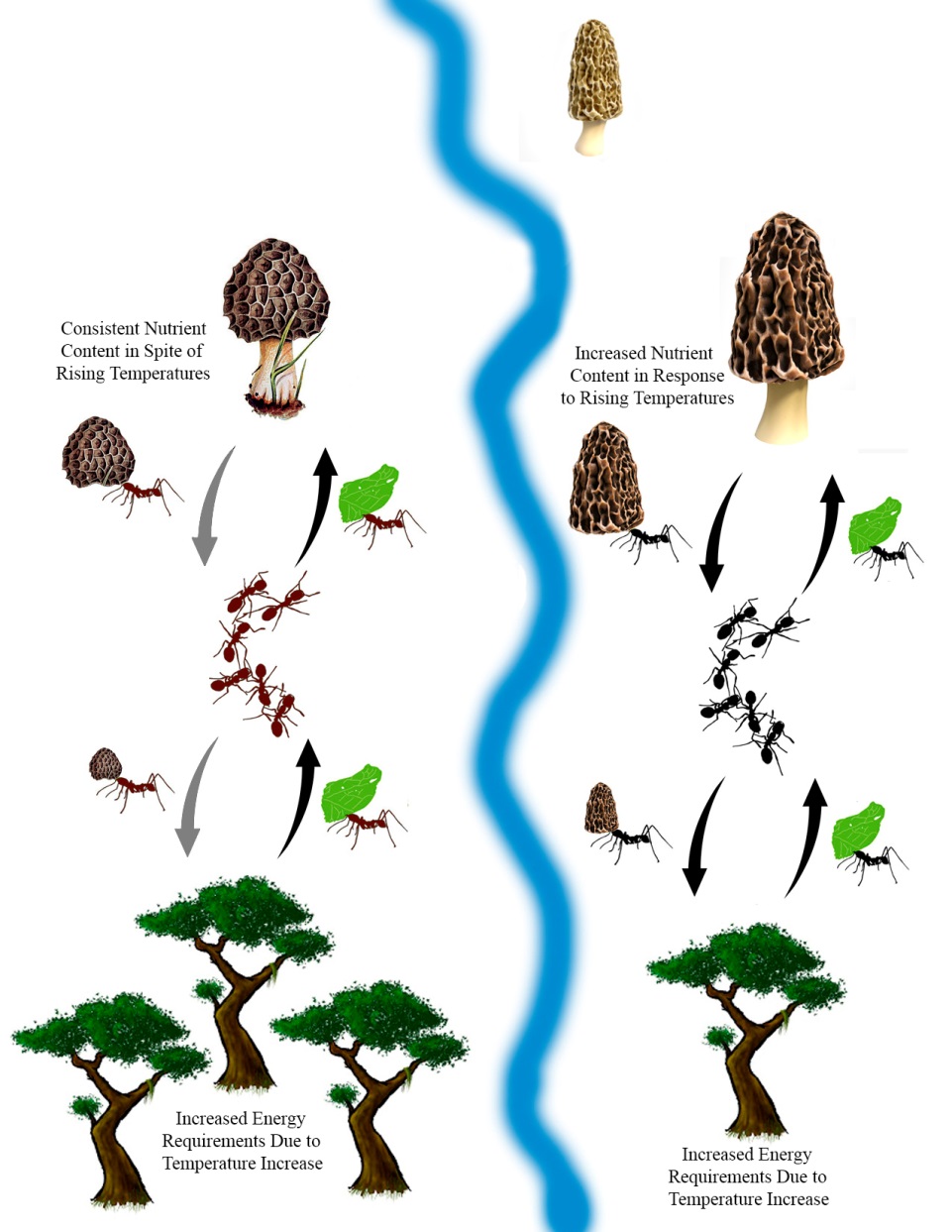


Figure 2B: *S&L System During Stress*

The Federal Government responded to the impending S&L bankruptcy by enacting DIDMCA and allowing the S&Ls to invest in other areas of the financial market which provided higher returns and could change with the inflation rate. At first, the S&Ls were making enough of a return to keep the remaining investors from withdrawing their deposits. The S&Ls' mortgages, however, were still not increasing their returns with the inflation rate. In the biological model, the increasing temperature evaporates the rest of the river, allowing the red ants to access the third type of fungus which was previously unavailable (Figure 2D). This new type of fungus was able to increase its nutrient content with the increase in temperature. This allowed the ants to keep the remaining trees alive near their nest even though the original fungus' nutrient content remained at pre-stress levels.

The S&Ls had no experience with the new types of loans, however, and made loans which were too risky. This led to the loans defaulting leaving the S&Ls with no returns besides the insufficient payments they received from their mortgages. More investors attempted to withdrawal their deposits to move to more lucrative areas of the market, but the S&Ls had no funds to give them resulting in many S&Ls becoming insolvent. In the ecosystem, the red ants meet a similar fate. Since the red ants had no previous encounter with the new fungus type, the ants' antimicrobial bacteria could not repress the mold which grew on the new fungus, causing the new fungus to die (Figure 2E). This left the red ants with minimal nutrients which they were still using in an attempt to revive the dying trees. As the trees died and the original fungus did not meet the energy needs of either the ants or trees, a large proportion of the red ants eventually starved from a lack of nutrients.

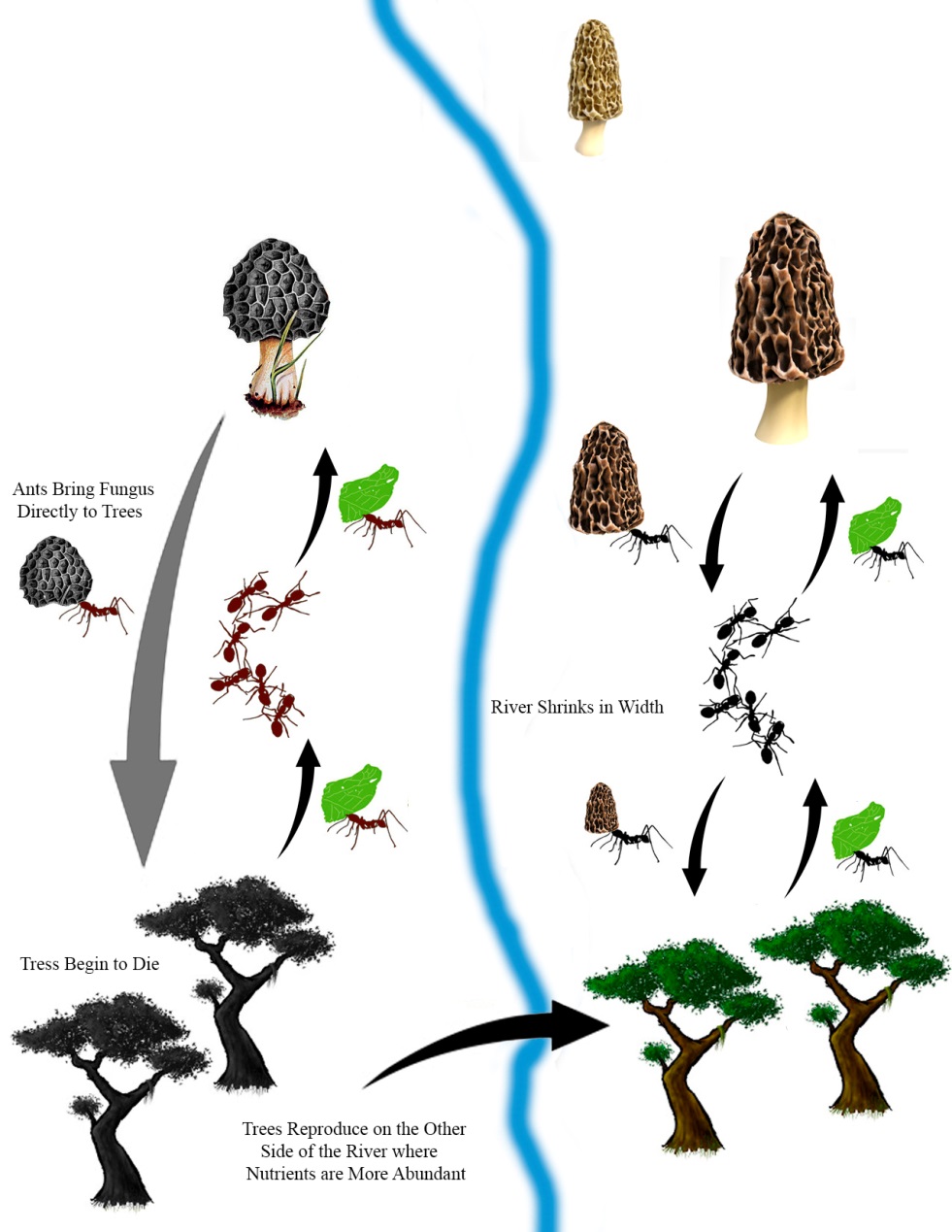


Figure 2C: *S&L System After Stress*

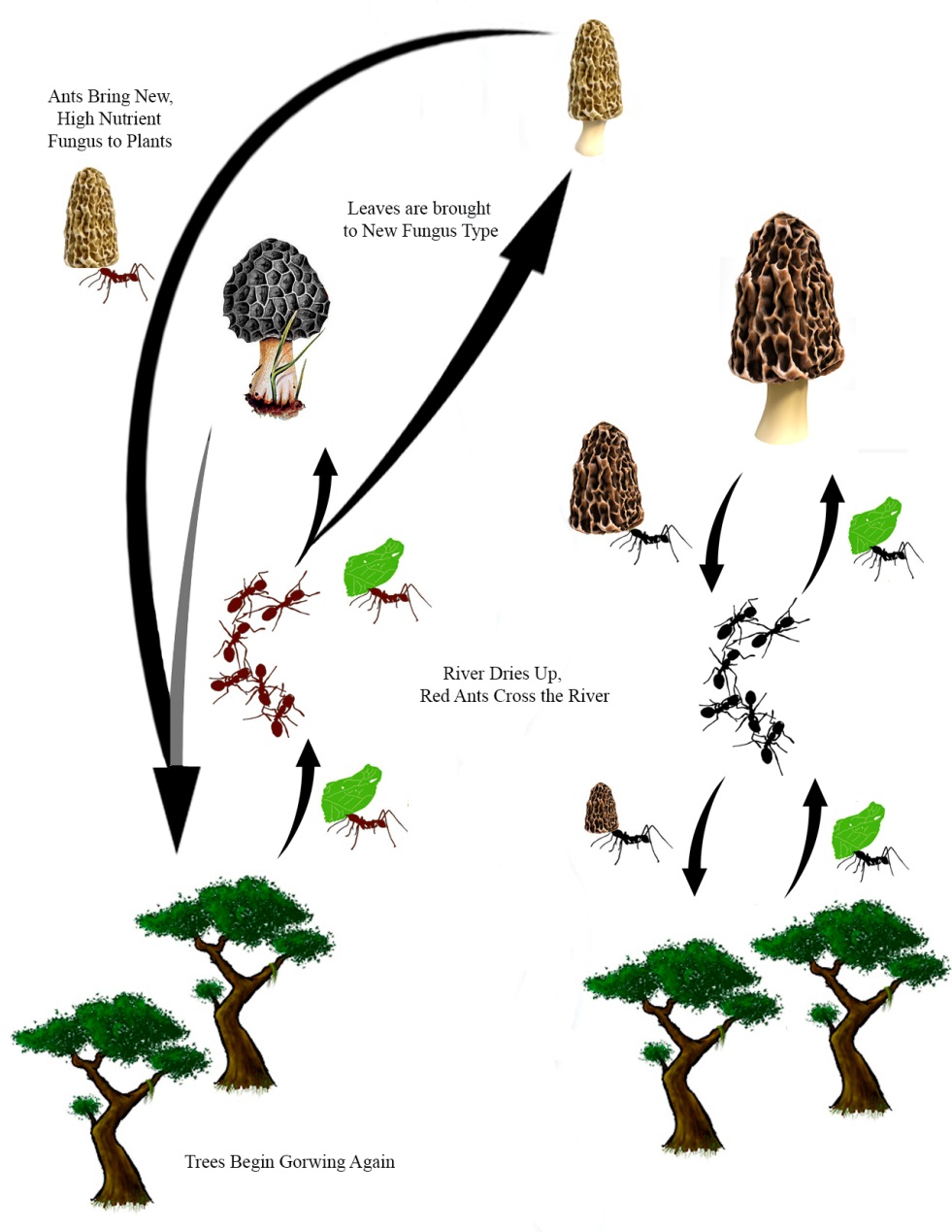


Figure 2D: *S&L System After DIDMCA*

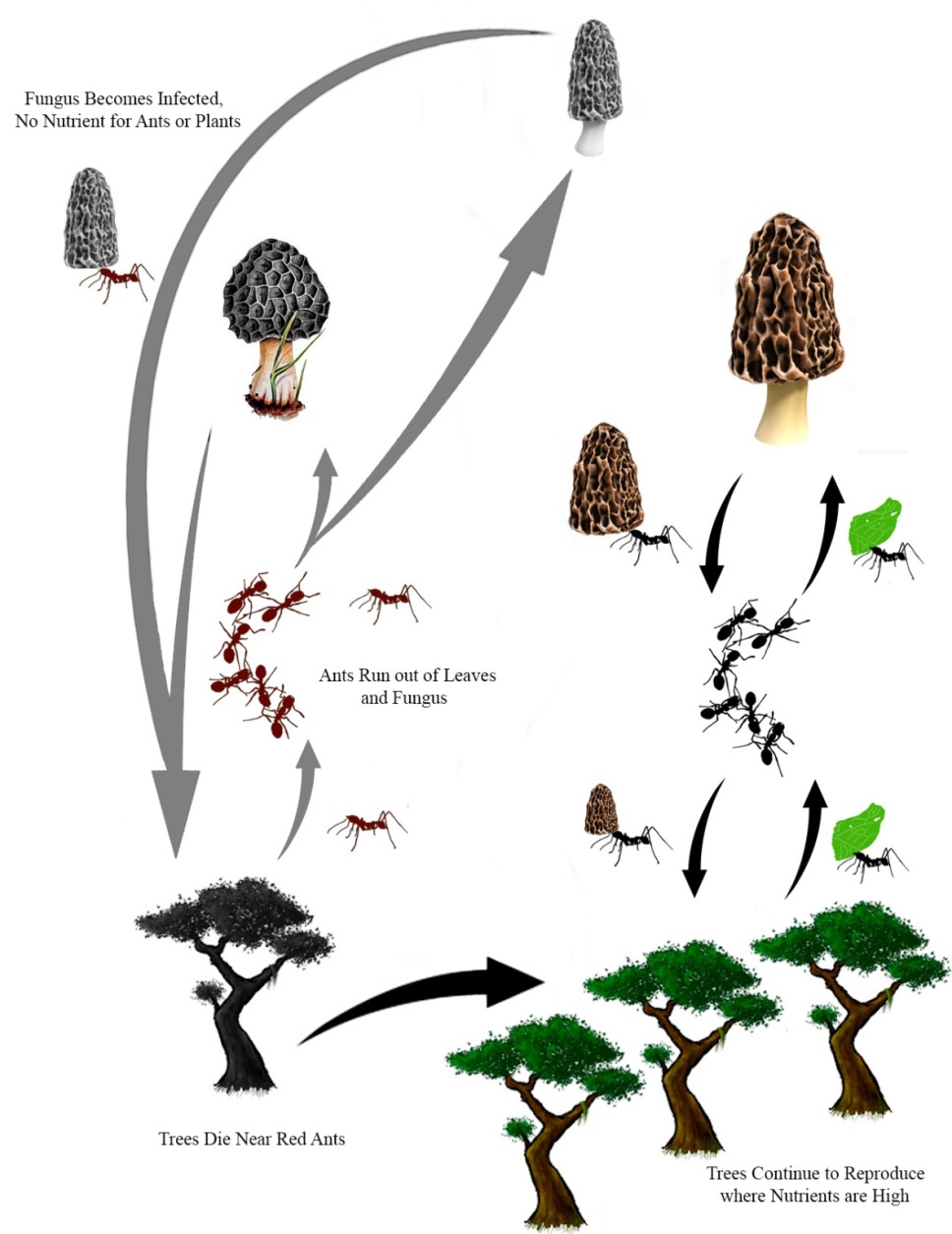


Figure 2E: *S&L System Leading Up to Crash*

Freddie Mac, of course, was able to survive the crisis since it was selling its mortgages to investors in place of holding the mortgages and receiving the interest payments which were then passed to the investors. An analogy which matches this in the biological system is that a large colony of red ants evolved to eat leaves instead of fungus. If the ants used only some of their harvested leaves to cultivate fungus and stored the rest of the leaves for future consumption, they would be more resistant to impacts in the nutrient content of the fungus. The fungus would instead be used solely for the fertilization of the trees instead of also consumption by the ants. As the environment came under stress, the trees would require more nutrients to survive, but would die since the fungus did not provide a sufficient amount of nutrients. Since the ants had been storing their harvested leaves, they would have been able to survive the period of stress with a smaller reduction in energy consumption compared to ants consuming fungus.

**Analysis of the System**

It is important to note that the S&L system was stable until the inflation rate climbed to high levels, exposing a fatal flaw in the system. As the instability of the system increased, regulations were repealed in an attempt to increase the stability of the system. It was hoped that increased deregulation would allow the institutions to increase their assets until they were stable. The banking system, however, had not evolved to be stable in a deregulated, competitive environment, so the deregulation instead further decreased the stability of the system. The deregulation also did not address the underlying problem of the poor return on the low-interest mortgages being held resulting in mass failures of the S&Ls. Deregulation did allow for increased portfolio diversification, however. The majority of the institutions which failed during this time period did so because they specialized in one type of asset: long-term, fixed-rate mortgages. These assets were considered safe and had a reasonable rate of return so it was only logical to invest in these mortgages. The environment changed, however, and market interest rates caused these mortgages to decrease in value. This resulted in the bankruptcy of the majority of institutions which simply originated mortgages and held them in their portfolios. Conversely, those institutions whose portfolios were sufficiently diverse were able to make it through the crisis without the large reduction in asset value. Assets which allowed returns to fluctuate with the market interest rate provided enough capital to pay the increasing interest on deposits. Other institutions such as Freddie Mac which did not keep their assets and instead sold them were also relatively well off since the investors who purchased the MBSs ended up with the reduction in asset value (FHFA, 2008: pg. 4).

In a biological system, an organism must be able to adapt to changes in environmental conditions in order to survive. Organisms which cannot adapt to new environments eventually become extinct making way for those organisms which can adapt to the environment. Regulation Q prevented the S&LS from adapting to the increase in inflation experienced during the 1980's. To reduce this stress it would be necessary to enact policies which allowed the financial system to adapt to new financial conditions such as fluctuating interest rates. One possible way the stress on the financial system could have been reduced was the use of adjustable rate mortgages (ARM). Although it is unlikely the ARMs could counteract such a large increase in inflation rate, it may have been able to help mitigate the strength of the crisis.

The second reason the biological system failed is that the diets of the organisms was too specialized. If an animal's only food source is disrupted, it is put under considerable stress. If a financial entity has only one source of income or one type of investment which becomes disrupted, the entity becomes subjected to substantial stress. Again, in the S&L system government regulation prevented the system from adapting to new parameters. The S&Ls were only allowed to give loans to mortgage borrowers instead of having a diversified portfolio. When the mortgages began providing minimal returns, the S&Ls had no choice but to move into a new area of the market which they had no experience with. If the S&Ls had been allowed to participate in other areas of the market to a limited extent, two benefits would have arisen. First, their portfolios would have been diverse enough to lessen the damage done by the decrease in mortgage values. Second, the S&Ls would have had more experience with the other areas of the market and may not have made as many failed loans as they did.

A key cause of the S&L crisis was the systems inability to change due to over-regulation by the federal government. Biological environments are regulated by a set of unwritten rules, but it is not over-regulated. The strict parameters set by the various policies prevented the S&Ls from changing their interest rates with the increasing market interest rate. This prevented the S&Ls from being competitive with other, lesser regulated entities. In addition, the S&Ls were designed to only invest in long-term mortgages giving them only one source of income which increased the systemic risk. Like a biological ecosyststem, a financial system must also be regulated, but must have enough freedom to change with the ever-changing financial environment.

**Regulations Which Changed the System**

To prevent future collapses, other regulations were enacted to stabilize the system. One of these regulations was FIRREA which enacted a number of new boards and offices. The statute also phased out junk bond investments owned by the S&Ls, restricted other investment types such as commercial real estate, and required S&Ls hold 70 percent of their assets as mortgages or mortgage-backed securities (Markham, 2002: pg. 174). After the FIRREA, it was feared that the increase in deposit insurance would lead to an additional moral hazard and banks would engage in very risky behavior without worrying about the consequences. The Federal Deposit Insurance Corporation Improvement Act (FDICIA) was enacted in 1991 in an attempt to reduce this moral hazard. Some of these reforms were increased premiums for risk seeking banks, limited insurance coverage on regular accounts, and  stricter requirements on the “too big to fail” practice. The “too big to fail” practice was adopted in 1984 to resolve the failures of  large banks by finding a buyer for the failed institution effectively insuring all depositor accounts. The FDICIA ended this practice except when the ensuing amount of systemic risk from the failure of the institution was considered unacceptable by a number of government entities. Instead, the payoff method was more commonly used where the FDIC pays the full balance of the depositors' accounts. Depositors with balances of over $100,000 were paid only $100,000 and while the rest was shared in liquidation so some of the investor's assets value was recovered, although not all. (Burton and Lombra, 2003: pg. 335). FIRREA also reorganized Freddie Mac so it operated much like Fannie Mae: a for profit structure with shareholders purchasing stock in the GSE. Fannie Mae also began to securitize mortgages and sell them to investors much like Freddie Mac had during the S&L crisis (FHFA, 2008: pg. 4). To prevent the GSEs from having a monopoly in the secondary mortgage market, the government also enacted a number of laws and regulations which helped private institutions grow and enabled them access to the market.  One way the government improved the private sector of the secondary mortgage market was by creating  real estate mortgage investment conduits (REMICs). These gave the private institutions status to open to issuers of MBSs which spurred growth in the number of firms issuing private-labeled MBSs (CBO, 2010: pg 73). The government also passed the Secondary Market Enhancement Act which attempted to equalize the competition between GSEs and private institutions. The law allowed federally-chartered and regulated financial institutions to invest in MBSs. It also allowed private-labeled mortgage backed securities to be legal investments equal to government securities and bonds (GPO, Law 98-440). One last statute which spurred growth in private-labeled securities and deregulated the system was the Gramm-Leach-Bliley Financial Services Modernization Act (GLBA) in 1999. This act allowed banks to participate in previously unavailable financial activities such as securities, insurance, and merchant banking (GPO, Law 106-102). This undid many of the key provisions of the Glass-Steagall Act which separated investment banks and commercial banks and prevented each type of bank from operating in the other bank's area of finance.

**The New Mortgage Market**

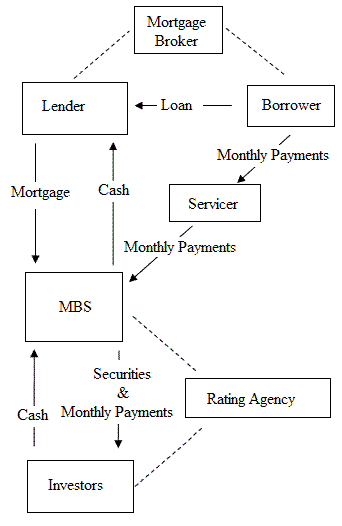
The large amount of new regulations enacted by the government allowed the system to become more complex. Before the S&L crisis, mortgages were originated by an institution who decided whether or not to grant credit, fund the loan, and collect payments from a borrower. The borrower and the lender would have an established relationship and therefore be able to evaluate the borrower’s ability to pay their mortgage payments. The bank would hold onto its issued mortgages and receive the interest payments until the loan was paid off. During the S&L crisis, the institutions which held onto their mortgages failed while those institutions which had packaged and sold their mortgages as securities, such as Freddie Mac, had been able to survive the crisis. Institutions therefore reorganized themselves into the “securitization structure” in an attempt to emulate the system which had allowed Freddie Mac to survive the crisis (Figure 3 adapted from: Sheila C. Bair, 2007). In place of the simple relationship between borrower and lender, a far more complex system was created by breaking down the role of the single lender into multiple entities. Instead of borrowers obtaining loans directly from lenders, homeowners would first contact a mortgage broker. For a fee, the mortgage broker would connect the borrower with a lender who would then give the family a loan and originate the mortgage. The lender would then sell the mortgage to an issuer, such as the GSEs. The issuer packages the mortgages it buys into MBSs and sells the securities to 

Figure 3: *The Post S&L Crisis Mortgage System*

The borrower would then begin making monthly payments to a servicer who would give the monthly payments to the issuer. The securities were  also rated by various rating agencies which assigned a rating to the securities based on the securities’ risk. Securities with the lowest risk were assigned a triple-A rating, then medium risk securities were given a triple-B rating, and very risky MBSs were rated triple-C. After the sale of the security is complete, the borrower’s payment passes to the servicer, then to the issuer, and finally to the investors (Sheila C. Blair, 2007). Although the system was complex, it worked. Borrowers who had a high credit score, could make a down payment, and had some form of collateral were often considered a safe investment and were given a mortgage. These safe mortgages, known as "prime" mortgages, were then packaged into securities by the issuer, rated, and sold to investors. Just after the emergence of this new system, the GSEs were the main issuers of securities and were considered reasonably safe since they were backed by the federal government. One problem with the system was that the addition of multiple parties in the securitization process had resulted in a lack of communication between the borrower and the other parties. Instead of the borrower being in direct contact with the holder of the mortgage, the borrower only had contact with the servicer. This lack of communication resulted in disregard for the borrower's ability to pay their monthly payments.

**The Rise of the Subprime Market**

This problem only escalated in severity when government institutions began to issue MBSs backed by subprime loans. Subprime mortgages are loans where the borrowers may have difficulty with the payment schedule, had lower credit ratings, or had no collateral. These mortgages are riskier since there is a higher chance the borrower will default on the loan. To counteract this risk, the borrower must pay a higher interest rate. If the borrower pays back their loan, the bank can potentially make a higher rate of return with the subprime mortgage than a prime mortgage. However, even if the borrower could not afford their monthly payments, they could sell their house and make a profit since housing prices were continuing to increase. This may have caused a moral hazard for borrowers to purchase houses they knew they couldn’t afford and a moral hazard for institutions to give loans to borrowers who they knew could not afford the payments. If instead the borrower defaults on their loan the bank may foreclose the house, taking ownership of the property. The rising property values allowed the bank to still make a profit by selling the house to another borrower.

        Although subprime mortgages existed since the 1970's, they did not increase in popularity until the early 1990's. During this time the GSEs only bought mortgages which followed their underwriting standards. Private institutions took note of the success of securitization and began to play a large role in the market. Most of the prime mortgages were owned by the GSEs, leaving very few safe mortgages for private issuers to purchase. In 1992 the GSEs were seen as becoming too powerful in the mortgage market, so the Office of Federal Housing Enterprise Oversight (OFHEO) was created to regulate and oversee the GSEs. The Department of Housing and Urban Development (HUD) was also given the authority to set housing goals for the GSEs to follow. These goals would be a certain number of mortgage originations per year. Specifically, the HUD set a specific number of mortgages to be given to low income borrowers and disadvantaged areas (Fowler, et al., 2008). Initially the GSEs were required to have 30 percent of their total purchases to be mortgages given to lower income individuals. The goal of this requirement was to cause an increase in homeownership in the United States. In 1995 the HUD amended this goal by allowing the purchase of subprime securities to count towards this goal. GSEs began to purchase subprime mortgages from lenders to fulfill this quota of low-income mortgages. Since these low-income mortgages had a higher risk, they were packaged with many high-quality, appropriate-risk mortgages to lessen the loss if the low-income mortgage defaulted. The HUD had expected the GSEs to only purchase those mortgages that were at an acceptable level of risk from the lenders. At this time, the lending agencies had began to use predatory lending to entice these low-income individuals to purchase mortgages they couldn't afford. Predatory lending is the practice of deceiving customers during the loan origination process. In the case of the mortgage lenders, they were using low "teaser" rates to trap borrowers and would then increase the interest rates after a short period of time (Leonnig, 2008). The institutions were also ignoring the borrower's loan qualifications, giving the borrowers loans even though the institutions knew the borrowers could not pay the loan back. In 2000, the HUD restricted the GSEs by not crediting them for purchasing mortgages that had a high cost or were originated through unfair practices. That same year, the market took another downturn due to the dot-com bubble bursting. Many believed that the housing and credit markets were a way to escape the downturn in the economy since housing prices seemed to always be increasing. The chairman of the Federal Reserve Board, Alan Greenspan decreased interest rates resulting in a steady increase in housing prices. The market slumped again with the occurrence of the terrorist attack on September 11th. The Fed again attempted to jumpstart the economy by further reducing interest rates from three percent to 0.75 percent. These interest rate cuts drove down the interest rate payments on prime mortgages (Engel & McCoy, 2011: pg. 19). These low interest rates allowed banks to borrow money cheap while lending the money at high rate of interest. This was particularly true for people with poor credit history or low income who did not qualify for prime loans and were instead given subprime mortgages.

        With access to such cheap credit, the private institution's market presence quickly grew. In 1990 Citibank and other corporate giants began to bypass the GSEs and organize their own MBS known as private label securities (Fowler, et al., 2008: pg. 6). Private institutions and investors alike soon realized that since the subprime borrowers could not easily receive loans from most lenders, the institutions could charge exorbitant interest rates making subprime mortgages very profitable. By 1997, investors had purchased more than $60 billion in private-label subprime MBSs, six times the amount in 1991 (Temkin et al., 2002). By 2000 both the private and government entities had hundreds of billions of dollars invested in subprime backed securities. By this time it is estimated that lenders originated $160 billion worth of subprime securities. Even with the drastic increase in mortgages given to low and moderate income families, the HUD again increased the amount of low income mortgages the GSEs were required to purchase to 50 percent of all purchased mortgages. (Engel & McCoy, 2011, pg. 21). This further increased the demand for subprime mortgages stimulating a large increase in the number of mortgage originators. By 2007 subprime mortgages had increased by 292 percent from $332 billion in 2003 to $1.3 trillion (MSNBC, 2007). Many of these were purchased by private institutions who believed housing prices would continue to rise and the borrowers would continue to pay their mortgage payments.

        During this time period private institutions, unregulated by the government, practiced extreme predatory lending on low income individuals in an attempt to increase the number of subprime mortgages in their portfolio. No proof of income was necessary and automated loan approvals were common (Ward, 2004). The lack of government regulation also lead to a large increase in mortgage fraud by borrowers (Cowen, 2008). The borrowers would provide false information about their income or collateral saying they were more qualified for a loan than they were. Before the securitization system, banks would perform a background check on the individual to check employment records, income documents and credit history. Now, however, banks were not concerned with the borrower's ability to pay back their mortgage. These lending practices led to the peak in homeownership at 69.2 percent in 2004 (U.S. Census Bureau, Table 14). With the private institutions originating so many mortgages for low-income individuals, the GSEs affordable-housing goals were increased again to 56 percent of mortgages going to low or medium income borrowers (Leonnig, 2008).

**The System Collapses**

As early as 2005, economists and finance professionals were warning the CEOs of both private and government institutions that the current mortgage system could collapse if current practices continued. These individuals were either fired from their firms or ignored. However, in the fourth quarter of 2005 and the first quarter of 2006 the booming housing market saw signs of slowing with median prices dropping 3.3 percent (Christie, 2006). In the beginning of 2007, home sales continued to decrease and foreclosures on homes vastly increased (FDIC, 2007). The majority of these foreclosures were from subprime mortgages whose borrowers could no longer afford the mortgage payments and walked away from their houses. As the homes foreclosed, the banks repossessed the houses and attempted to sell them to new home buyers. Due to the mass amount of foreclosures, however, the supply of houses increased rapidly over a short period of time driving housing prices down further. As more mortgages began to default and housing prices continued to fall, companies which specialized in subprime mortgages began to declare bankruptcy as their portfolios became worthless. The GSEs also experienced a large reduction in portfolio value as many of their subprime mortgages they had guaranteed defaulted. As the year continued the number of defaults in subprime mortgages spread to prime mortgages as people's houses continued to drop in value. The government attempted to stabilize the ever worsening conditions by decreasing the discount rate and interjecting billions of dollars into the money supply for banks to borrow at a low rate. In September of 2008 the government took control of the GSEs in an attempt to gain control of the downward spiraling enterprises. In October the government created a $700 billion dollar program called the Troubled Asset Relief Program (TARP) to purchase failing bank assets and soon after the stock market experienced its worst crash since the Great Depression, losing 22.1 percent. In December 2008, the government then cut the Federal funds rate to zero percent essentially letting banks borrow money for free (Federal Reserve, 2008).

**The Securitization Ecosystem**

After the S&L system collapsed, the S&Ls began the practice of securitization and selling their MBSs to investors. Securitization passed the risk from the banks to the investors while still providing the banks with lucrative profits. These mortgages, like the previous system were given to borrowers with lower risk. In the previous leaf-cutter ant system, most of the red ant colonies using the fungus growing method would have starved during the environmental stress. This left the large red ant colony which took the fungus straight to the trees and stored most of the harvested leaves for future consumption. The environment returned to its normal temperature and the red ants were able to begin proliferating once more. As more colonies arose, they all evolved to use this method of harvesting and storing the leaves in place of consuming the fungus. The fungus grown and used for fertilization is resistant to infection, but have only a moderate nutrient content (Figure 4).

The new securitization system resulted in larger profits for all entities. This led to a cycle with an increasing amount of credit. As the investors received more return from additional investments, they would purchase more MBSs from the banks. As the banks received their payments, they would originate more mortgages which were then purchased by investors closing the cycle. This glut of credit led to the increase in players at all levels of the market. In the environmental model, this credit can simply be seen as an increase in environmental nutrients. As the nutrients increased in each part of the system, there was more nutritious leaves for harvest, more ants to do the harvesting, and more fungus being grown (Figure 4A).

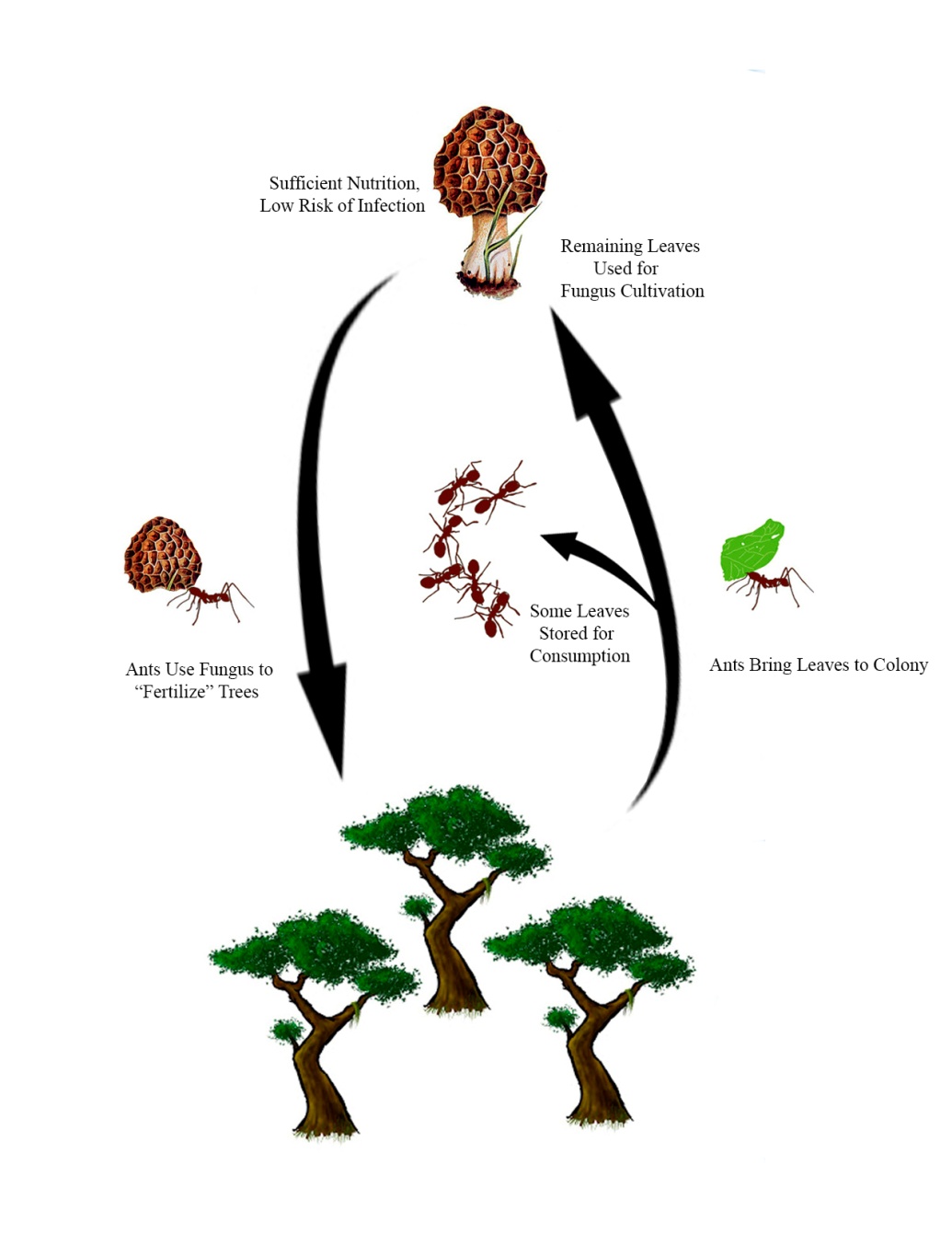


Figure 4: *The Biological Securitization System*

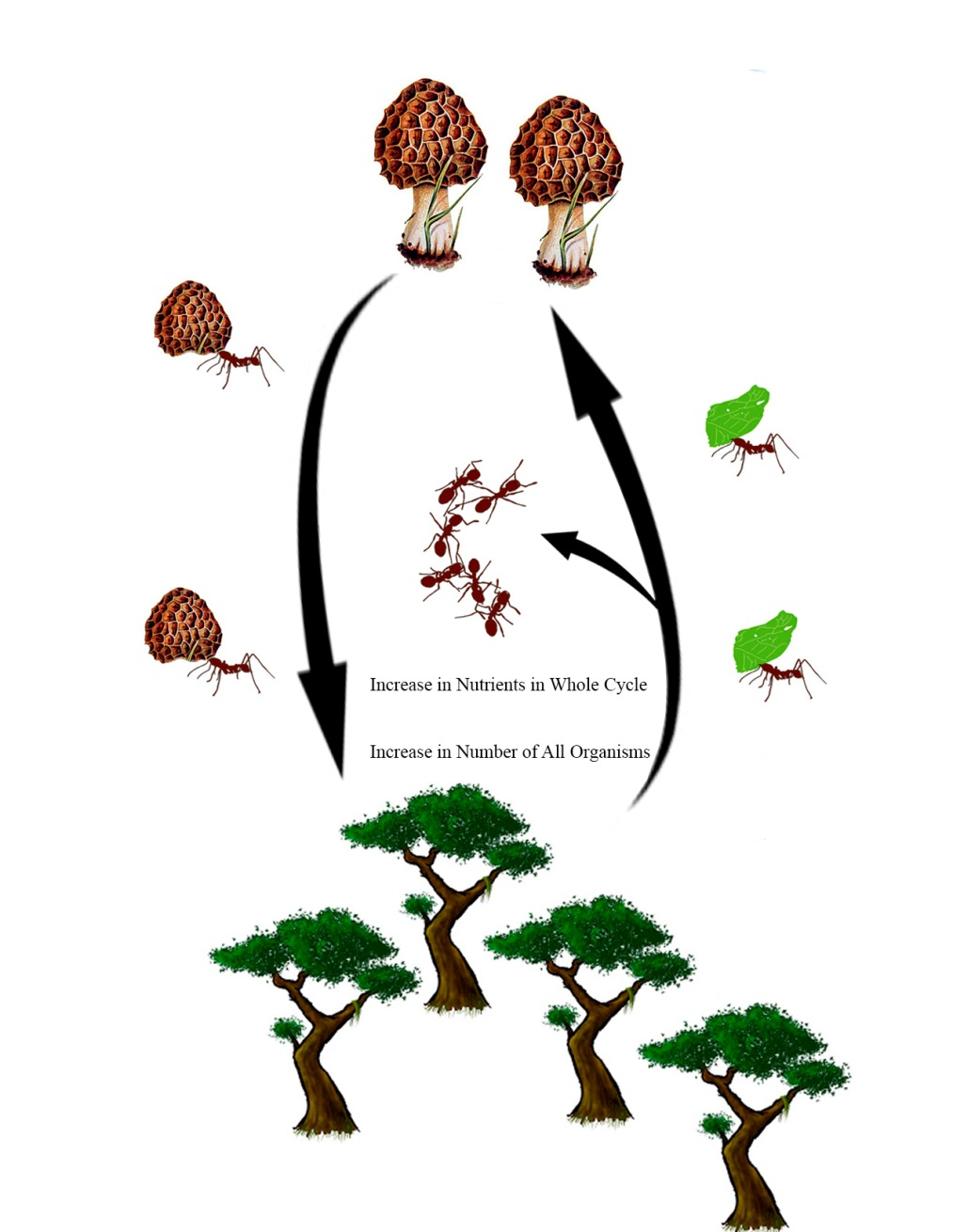


Figure 4A: *Increase in Credit*

As the amount of funds flowing through the system increased, entities playing new roles began to emerge. Mortgages were being issued by small lenders which sold the mortgages to the larger banks who sold the MBSs to the investors. Rating agencies became increasingly prevalent in the system and rated the different MBSs depending on their risk. In actual ant colonies it is possible for ants to "enslave" ants from different colonies and use them to take care of young or expand the nest. In the securitization ecosystem these "enslaved" black ants can be analogous to the small mortgage lenders. These black ants are independent of the black ants used in the S&L system. The black ants are used to cultivate the moderate-nutrient fungus with the leaves provided by the red ants. The black ants then give the cultivated fungus to the red ants which then use the fungus to fertilize the trees (Figure 4B).

Rating agencies can be analogous to the red ant's ability to detect if the fungus given to it by the black ants is infected or contaminated. The black ants are new to the ecosystem and lack the ability to detect if the fungus becomes infected. These black ants are fed off of leaves given to them by the red ants in exchange for their labor in the cultivation of the fungus. There is a distinction that needs to be made between the mortgage lenders and the black ants in the ecosystem. The mortgage lenders chose to be in the system to gain profit from the increasing credit in the securitization system. The black ants on the, other hand, are forced into gathering the fungus for the red ants. Although the two are motivated for different reasons, they accomplish the same tasks in each system.

The DUH pushed the GSEs to start issuing subprime mortgages to lower income individuals. The other private banks issued these subprime mortgages because they were more abundant and provided a higher return even with the risk of default. In the biological model these subprime mortgages can be seen as another type of fungus which has a higher nutrient content, but had a higher risk of infection than the original fungus. This fungus is also easier to cultivate, so the black ants begin to cultivate it in increasing amounts. The red ants use this fungus as fertilizer and, due to its higher nutrient content, it is a more effective fertilizer. This leads to a further increase of nutrients in the system, increasing the amount of each type of organism (Figure 4C).

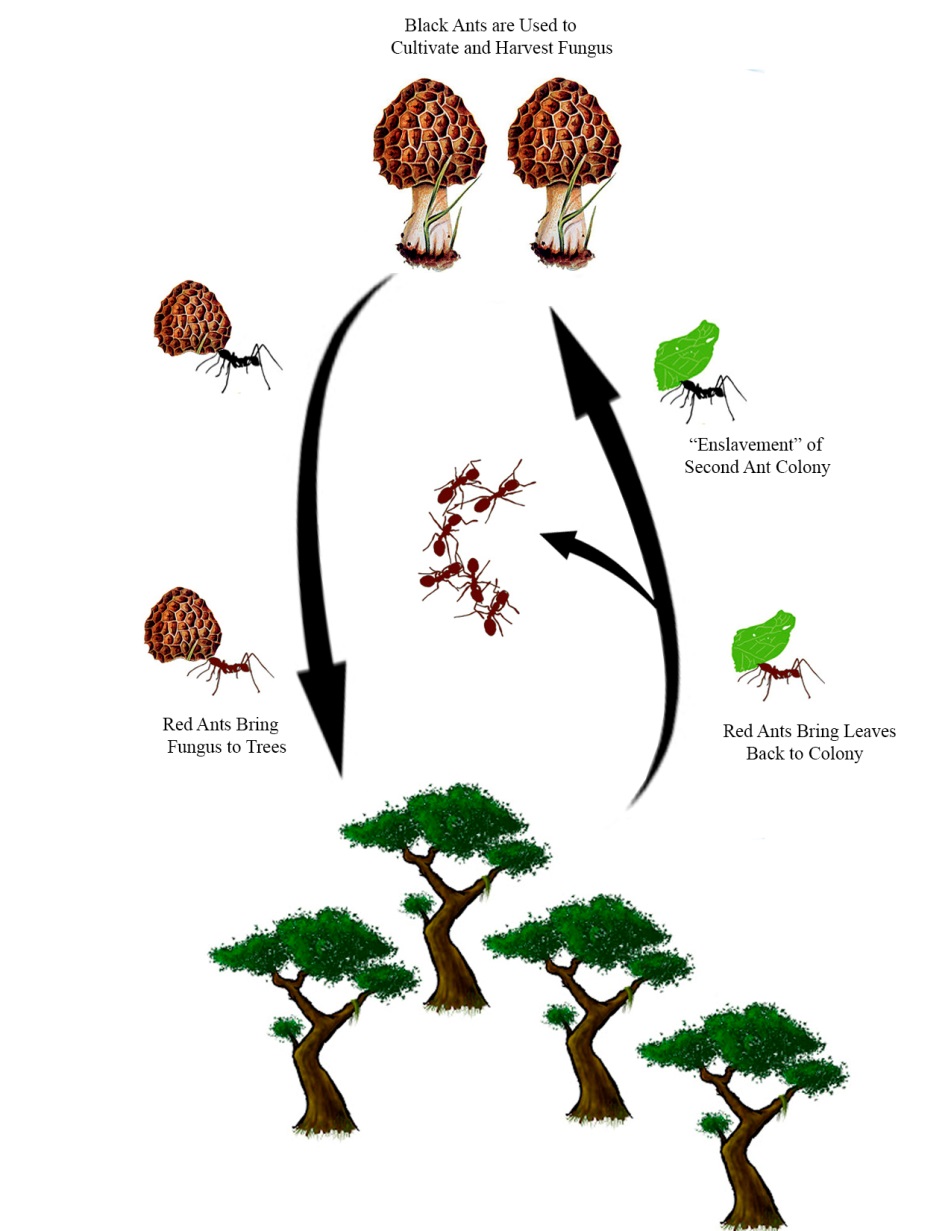


Figure 4B: *Rise of Intermediate Entities*

As time went by more and more subprime mortgages were being issued by lenders and sold to investors. The mortgage lenders began engaging in their predatory lending practices creating riskier mortgages. The rating agencies then would rate many of these risky mortgages as safe and then sell them to investors. Although the black ants can't engage in predatory lending practices, they can increase the amount of the high nutrient fungus grown in the system. Since the black ants are inexperienced with the fungus growth, they are unaware of the potential risk for infection to the fungus. The biological analogy to the rating agencies providing false ratings for MBSs can be viewed as a loss in the red ant's ability to detect infection in the fungus. Since the red ants are no longer growing the fungus, only transporting it, it is not cost-efficient to retain the ability to detect the infections in the fungus (Figure 4D).

The subprime mortgages began to default, resulting in some investors holding MBSs with no value. This problem would have had a much smaller impact if investors and large banks knew which MBSs were actually risky. The rating agencies had labeled some of them as "safe" MBSs, but it was unknown which were rated inaccurately. This caused panic to spread through the system as no one was sure which MBSs were accurately rated. In the biological model, the fungus grows an infection, but since no ants can detect the infection they continue to fertilize the trees with the infected fungus. This infection spreads to the trees causing some of the trees to die. Since the ants do not know which fungus is infected, they have no choice but to blindly attempt to fertilize the trees with what fungus they have (Figure 4E). As the panic spread people's investments began to become worthless and financial entities became bankrupt, the system collapsed once again and the government needed to bail out the troubled entities.

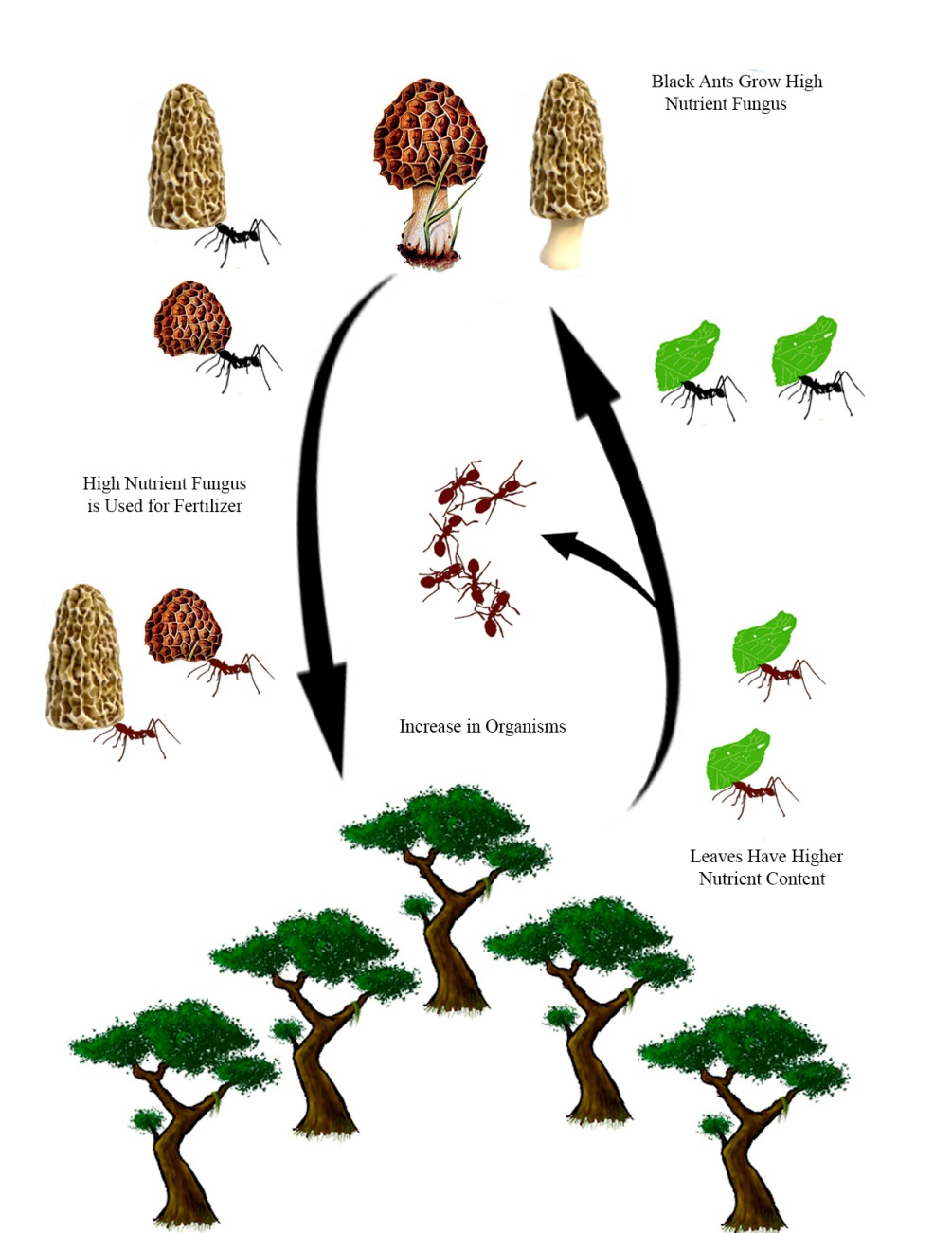


Figure 4C: *Beginning of Subprime Mortgages*

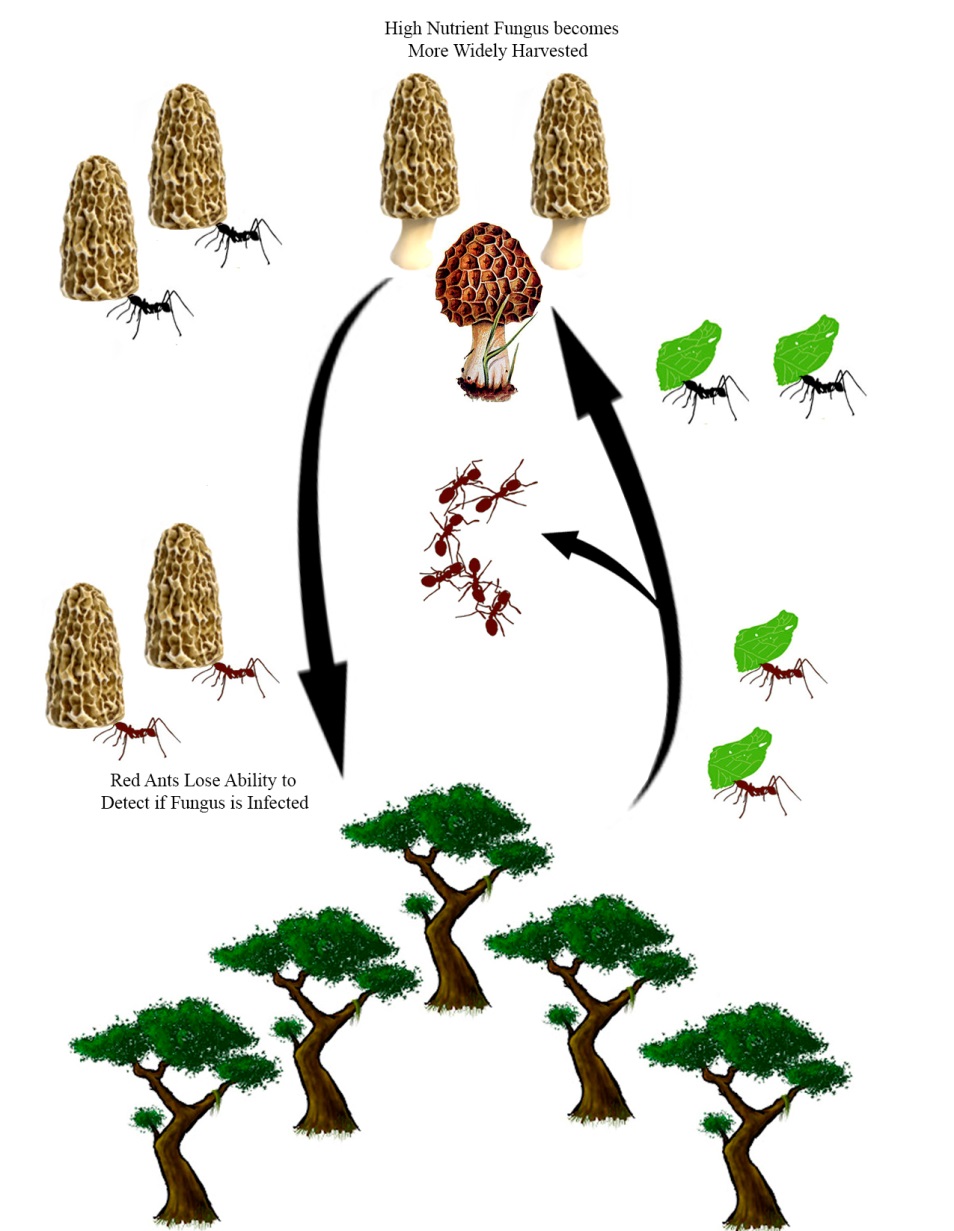


Figure 4D: *Increase in Subprime Mortgages*

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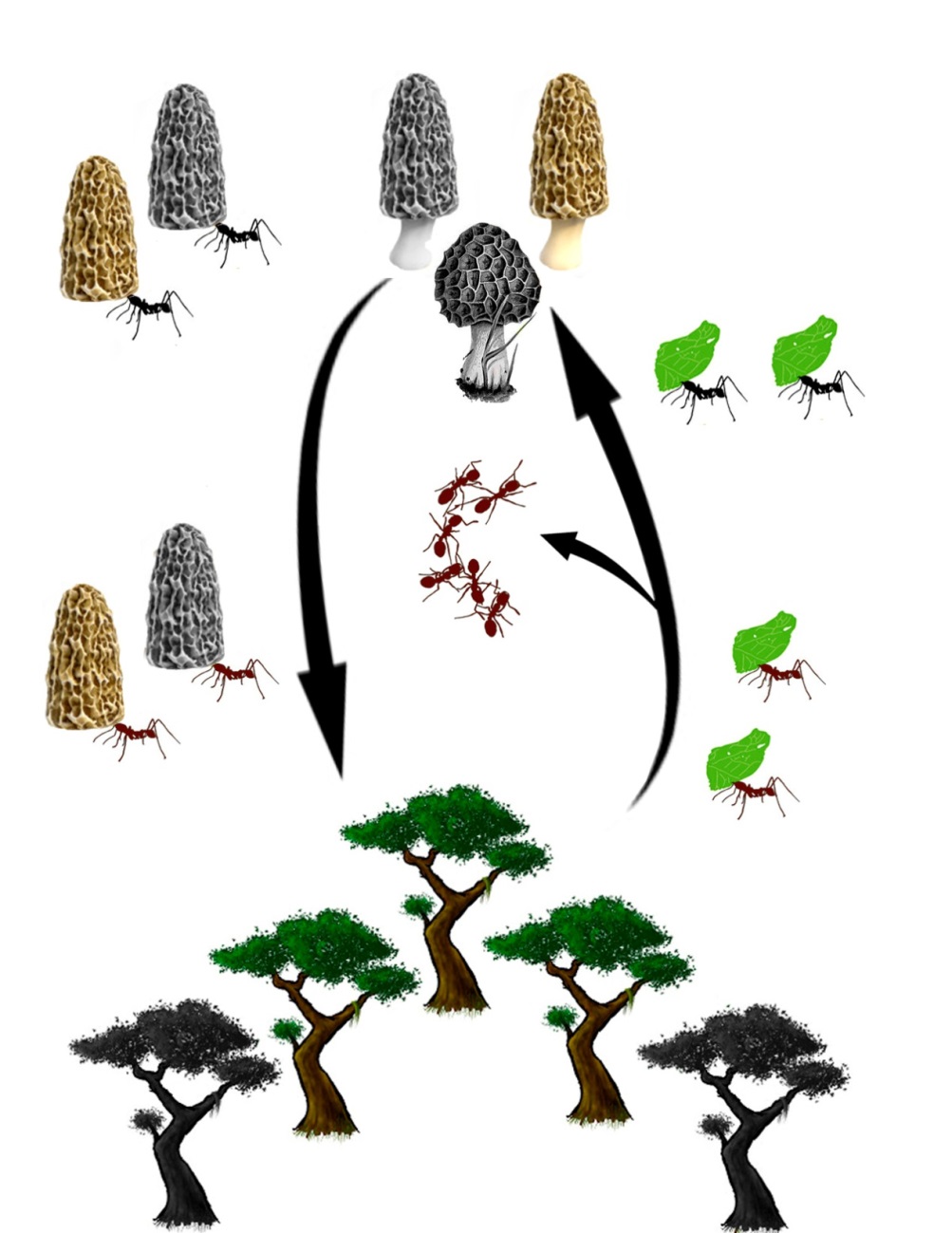


Figure 4E: *Subprime Mortgage Crisis*

**Analysis of the System**

The financial system, in this instance, failed due to an abundance of disincentives in the system. The system was originally stable with the large banks lending money to borrowers who were considered safe. The increase of credit in the system, increasing pressure by the DUH, and an increase in disincentives lead to the increase in risky mortgages being created and then "hidden" by the rating agencies. The mortgage lenders were not paid to provide quality mortgages, but instead were paid by the amount of mortgages originated and sold. In addition, many of the small mortgage lenders were inexperienced at providing acceptable risk mortgages. This led them to provide mortgages to individuals who were not qualified to own mortgages financially. Investors also enjoyed some benefits from holding riskier MBSs in the form of higher interest payments, further encouraging the origination of subprime mortgages. Rating agencies also had an incentive to lie when rating MBSs. The rating agencies were paid by the entities selling the MBS, so they would rate the MBS safer than what they deserved so the entities would come back to the same rating agency. These disincentives were exacerbated by the massive amount of mortgages being originated during this time period. With so many mortgages being originated, entities could not keep track of which MBSs were actually safe and which were risky causing a panic.

In a biological system, a species which has no previous interaction with a food source has no adaptations to help it feed on that particular food. If there is no benefit to having such an adaptation for this new food source, the species will not evolve one. Similarly, an organism will eventually lose a trait if the trait costs energy and it provides no benefit to passing on genes to future generations. If a species does not adapt to its food source, it may end up consuming food that is unsafe to eat. In the financial systems, the new mortgage originators had little experience in creating acceptable-risk mortgages and had no incentive to learn how to create acceptable-risk mortgages. The banks had no incentive to determine if the mortgages they were purchasing were low-risk or high-risk for they received payment either way. The banks essentially "lost" the ability to determine the level of risk in a mortgage, increasing the systemic risk as they purchased higher-risk mortgages.

To rectify these disincentives within a biological system, it must become more beneficial for the species to adapt to its food source and be able to tell what food is safe to eat. The parallel of this in the financial system would essentially be removing the disincentives in the system and providing the entities with an incentive to produce safe mortgages and MBSs. This could be accomplished by requiring the mortgage lenders or the issuer banks to hold onto a number of the mortgages that they issue or purchase. If the entities receive part of their profit from interest payments on mortgages, then they would have the incentive to originate or buy acceptable-risk mortgages. Another solution may have been to remove the incentive for rating agencies to lie to investors on the risk of the MBSs. If the rating agencies were paid by the investors instead of the issuers, they would have had the incentive to find only safe and lucrative MBSs for their clients to purchase. If they rated a risky MBS as safe and it defaulted, their customer would not return for business.

After the over-regulation of the S&L system, the government lessened the regulations on the financial system. This, however, was not an effective long-term solution as the government did not have enough regulation on the securitization system to limit the systemic risk. If regulating agencies were required to monitor each entity more they may have been able to force the financial entities to not participate in risky business practices. Increased regulation could have also provided incentives for entities to only originate appropriate-risk mortgages or only deal with high-risk mortgages to a limited extent.

The complexity of the system also increased the risk of financial collapse. With banks selling MBSs, insuring the MBSs, lending money to finance MBSs, and investing in MBSs, the system became so intertwined and overlapped to such a degree that the exact relationships between the entities was unknown. This resulted in the risk becoming unknown as well as the entities continued to participate in MBS activity. To reduce this risk, the system should be simplified where each entity provides a limited array of services where potential risk is visible and not hidden behind multiple, complex interactions.

**Regulations After the Crisis**

One of these was the Housing and Economic Recovery Act (HERA) of 2008 (Public Law 110-289). The overall purpose of the act was to restore consumer confidence in the mortgage industry. One way it did this was by providing insurance $300 billion worth of mortgages to assist almost 400,000 homeowners. The act also created the Federal Housing Finance Agency which was the combination of the Office of Federal Housing and Oversight and the Federal Housing Finance Board. The newly created agency had more oversight than the previous two companies combined and was designed to oversee the GSEs and the 12 Federal Home Loan Banks. It also helped to reduce the number of foreclosures by buying and renovating properties and provided loans for the refinancing of mortgages at risk of foreclosure. Lastly, it also raised the national debt ceiling by $800 billion to allow the treasury to support the GSEs. Although many of these new provisions would help the economy return to normality, only the creation of the Federal Housing Finance Agency focused on the root cause of the crisis instead of focusing solely on the symptoms the crisis. With its increased oversight, the agency had the potential to better regulate the mortgage system and to reduce the damage done by any future crises.

Perhaps the largest change in financial regulation was the Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010 (Morrison and Foerster, 2010). The Act is massive in scope and aimed to improve the financial stability of the United States by improving transparency in the financial system, ending the "too big to fail" practice, and to protect consumers from predatory lending practices. It enacted the Financial Stability Oversight Council to oversee various financial institutions, to asses risks to the financial system, and identify gaps in current regulation. Data for the council is to be collected by the newly created Office of Financial Research. The act also required 5% of the credit risk to be retained by the securitizer instead of all risk being held by the investors. This provides and incentive for the securitizing firms to provide mortgages to safer individuals instead of simply originating as many mortgages as possible and transferring the risk to the investors. The securitizer is also required to provide more information about the assets and the quality of the assets to the purchasing investors. There was also significant change in the credit rating agency sector where the agencies are now required to disclose the qualitative and quantitative methodologies and assumptions used during rating. The Securities and Exchange Commission (SEC) also gained the Office of Credit Ratings to monitor the rating agencies, establish fines if the agencies violated one of the new regulations, and conduct an annual exam of each rating agency. The act also attempted to lessen the impact of financial crises on taxpayers so firms experienced the costs, not the general population. Large firms were charged $50 billion upfront for a fund to be used for any liquidation. One last major change enacted by the Dodd-Frank Act is the establishment of the Volcker Rule. This rule prohibited banking entities from engaging in proprietary trading or other fund activities. It also required nonbank financial companies to have additional capital reserve requirements when engaging in proprietary trading.

**Unresolved Issues**

Although the Dodd-Frank act focused more on the root causes than the HERA, there are still some issues which are still unresolved or are created by the Dodd-Frank act. The biggest issue left unaddressed is any new regulation imposed on Fannie Mae or Freddie Mac. Although the HUD has planned to wind down the GSEs, there has yet to be any legislation passed on the entities (HUD, 2014). This is of concern as the main focus of the GSEs is still to provide housing for "undeserved" borrowers. This requirement for the GSE to give loans to low income individuals puts the system at risk should another housing bubble occur. Another potential issue is the amount of risk retained by the securitizers. Although this percentage may provide an incentive for the financial entities to give out safe loans now, it may not provide enough of an incentive in the future if the supply of safe mortgages runs low. Should this happen, the 5% coverage may not be a sufficient enough of a coverage to keep the private banks from issuing higher-risk mortgages. In addition, there is not contingency to resolve financial entities that are considered systemically important to the financial systems as a whole. Although the Dodd-Frank act attempts to create a way for smaller entities to fail safely, it may be possible that the failure of a large entity, such as AIG, may result in another financial panic. It has been suggested that these "important" entities should be broken up into smaller, more transparent sub-entities that act mostly independent of one another (WSJ, 2009). This would also allow for more competition to arise in the market instead of few large entities to dominate the system. One last issue that could prove problematic in the future is still the incentives of rating agencies. Although they are now more closely regulated by the SEC, they are still hired by companies wanting to sell their assets. Since the company is the one hiring the rating agencies, they still have the incentive to rate the assets potentially higher than they actually should be even with the new regulations in place.

**The Biological Equivalents of the Risks**

The analogy in the environmental model to the first unresolved issue would be if the ants still cultivated the fungus that is more prone to infection. Although the ants may now be able to detect the infection in the harvested fungus before it got to the trees, it would still result in a potentially large portion of the fungus becoming infected and dying resulting in a large loss of nutrients. Although the colony may not die completely, it would experience extreme stress and increase the systemic risk of the ecosystem failing. To reduce the risk of this happening, the ants could grow a lower proportion of the fungus that is prone to infection. The financial system equivalent of this would be if the DUH reduced the percentage of low-income mortgages the GSEs were required to originate. This would reduce the systemic risk while still providing some mortgages for lower income families.

The risk coverage in the environmental system could be analogous to the ants having to use some of their stored leaves as a replacement fertilizer to remedy the tree if it becomes infected from infected fungus. If not enough of the leaves are needed to help fix the trees, then the ants have little reason to not cultivate the infection prone fungus as long as risky fungus provides more nutrients. If the ants had to use more leaves to save the infected trees or began to consume some of the fungus as a secondary source of nutrients, then they would have more reason to avoid the infection-prone fungus. This can also work in the financial system. If the financial entities had to pay more of the risk coverage such as 10 percent to 15 percent, there would be less of a chance of the entities originating risky mortgages. In addition, if the entities had to hold onto a number of the mortgages they securitize, they would have more of an incentive to produce appropriate-risk mortgages. This may cause some issues where only the most qualified of borrowers are able to get mortgages, however.

If an ant colony becomes too large in the environmental system it poses a risk to the stability of the environment. This is because larger colonies can eradicate smaller colonies and require more nutrients to survive. If a large colony was to split into multiple smaller colonies, they would compete with one another for resources instead of overharvesting the trees and fungus for nutrients. Accomplishing this in the financial system would prove extremely difficult and be met with much resistance from the large financial entities who may be split into smaller entities. Doing this however, would significantly reduce the amount of systemic risk caused by an overly large entity. By splitting the large bank into multiple smaller banks, the risk is divided among the smaller subdivisions. There is much less of a chance of all the subdivisions going bankrupt than the one large entity since the small subdivisions are more independent of one another.

The last unresolved issue in the financial system would be analogous to if the ants could detect infection in the fungus used as fertilizer, but still used the fungus as fertilizer anyway. The trees, just like the investors, have to hope that the fungus brought to them isn't infected. If the trees were able to detect any infection in the fungus and could selectively avoid absorbing infected fungus tissue, then this would reduce the risk of the trees becoming infected and the system collapsing. Although this analogy is stretched, the financial equivalent of this would be if the rating agencies were hired by and reported their findings to potential investors. If the rating agency is hired by the investors, then the agency has more loyalty to the investor than the securitizer. If a rating agency accidently rates a high-risk MBS as a low-risk MBS, then the MBS defaults, then the investors are less likely to repeat business with that particular rating agency. This gives the rating agency more of an incentive to accurately rate an MBS instead of potentially giving an MBS a higher rating so they are rehired by the securitizer. If the investors hired the rating agency, then the banks would also have more of an incentive to originate or purchase more safe MBS so they are easier to sell to investors. Another method could be to hold the rating agencies responsible for failure they should have detected. This method is harder to enforce since "detectable" risk is a subjective term and may be difficult to determine. These methods may also decrease the number of mortgages given to low-income families, however, since the agencies are responsible for high-risk mortgages.

**Conclusion**

The future stability of the financial system relies on us better understanding the risks inherent in our system should the financial climate shift drastically and quickly. Many regulations imposed onto the financial system come only after the crisis has begun, and stabilize the economy just in time for the next financial crisis. The key to lessening the impacts of these crises lies in looking at how the system would change with various potential changes in the financial environment. These predictions can be more exact through the use of models, including real life, biological models. By finding an environmental system that underwent an environmental change analogous to the change in the financial environment and examining how the organisms adapted or didn't adapt enough, policy makers might gain some insight into ways to make the financial system more stable in the long run. These environmental models may also help to devise contingency plans in the case of severe financial stress to lessen the impact and damage done by the changes in the financial ecosystem.

When examining the stability of a biological ecosystem, there are several parameters to examine to determine if the system is stable. These parameters can be abstracted to determine if a financial system will be stable in the long run. A stable system must support balanced growth to allow for a sustainable future. The system must also be limited in its complexity so as not to increase the number of complicating interactions and limiting the systemic risk. Regulation may be the most important aspect in evaluating the stability of a system. The system must be regulated enough so potentially risky activity is kept within sustainable limits. The system must also be regulated in such a way that incentives favor long-term stability over profitability or short-term stability. Regulation must also be carefully limited so the system is able to operate within a range of financial conditions and not just a single type of environment. The entities and the system must be able to change in such a way that they are able to change their business practices and adapt to the fluctuating financial environment. If these biological system parameters had been applied to the financial system before the 2008 financial crisis, the impacts of that crisis may have been reduced if not avoidable. In future policy decisions it is important to keep biological systems in mind as a model of stability and to build the system off of these parameters.

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**SRI Fund**

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***ABSTRACT***

*A single mutual fund has several tickers because it is available in different share classes. They are divided into institutional class (I), investor classes (A, B and C) and retirement class (R) for the most famous ones. Class “I” is more representative in a cross-sectional analysis because shares are less expansive and represent more accurately the performance of the mutual fund against its benchmark. Mutual funds need to disclose whether the compensation of fund managers is fixed, whether it is related to the fund performance, and whether it is based on the fund assets under management (AUM). The compensation scheme is like a tournament in which top performers, compared to a set of managers at similar funds, receive the largest amount of remuneration. The fee structures of a mutual fund depend on the class of shares, load or no-load classes. Load classes are for investors that buy shares through financial professional, and no-load classes are for investors that buy shares without the assistance of a financial professional. Investors can use several measures such as Sharpe ratio, Treynor ratio, Information ratio, and selectivity in order to evaluate the performance of SRII and non-SRII funds. We found that the VICE fund is more expansive than most of the SRII funds in any share class because it is unique and offered additional performance*

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SRII also known as socially responsible investments can be made in individual companies or through a socially conscious mutual fund or ETF. SRII funds avoid investing in companies that produce or sell addictive substances or companies that are looked at with products that are harmful to society. SRII funds target investing in companies that engage in helping the preservation of the earth and provide helpful products for society. This includes companies for example that take part in environmental sustainability and also companies that look for alternative energy and clean technology’s to help the environment. The whole concept of SRII funds is the Socially Conscious idea of investing and is growing as a widely followed practice. There are new funds and investment vehicles being made accessible for retail investors so that they can follow this practice as well. The ETF’s and Mutual SRII funds provide investors with a way to gain access to multiple socially responsible companies across many sectors with just one investment, the best way for an investor to decide on which fund to invest in is to read into these ETF and mutual fund’s prospectus’s so that they know which types of Socially responsible companies they will be investing in[[10]](#footnote-10). However one thing to keep in mind when analyzing SRII funds is that although an investment may be a socially responsible company it does not in turn mean that it is a good investment that will have a good return for a portfolio.

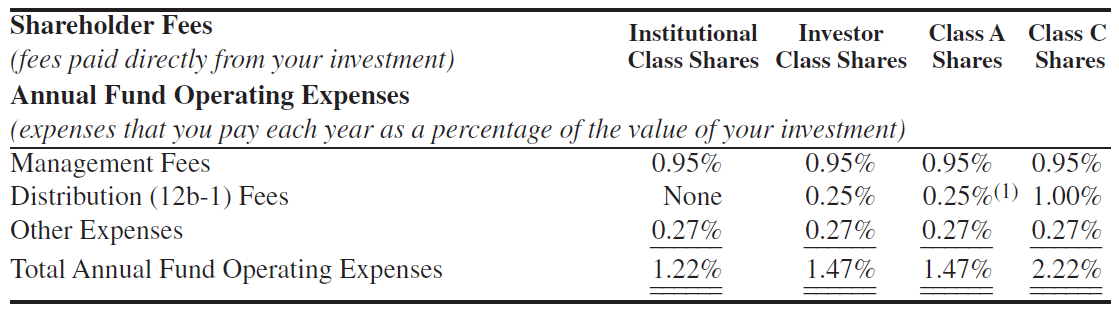
SRII Funds are becoming more and more popular due to investor’s appreciation and awareness of being socially responsible growing. However literature online discusses the expectations investors should have by turning to socially responsible investing. The first aspect of SRII is that if an investor is going to create a SRI portfolio on their own instead of invest in a fund then it requires much more research and will lead to far less diversified portfolio then if they were to invest in a total stock market fund. However there is the option of investing in a SRI funds such as a Vanguard FTSE social index fund which screen for companies based on things such as social issues and environments, this of course is a lot easier and more efficient for an investor looking for a well-diversified SRI portfolio. However there are downsides to this as well, these funds will still be significantly less diversified then a total U.S index fund because of the screening of companies to make sure they are social responsible. The other downside is the higher premium of social responsible funds, their expense ratio are known for being higher than non-socially responsible index funds, making investing in SRI funds more expensive and in turn requiring an even higher rate of return[[11]](#footnote-11). An article from USA news in April 2011 sums up SRII funds as funds that “essentially screen for profitable companies that make positive contributions to society”. They also discuss how the number of SRII funds in the U.S has grown substantially (and has continued to since the article was published). The article discusses how SRI funds follow righteous causes however there are things investors should be aware about before they put their money into them. The first aspect is that since you are investing in a fund that restricts what the manager can buy due to the socially responsible criteria, that it is only fair to expect lower returns in exchange for them respecting the investor’s personal guidelines. The second thing the author warns against for investors when investing with SRII funds is that the companies the SRI fund are investing in might not match the beliefs of the personal investor on what they feel is socially responsible[[12]](#footnote-12). This is why as mentioned earlier reading through fund prospectuses are important for individual SRI investors that are putting their money into SRI Funds.

Mutual funds are divided into share classes, which explain why a single mutual fund may have two or more different ticker. An investor has to pay three type of fees associated with a mutual fund: front-end load, back-end load and 12b-1 fees. Front-end load is a commission applied at the time of the initial purchase of the security. Similarly, back-end load, also known as deferred sales charges, occur when the investor sells the mutual fund within a defined period and represent a percentage of the value being sold. 12-b1 fees are annual marketing or distribution fees associated with a mutual fund. The different share classes offer a different combination of front-end load, back-end load and 12b-1 fees, which gives the investor more flexibility in in investment strategy. This will be explained in details later on in this report. Mutual funds are divided in the following classes:

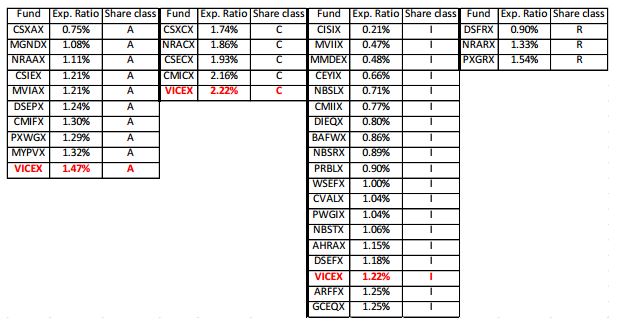
* Class A shares charge a front-end load as well as a small 12-b1 fee. The percentage of sales charge usually decreases as the investor is willing to invest more money into the fund. The discount gradually increases with the initial investment. This is known as “breakpoints”. Investor usually need relatively high amount of money to qualify to this discount. As fees may represent a subsequent portion of the initial investment, Class A shares are often designed for long-term investments.
* Class B shares are characterized by having a back-end load as well as a rather import 12-b1 fee. However, they do not have front-end load. The longer an investor holds the shares the lower the deferred sales charge will be. Additionally, Class B shares automatically converts into Class A shares after a certain period of time. These shares target investor with small initial investments (because of no front-end fees) and long-term investment horizon.
* Class C shares have a high 12-b1 fee (marketing fee) combined with a small back-end fee (usually 1%). Class C shares are considered as “level load” fund. Investors pay an annual charge for distribution and marketing costs of the fund. There is no convertibility options associated with class C shares. Class C shares make more sense for short-term investors.
* Class I shares are designed for institutional investors because they have very high initial investment requirement (more than $1 million), which individual investors can usually not afford. This is the most widely held share class. They have the lowest expenses of all of a fund's share classes.
* Class R shares are usually for use in retirement plans such as 401(k) plans. They typically do not charge neither front-end or back-end loads but a small marketing fee, ranging from 0.25% to 0.50%. R Class shares are not offered directly to an investor but are sold through third parties, who offer them through employee-sponsored retirement plans.

A cross-sectional analysis is an analysis of a company against the industry it operates within. In this case, it would compare the performance of a mutual against a benchmark. As stated previously, similar mutual funds have many different tickers that are all associated with a share class. Del Guercio and Reuter (2011) conclude that “empirical studies on mutual fund performance should censor the cross-section to only direct-sold funds”.[[13]](#footnote-13) No-load mutual fund shares are sold without a commission or sales charge because shares are directly purchased from the fund company. No-load mutual funds are divided into Class I and Class N shares. Class I do not charge a 12-b1 fee and Class N charges a 12b-1 fee of no more than 0.25% of fund assets. Therefore, cross-sectional analysis should only focus on these two types of Classes. Since no-load funds do no charge front-end and back-end loads, their performance can be directly compared to their respective benchmark. The performance of other share classes is misrepresented because of up-front and selling fees.

We ranked all the funds listed in the excel file based on their costs. We used the expense ratio to rank them. The expense ratio represents the percentage of the fund’s assets that go purely towards the expense of running the fund. It includes the investment advisory fee, the administrative costs, 12-b1, distribution fees and other operating expenses. The expenses ratios for all the funds were available in the excel file.

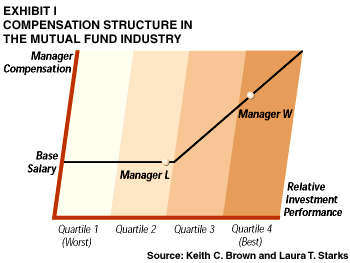


However, we found the one for VICEX in their prospectus, as presented above. After analysis of the data in the excel file, we found that mutual funds have different class shares. After looking for the class of each individual found we grouped and compared them by class type. Our findings are presented below (several graphs are also presented in annexes):

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We can see that expense ratios varie a lot between share classes and in each classes themselves. In overall, the lowest expansive class, as we presented earlier in this report, is the I class, which is designed for institutional investors. These results also show that the VICE fund is rank among the most expansive ones of this sample. Its expense ratio is 1.47% for the class A shares, 2.22% for the class B shares and 1.22% for the class I shares. This is due to the fact that this fund has rather no competition. Indeed, there are penlty a SRII fund avaiable in the market, but bo funds like the VICE fund. An investro is willing to pay more for something different. As we will discuss later in this report, the VICE find performed much better than SRII fund, which means that investors may pay higher, but this price worth the investment.

Mutual funds need to disclose whether the compensation of fund managers is fixed, whether it is related to the fund performance, and whether it is based on the fund assets under management (AUM). In a recent research on a sample of 4112 mutual funds, it appeared that almost 95% of fund managers have a compensation contract based on salary plus bonus. Thus, fund managers have an incentive to increase their portfolio’s risk level in order to enhance their chances of receiving higher bonuses. The compensation scheme is like a tournament in which top performers, compared to a set of managers at similar funds, receive the largest amount of remuneration. For example, the compensation can be structured as follow: 100% of base salary if the manager finishes in the top quartile and 50% if in the next highest quartile or 0% if below the median. As you can see on the graph below[[14]](#footnote-14), we can clearly see that the fund manager receives a bonus when the mutual fund performs better relative to the peer group.

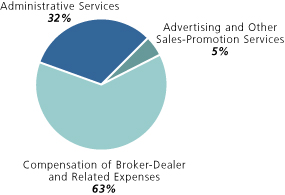


Investors who decide to put their money in a mutual fund incur two primary types of expenses and fees: ongoing expenses and sales loads. The former covers portfolio management, fund administration, daily fund accounting and pricing, shareholder services, distribution charges, and other operating costs. The latter is paid at the time of share purchase, when shares are sold, or over time.

The fee structures of a mutual fund depend on the class of shares, load or no-load classes, which fund sponsors offer. Load classes are for investors that buy shares through a financial professional, and no-load classes are for investors that buy shares without the assistance of a financial professional. There are also operating costs that are common to most mutual funds such as management fees, reinvestment fees, exchange fees, custodial fees, and administrative fees[[15]](#footnote-15).

**12b-1 Fees**

Since 1980, the SEC adopted rule 12b-1 in order to permit funds to compensate financial professionals. The 12b-1 fees, also known as distribution fees relate to marketing, advertising, as well as distribution services and correspond to the mutual fund’s annual fund operating expenses. This fee ranges from 0.25% of a fund’ assets and could reach 1% of the fund’s assets[[16]](#footnote-16). The investor pays this fee every year for the fund as it allows them to run commercials and promote itself. As you can see on the chart below, the 12b-1 fees enable mutual funds to mostly pay costs of compensating broker dealer for the sale of fund shares and related expenses.



The 12b-1 fees are included in the calculation of the fund’s expense ratio, but they are disclosed separately in the fee of each fund’s prospectus[[17]](#footnote-17). Recently, the SEC announced that it will bring potential changes to rule 12b-1. In addition, mutual fund investors are outraged as these fees keep on increasing.

**Load share classes**

For load funds, there are two types of loads: front-end and back-end. The former involves a fee upfront when you purchase the fund. The latter represents the fee you pay when you sell the fund.

Front-end loads are generally associated with Class A shares, in which investors compensate financial professionals for their assistance. This class of shares charge a sales load, which is a percentage of the sales price or offering price when you purchase. Class A shares offer breakpoints because the more you invest, the lower the percentage of sales load.

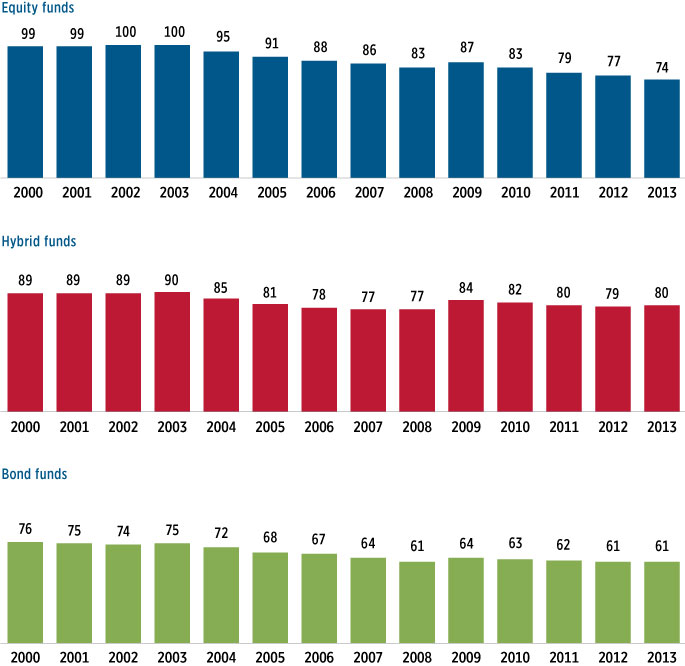
Back-end load are generally associated with class B shares, in which investors pay for services provided by financial professionals through a combination of 12b-1 and a contingent deferred sales load (CDSL). An investor should pay CDSL if fund shares are sold before a given number of years of ownership. If an investor holds a back-end load shares for a specified number of years, then the investor will benefit from lower 12b-1 fee. Thus, back-end load shares can be converted to class A shares.

Level-load shares include class C shares and do not have front-end loads. Investors in this class compensate financial professionals with an annual 12b-1 fee of 1% and a CDSL in case the investor sells shares within a year of purchase.

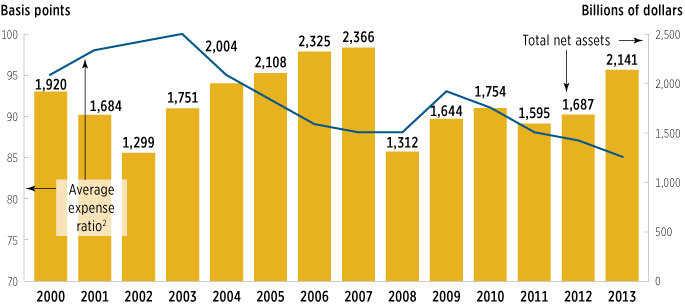
**No-Load share classes**

This class does not have front-end load or CDSL, but has 12b-1 fee that does not exceed 0.25%. Investors can either buy no-load share classes directly from mutual fund sponsors or through employer-sponsored retirement plans, discount brokerage firms, and bank trust departments.

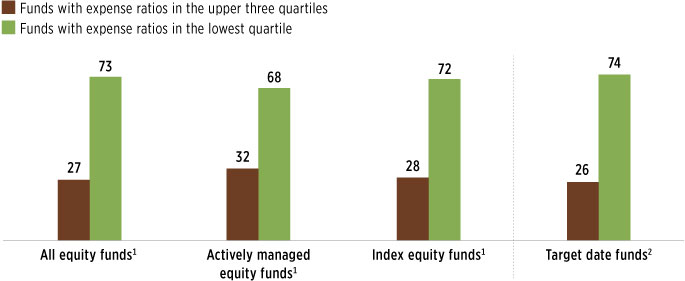
In recent years, mutual fund investors pay fees and expenses that have fallen substantially. As you can see on these graphs below, the expense ratio for mutual funds do not exceed 80 basis points.



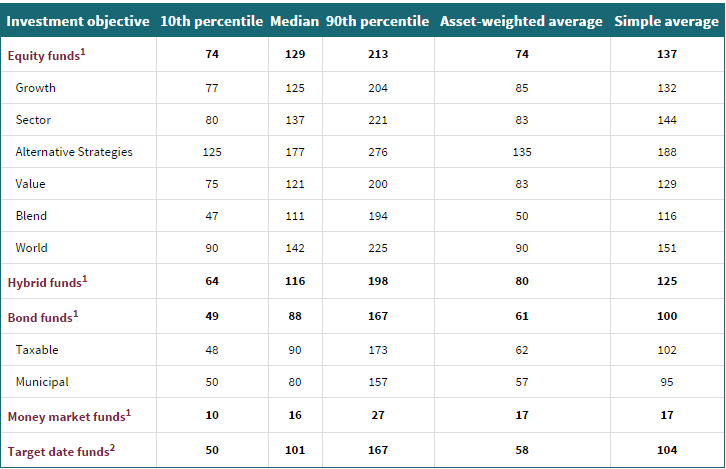
In 2000, equity fund investors paid 99 cents for every $100 invested, but in 2013 there was a decline of 25% and investors incurred an expense ratio of 74 basis points. In hybrid funds, the ratio has decline from 89 basis points in 2000 to 80 basis points in 2013, a decrease of nearly 10%. The bond funds also saw their expense ratio fell from 76 basis points to 61 basis points. This decline in fund expense ratios can be explained by the size of the fund’s assets. When the assets increase, costs make up a smaller proportion. Adversely, when the fund’s assets fall the fixed costs represent a greater proportion. The graph below shows the negative relationship between the fund’s assets and the average expense ratio.



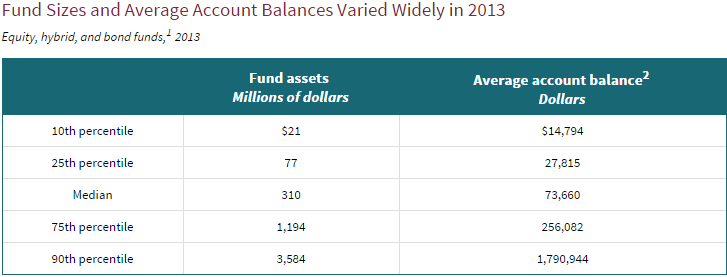
Another factor in the decline of the expense ratio is the existence of economies of scale from the growth in fund assets as well as competition from fund sponsors and exchange-traded funds. In fact, investors are seeking more and more for mutual fund services. Hence, households have doubled their positions in mutual funds and there are approximately 56.7 million of households in 2013 that own mutual funds. Investors have a tendency to invest mostly in mutual funds that have low expense ratio. As you can see on the graph below, funds with expense ratios in the lowest quartile are greater than those in the upper quartile.



The expense ratios vary within the different mutual funds depend on several factors such as investment objective, fund size, balances in shareholder accounts, and payments to intermediaries. First, fund expenses depend on the investment objective because an equity fund that invests in sectors that require high cost to manage tend to be more expensive than for example bond and money market funds. The following table[[18]](#footnote-18) shows that expense ratios differ across the different products being offered.



Second, the fund size is another factor that explains the differences in expense ratios. As a matter of fact, large mutual funds tend to have relatively low expense ratios because of economies of scale. On the table below, we can clearly see that mutual funds that have investors with large amounts of money will have higher average account balance. For example in 2013, 25% of the mutual funds have assets of $77 million or less, while 25% have nearly %1.2 billion or more. Thus, if an investor decided to put money in a large mutual fund, then the investor will incur low expenses.



Below we define the measures used to assess the performance of SRII and non SRII funds and evaluate the advantages and disadvantages of each of them:

**Sharpe Ratio[[19]](#footnote-19)[[20]](#footnote-20)**

This measure looks at the historical distribution of returns generated by an investment. Sharpe ratio measures the reward-to-risk as follow:

In the numerator, the expected return of the investment minus the risk free rate and in the denominator there is the standard deviation of the return.

|  |  |
| --- | --- |
| Advantages | Disadvantages |
| The Sharpe ratio measures both return and risk.  This measure enables to compare the risk-adjusted performance of several portfolios.  It measures the benefits of diversification  It computes from any observed series of returns without the need of additional information related to the profitability.  It avoids the high volatility measures of alpha and beta.  It measures the selection ability (purchase undervalued stocks or sell overvalued stocks). | The Sharpe ratio does not give a reliable assessment if one of the assets is correlated to the rest of the portfolio.  The ratio does not distinguish between systematic and unsystematic risk |

**Treynor Ratio**

This measure evaluates the excess return that could be earned on an investment with no diversifiable risk.

In the numerator, the expected return of the investment minus the risk free rate and in the denominator there is the systematic risk for the portfolio.

|  |  |
| --- | --- |
| Advantages | Disadvantages |
| The Treynor ratio indicates the volatility a stock brings to an entire portfolio.  It evaluates portfolio performance and determines the overall volatility of the portfolio. | The Treynor ratio is only relevant if the portfolio is fully diversified.  It distinguishes between systematic and unsystematic risk but focuses only on the former. |

**Jensen Alpha**

This measure evaluates the portfolio’s rate of return and the ability to deliver above-average returns regarding the risk taken (Beta).

|  |  |
| --- | --- |
| Advantages | Disadvantages |
| The Jensen shows the abnormal return that can be gained or lost in a portfolio.  It assists the individual to construct a portfolio that could generate an abnormal return and above average growth. | The ratio does not reward a portfolio for being well diversified.  It does not reward positive skewness.  CAPM measures the expected return by the systematic risk and ignores factors that affect the portfolio performance. |

**Selectivity**

This measure evaluates the actual return compared to an unmanaged portfolio with identical systematic risk. It is quite similar to the Treynor measure.

|  |  |
| --- | --- |
| Advantages | Disadvantages |
| Selectivity analyses return and risk.  It shows the difference between non-diversifiable and diversifiable risk. | It only gives a representation of the performance of the portfolio compared to an unmanaged portfolio, it does not in turn show how the portfolio performed against other actively managed portfolios. |

**Information Ratio**

This measures a portfolios average return in excess of that of a comparison or benchmark portfolio

IR= (Rj-Rb)/ [σ](http://en.wikipedia.org/wiki/Sigma)er

|  |  |
| --- | --- |
| Advantages | Disadvantages |
| Gives an accurate assessment of the quality of the investors ability to outperform a certain benchmark  Simple and intuitive measure of the benefit-cost of trade-offs involved in the active management of the portfolio  Flexible design which allows for multiple benchmarks to be used as the comparison | Assessments are relative only to the performance of different portfolios that are selected as the comparison  Difficult to assess statistical significance  Depends heavily on the concept that the portfolio and benchmark have similar levels of systematic risk. |

**Diversification**

This measures the portfolios ability to minimize or eliminate their exposure to company – specific risk (systematic risk).

|  |  |
| --- | --- |
| Advantages | Disadvantages |
| Helps analyze a portfolio exposure to systematic risk.  By using the diversification as a measure a portfolio can focus on limiting its risk to potential single company risks.  When having a well-diversified portfolio you can have many different asset choices creating a stable portfolio that theoretically should increase in value long term. | Less likely to make a huge profit from a single sector with a well diversified portfolio because you have investments in other sectors equally weighing each other out.  Increased exposure for if the market declines, since you are holding a widely diversified portfolio if the market as a whole declines the entire portfolio will suffer.  You protect yourself from excessive financial exposure but at the cost of missing on potential major profits. [[21]](#footnote-21) |

A concern about socially responsible investing from many people is the question of does socially responsible investing hinder an investor’s return because of how secluded the target investments are. When analyzing our performance measures on SRI funds, we looked at the median of these funds under several different portfolio measurement ratios and compared them to the market and VICE funds. Comparing these SRI funds to VICE funds is an extremely interesting comparison because we are essentially comparing polar opposites of society. One fund invests in only companies that have society’s best interest in mind and are focused on preserving the environment and the other fund (VICE) invests in products and substances that are addictive and frowned upon by much of society. Companies VICE funds invest in are the exact type of companies SRI funds refuse to ever invest in or consider. Against all three Jensen measures including the median Jensen, Median Jensen(3 factor model, and 4 factor model) the VICE fund significantly outperformed the median of SRI funds, with the Vice Fund having a positive Jensen in all three measures and the SRI fund having a negative Jensen in all three measures. What this shows is that while the vice fund has shown an above average ability to deliver returns relative to beta (positive returns) the SRI fund has delivered below average returns subject to the funds beta. The next measure we analyzed as a comparison was the Sharpe measure. Both funds had positive Sharpe measures showing that their reward to risk had an excess return relative to the risk they took on. However the VICE fund once again outperformed the SRI fund in this category with a .43 Sharpe ratio compared to a .33 Sharpe ratio by the SRI fund, one last relative comparison to keep in mind on this measure is that the market also had a .43 Sharpe ratio showing that relative to the risk both took on the SRI fund underperformed compared to the market. The next measure we used to evaluate both funds’ performance was the Treynor, this ratio showed that by not taking into account diversification, these funds both achieved excess returns in comparison to a riskless investment however once again the VICE funds excess return was greater with a Treynor ratio of .07 whereas the SRI fund only had a .0544 Treynor ratio. This was also another ratio measure where the market achieved a return equal to the VICE fund and in turn out performed the SRI fund. When measuring both fund’s performance against the benchmark of the S&P 500 the Vice found had an information ratio of .09 whereas the SRI fund largely underperformed with an Information Ratio of -.3641. As you can see with all of these portfolio measures it is clear that the VICE fund has completely outperformed the median of SRI funds.

After analyzing the performance of SRI funds in comparison the VICE fund and the market it is evident that Socially Responsible funds do seem to have an overall lower return and worse performance due to the socially responsible stock screening they have to follow when creating their portfolios. Our performance measure results support the literature we found online that also describes one of the downsides of SRI funds is the sacrifice of some returns due to the portfolio only being able to contain socially responsible funds. However as mentioned above these portfolios are created to obey the investors wishes to maintain only investments that they feel are socially responsible and in turn they must understand a lower return will most likely occur.

**A Rebranding of Student Affairs**

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***Erin Troy, Siena College***

***Cheryl Buff, Siena College***

***Maryellen Gilroy, Siena College***

***Abstract***

*This semester it was our task to evaluate the current attitudes and perceptions of Student Affairs and the Student Affairs brand by designing appropriate research methodology and executing the research. With all of the data we have collected, we took the perceptions and made strategic recommendations for Student Affairs to build brand recognition, awareness, and a positive image.*

*We started the research process by looking into secondary data revolving around branding in higher education. These articles provided us with a basis of knowledge about branding and other studies that have been done. The next step we took was to try and understand the Siena Student Affairs brand in depth in order to develop questions for of our primary data collection. To understand the brand, we interviewed the directors of each office in the division. Our goals were to understand their job scopes, determine what they think of the brand, and understand what perceptions they think students have of the brand and their office. Additionally, we let them give us input on questions they wanted to be asked in our survey, focus groups, and polling data.*

*After developing questions for our focus group, we had sent out hundreds of emails to a stratified random sample of Siena students. With no responses to our email invitations, we redesigned our sampling approach and held a convenience based focus group. Additionally we watched the videotapes of a series of focus groups conducted by the SRI in spring 2013. We looked at these videos objectively to develop our own conclusions and to see if there were any similarities in results between our focus group and theirs. To further augment our data collection, we developed a small survey and distributed it, by virtue of an intercept interview, in the SSU. We collected 54 responses from this polling session, and gained further information about some of the common themes in the focus groups. The last form of data collection was the campus wide Qualtrics survey we administered. We distributed this survey to the Siena community via email, Facebook, Twitter, and to faculty, staff and administrators. Faculty members were also asked to distribute the survey to their classes. We had a total of 387 responses from this survey, some incomplete, but still valuable data.*

*After gathering and intensely analyzing the data we collected throughout the semester, we made some strategic recommendations on how Student Affairs can build brand awareness, brand recognition, and create a more positive image around Student Affairs. The recommendations we made are based off of our data we have collected, our knowledge of consumer behavior, and our secondary data collection. Our recommendations include; increasing marketing communications for the brand by communicating more clearly the rules set the college, creating a simple to identify unified brand logo and mission, create student affairs fact sheets for advisors to give to students, change the name to Campus Life, launch a “We are Listening” campaign, and create a “Campus Life” blackboard folder. We think if these changes are made, Siena students will have a more positive experience in life outside of the classroom.*

**INTRODUCTION**

A brand is a “name, term, sign, symbol, or design, or a combination of them, intended to identify the goods and services of one seller or group of sellers and to differentiate them from those of competition.” [[22]](#footnote-22)Many managers view the term more broadly, suggesting that a brand is something that creates a certain amount of awareness, reputation, and prominence; in fact, brands have value, convey meaning, cause emotional responses and reactions, and they must be effectively managed to help an organization reach its overarching goals. [[23]](#footnote-23)

This semester we have worked with Student Affairs, under the guidance of the Vice President of Student Affairs, Dr. Maryellen Gilroy, to help evaluate current attitudes and perceptions of Student Affairs and the Student Affairs brand. Together we have worked with Dr. Buff to design appropriate research methodology to assess current attitudes and perceptions of the brand. It was our intent to make recommendations about the brand and propose possible rebranding initiatives. In addition to communicating with Dr. Gilroy on a regular basis, we have also worked regularly with Dr. Cheryl Buff to assure the accomplishment of our goal of gaining awareness and recognition for the Student Affairs brand at Siena College.

**SECONDARY DATA**

**Literature Review**

As preliminary research we looked through many different journal articles to help us gain some prior knowledge about branding and rebranding, specifically, in the higher education sector. We have read through eight articles and one presentation, all regarding branding. The summaries and key take away points from each article can be found in the original publication and additional information can be found by contacting us.

**Student Affairs Annual Report 2013-2014**

We used the Annual Report to get a better understanding of the brand as a whole and how it is currently being depicted through publications. We also looked at other sources of media that Student Affairs is maintaining. Our observation is that the website is fairly hard to find and is not accessible or beneficial to the user.

**NLSSI Data**

This is a nationally normed survey, which assesses student satisfaction with a range of college programs and services, in particular instructional effectiveness, student activities, performance of college offices, and other areas of institutional performance. The survey was administered last spring to all full-time undergraduates. Par the usual, the response rate was modest (less than 20%). Respondents were asked to measure each item in terms of both importance and satisfaction, each on a 7-point scale (with 7 being "very important" or "very satisfied"). Results indicate that Siena students generally had lower ratings than comparison institutions, particularly in some areas of campus life and in overall satisfaction. Certain subgroups of students (e.g. males, Hispanics, students from Long Island, students in the School of Business) had especially low satisfaction ratings.

Siena scored significantly lower than comparison institutions and peer institutions in:

* Student Centeredness
* Campus Life
* Academic Advising
* Concern for the Individual
* Service Excellence
* Campus Climate

Siena did score slightly (but non-significantly) higher than the 4-year private comparison groups in:

* Instructional Effectiveness
* Recruitment and Financial Aid
* Campus Support Services
* Safety and Security
* Responsiveness to Diverse Populations

Important discussion points:

* It is possible that students are seeing a significant disconnect between the “image” of Siena (i.e. its reputation) and the “reality” (i.e. their own experiences), and that this disconnect is contributing to low scores on some of the items pertaining to global satisfaction (e.g. “All in all, if you had to do it over, would you enroll here again?”).
* Students who indicated that Siena was their first choice among colleges had higher satisfaction ratings than students who indicated that Siena was a lower choice.

**PRIMARY DATA COLLECTION – QUALITATIVE DATA**

**Director Interviews**

We asked each director the same set of questions to gather data we could compare. The questions covered job scope, the number of students the office interacted with, the groups they work with outside of students, benefits of using the service, downsides of using the service, some barriers to entry for students to use the service, perceptions that they think students have about their office, and the image they want their office to have. Below is a list of departments and directors we interviewed. Complete summarizations can be provided upon request.

* Health Services – Carrie Hogan
* Student Compliance Office – Jeanne Obermayer
* Assistant VP of Student Affairs – Sister Dunn
* Director of Public Safety – Mike Papadopolus
* Sr. Thea Bowman Center for Women – Shannon O’Neil
* Service for Students with Disabilities & Veteran Service – Rob Bahny
* Director of Community Living – Adam Casler
* Dean of Students – John Felio
* Associate Dean – Jay Bebb
* Associate Dean – Joy Galerno
* Center for Counseling Services – Wally Bzdell

**Focus Groups**

It was our intent to conduct a number of focus groups. Using a stratified random sample generated by Lee Allard, we sent email invitations to potential student participants. We sent emails out seeking to create focus groups with the following categories:

* Residential Freshman/Sophomore
* Residential Junior/Senior
* Commuter Students
* All Faculty/Administrators

We sent out over 100 email invitations and received no responses from those targeted.. Thus, we were forced to generate a convenience-based sample. This convenience-based sample included the following demographics:

* 9 individuals
* 3 Men, 6 Women
* Juniors/Seniors
* Mixed levels of involvement on Siena campus

Before we started asking any of our focus group questions, we distributed a preliminary survey to assess demographic characteristics and any prior knowledge the respondents had of Student Affairs. The questions that were asked were comprised of:

* List all departments in Student Affairs. We mixed Student Affairs offices in with other offices on campus (included an “all of the above” and “none of the above” option) and asked participants to choose all that were thought to be applicable
* Major
* Class Year
* Number and types of clubs or activities involved in

Results from this preliminary survey were as follows:

|  |  |  |  |
| --- | --- | --- | --- |
| Knowledge of Student Affairs\* | Major | Class Year | # Of Activities Involved In \*\* |
| None | Finance | Senior | 0 |
| None | English | Senior | 0 |
| None | Accounting | Junior | 1 |
| None | Marketing | Junior | 3 |
| None | Sociology | Senior | 4 |
| None | Psychology | Senior | 2 |
| None | Political Science | Junior | 4 |
| None | Economics | Senior | 3 |
| None | Computer Science | Senior | 0 |

\*When given the preliminary survey, none of the respondents were able to correctly classify which offices belonged to Student Affairs.

\*\*The activities did not only include Student Affairs associated activities but rather anything outside of basic academics (i.e. sports, work study jobs, academic extracurricular activities, internships, etc.) This relates to one of our major themes of student involvement increasing their satisfaction with the school as a whole, therefore we do not limit measuring involvement to only Student Affairs involvement.

**Major Themes we found in our Focus Groups**

Academics

* When asking students what they thought Siena was strongest in they almost always replied with Academics and the opportunities that their Academics provided them with
  + Besides registration being frustrating, students didn't have a bad word to say about their academic experience at Siena.

Positive/Negative Reactions about Public Safety:

* “They helped me get into my room when I was locked out”
* “I feel like they’re out to get you in trouble”
* “They don’t listen to you enough

Positive/Negative Reactions about ResLife

* “The RA programs are things I would have liked to do in fifth grade”
* “Fogarty never answers my emails”
* “I have no problems with any RD’s or RA’s and I have met with many of them”

The Deans got mostly neutral reactions:

* Dean Bebb got a glowing review, and the students thought he was not only fair, but they understood why he did what he did for them. The other deans were known for inconsistency in punishments, which seemed to bother students.

Health Services

* Many students have never had an interaction with them, but the ones who did said they would rather go to the urgent care down the road because the service is poor here.

Other Departments

* Compliance office, counseling center, disabilities center, the women’ center, the cross cultural center, and student activities and leadership
  + Students had little to no interaction with and could not form an opinion on them

Other Comments:

* None of the students thought it mattered if Student Affairs was known as a unified brand to them or not, and that it would not make a difference to them
* Siena was no one’s first choice initially on their college search, what changed their minds:
  + Visiting UAlbany before visiting Siena
  + Great financial aid package
* Everyone said they would recommend Siena to prospective students; their dissatisfactions have not outweighed the good things they have gained from being a Siena student.

**Polling Data**

We polled in the SSU outside of Casey’s to gather further data since we were having trouble finding participants for focus groups. We strategically chose this location because we would be able to catch commuters and residents. The list of questions we asked in our polling sessions were short and something students could answer in a couple of minutes. The questions were designed based off of what we had seen trending from our own focus group findings.

* In our polling we had a total of 54 Respondents
  + - 46 Residents, 8 Commuters
    - 29 Seniors, 3 Juniors, 17 Sophomores, 5 Freshman
  + Means for the question “How has your interaction with Public Safety?”
    - 4.1 (on a 1-9 scale 1 being favorable, 9 being unfavorable)
  + Means for the question “How has your interaction been with residential living?”
    - 3.7 (on a 1-9 scale 1 being pleasant, 9 being unpleasant)
  + Means for the question “How has your interaction been with Health Services?”
    - 4.1 (on a 1-9 scale 1 being bad, 9 being good)
* Of the 54 respondents Siena was the first choice during college search breaks down as:
  + - First Choice: 29 respondents
    - Not First Choice: 25 respondents
* Of the 54 respondents:
  + 96% would recommend Siena to a prospective student
    - Would recommend Siena: 52 respondents
    - Would not recommend Siena: 2 respondents
* What are student perceptions of Student Affairs as a whole?
  + Many students were confused about what Student Affairs was initially when approached with the question: What are your perceptions of Student Affairs as a whole? After educating them about what offices Student Affairs encompassed, then they could form an opinion.
  + Some of the answers to the question were:
    - “They care more about liabilities than the students”
    - “Good”
    - “RA’s are sometimes too intense”
    - “Overall, they’re okay”
    - “They are a good resource”
    - “I hate public safety, but everything else is alright”
    - “Ok. Needs to listen to students more”
    - “Pretty good, but I don’t interact with them much”
    - “Who are they?”
    - “Nice people, but they all need to get on the same page”
  + We think this is a mix of positive and negative comments, along with constructive criticism. The constructive criticism can be used to gain an insight to what students think Student Affairs is, what stands out the most, and if they like what they are doing. Some of this constructive criticism being that Student Affairs needs to communicate more to students who they are, why they do what they do, be more consistent, and listen to students opinions more.

**SRI Focus Groups**

As part of our data analysis for this project, we evaluated focus groups conducted by SRI in spring of 2013. . To avoid any interpretation bias, we reviewed the videos objectively and drew our own conclusions about the content prior to reviewing any of the SRI reports or presentations. These focus groups provided us with good information that presented many similarities with the findings from our focus group, our survey data, and our polling data. We viewed a total of nine focus groups-consisting of a total of seven commuters, a mixed group of 12 freshman and sophomores, three underclassmen athletes (involved students), three upperclassman athletes (also highly involved), four moderately involved students, a group of six non involved students, and finally a group of eight RAs. In each group, there were recurring themes. Below is a summary of the findings from our analysis of each of the focus groups, categorized by themes of responses:

* Why students chose to attend Siena:
  + Small Campus
  + Friendly environment, people hold doors
  + People feel like they fit in
  + Great tours, and good admissions experience
  + A Catholic school is important
  + Positive energy on campus
* Unexpected positive attributes when arriving to Siena
  + Known by name on campus
  + Easy to become a leader on campus
  + Easy to get involved
  + A lot of opportunities
  + You can find “who you are” when you are a student here
  + Liberal arts education exposes you to a wide range of subjects
  + Good networking opportunities
  + Easy to develop relationships with faculty
  + Great academic programs (Albany Med, Business, Masters in Accounting)
* Unexpected Disappointments
  + Treated like a child, not trusted
  + Too strict
  + Registration is too stressful
  + If you come undecided, it may be hard to find your major
  + Gym is not accommodating to the amount of people using facilities
  + Need more on campus activities
  + Poor food quality
  + Paranoid when hearing Public Safety’s keys
  + Housing system is unfair to some/ fair to others
* Best qualities of Student Life
  + Small
  + Quality of faculty
  + Good value for a good price
  + Being involved helps you prosper
  + Great alumni network
* Worst qualities of Student Life
  + Students feel like they are in a “Police State”
  + Needs to be more diverse
  + Treated like a child
  + RA’s are out to get students
* Suggested Ideas
  + Update athletic facility
  + Fall version of Siena Fest
* Overall themes to take away from the focus that related to our focus group:
  + Need more activities on campus
  + Registration
  + Housing
  + Communication between authorities and students
  + Safety vs. being treated like an adult

**PRIMARY DATA COLLECTION – QUANTITATIVE DATA**

**Qualtrics Survey (387 responses)**

We sent out a campus wide survey through the online software, Qualtrics. Our survey was administered to all students, faculty, staff, and administrators at Siena. Our survey was posted for one week, and we received 387 mostly complete responses. There were any surveys that were started and incomplete, so some of our numbers do not add up to 387. There is a copy of the survey questions in the appendix for your reference. The breakdown of respondent demographic information is listed below.

|  |  |
| --- | --- |
| Demographics | |
| Class Year: | |
| Freshman | 56 |
| Sophomore | 79 |
| Junior | 53 |
| Senior | 112 |
| Faculty: | |
| Faculty | 20 |
| Gender: | |
| Male | 112 |
| Female | 181 |
| Transgender | 2 |
| Other | 2 |
| Would rather not disclose | 3 |
| Type of Student: | |
| Resident | 256 |
| Commuter | 44 |
| Total | 320 |

\*\*Note: Not everyone answered all demographic questions

**Student Affairs Offices: Thoughts vs. Actual**

When asking students to classify each office to a certain department the results were as follows:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Student Affairs** | | **Other Department** | |
| **Office** | **#** | **%** | **#** | **%** |
| **Public Safety** | 159 | 41.1 | 160 | 41.3 |
| **Dean of Students** | **269** | 69.5 | 55 | 14.2 |
| **Associate Deans of Students** | **268** | 69.3 | 55 | 14.2 |
| **Student Activities and Leadership** | **307** | 79.3 | 20 | 5.2 |
| **Center for Counseling and Student Development** | **235** | 60.7 | 77 | 19.9 |
| **Health Services** | 162 | 41.9 | 146 | 37.7 |
| **Residential Life** | **282** | 72.9 | 49 | 12.7 |
| **Sr. Thea Bowman Center for Women** | 177 | 45.7 | 126 | 32.6 |
| **Services for Students with Disabilities and Veteran Services** | **211** | 54.5 | 96 | 24.8 |
| **Student Compliance Office** | **225** | 58.1 | 74 | 19.1 |
| **Academic Affairs** | 188 | 48.6 | 120 | 31.0 |
| **Tutoring Services** | **194** | 50.1 | 107 | 27.6 |
| **The Writing Center** | 175 | 45.2 | 120 | 31.0 |
| **Student Account Center** | 190 | 49.1 | 109 | 28.2 |
| **Registrar’s Office** | 127 | 32.8 | 161 | 41.6 |
| **Franciscan Center for Services and Advocacy** | 123 | 31.8 | 170 | 43.9 |
| **Admissions** | 109 | 28.2 | **185** | 47.8 |
| **Academic Advising and Support** | **190** | 49.1 | 106 | 27.4 |
| **Sodexo Dining Service** | 86 | 22.2 | **210** | 54.3 |

\*Note that the percentages do not add up to 100% as participants were allowed to skip past the question.

**Feelings of “Student Affairs” & Class Year**

We saw a significant difference between class year and what feelings came to mind when you hear “Student Affairs.” Looking at the responses below, we note that mean score for feelings declines as class year increases. Seemingly, the greater the length of time on campus, the lower the feelings of satisfaction with Student Affairs. The mean scores for each were as follows:

|  |  |
| --- | --- |
| Class Year  n= | Mean\* |
| Freshman (56) | 3.23 |
| Sophomore (79) | 3.20 |
| Junior (53) | 2.96 |
| Seniors (112) | 2.79 |

\*Measured ona five pointLikert scale with 1= “Miserable” 3= “Satisfactory” 5= “Delightful”

**Perceptions of Each Office & Student Affairs as a whole**

We asked students to rate their overall perception of each department that is part of Student Affairs. We also included a no interaction response, but did not include any interaction when calculating the mean scores for each office. The mean score for each office is listed below; higher scores means the office has a higher overall perception:

|  |  |
| --- | --- |
| Office | Mean |
| Vice President of Student Affairs | 3.69 |
| Dean(s) of Students | 3.85 |
| Student Activities | 3.97 |
| Counseling Center | 4.00 |
| Health Services | 3.29 |
| Residential Life | 3.51 |
| Sr. Thea Bowman Women’s Center | 4.00 |
| Disabilities and Veteran services | 3.95 |
| Student Compliance Office | 3.64 |
| Damietta Cross Cultural Center | 3.84 |
| Public Safety | 3.55 |

\*Measured on a five point Likert scale with 1= “Very Poor” and 5= “Very Good”

**Perceptions of student affairs before and after being informed**

We asked students, “What feeling comes to mind when you hear “Student Affairs”?”. We asked this question when they first began the survey and then again after informing them of all of the offices included within Student Affairs. Using a paired samples t-test, we note significance at the p<.000, there is a slight favorable increase in perception once students know all Student Affairs has to offer. The responses did not change the statistical significance of the results whether the students were residents or commuters. Below are the results:

|  |  |
| --- | --- |
| Question  n=361 | Mean |
| What Feeling comes to mind when you hear, “Student Affairs”? | 3.04 |
| Now that you’ve seen all the departments that encompass Student Affairs, what feeling comes to mind? | 3.13 |

\*Measured ona five pointLikert scale with 1= “Miserable” 3= “Satisfactory” 5= “Delightful”

**Ranking of descriptors of the brand**

We asked participants to evaluate descriptive words of the brand to gather which they thought were most applicable to the brands image currently; they ranked in the following order (accompanied by their mean score with 1= “Not at all descriptive” to 5=”Extremely Descriptive”):

1. Available (3.50)
2. Friendly (3.49)
3. Sincere (3.38)
4. Up-to-date (3.35)
5. Honest (3.30)
6. Reliable (3.28)

**Reasons why students selected Siena College**

We asked students to check as many of the factors as to why they chose Siena. The factors are ranked below from most chosen to least. This gives an indication of things that attract potential students to Siena. The results are not too surprising as the top three perfectly mirror the top three that were discussed in our focus groups. This is also consistent with the findings of *University Branding: Understanding Students’ choice of an Educational Institution*, which was discussed earlier, where we found the top three features student are looking for in a school is financial aid, location, and size (as bolded below).

1. Scholarship/Cost and Financial Aid Package (62.3)
2. Location (57.9)
3. Size (57.4)
4. Majors (43.9)
5. Academic Programs (39.8)
6. Clubs (14.2)
7. Religious Affiliation and Programs (12.9)
8. Activities (12.9)
9. Sports (10.3)
10. Student Services Offered (10.1)
11. Housing (5.7)

**Resident vs. Commuter**

We also looked to see if being a resident student or a commuter student would make a difference in the overall perceptions of Student Affairs. We found no significant difference between the two groups responses, suggesting that residential status does not change student opinions about Student Affairs.

**Best way to reach students**

We asked students what the best way to reach them was by having a list of common communication channels. The list provided included; Email, Facebook, Twitter, Instagram, Blackboard, and Other. Below is a frequency list of how the respondents answered:

|  |  |
| --- | --- |
| Response Option | Frequency |
| Email | 252 |
| Twitter | 11 |
| Facebook | 7 |
| Instagram | 5 |
| Blackboard | 18 |
| Other | 10 |

**Discipline Questions**

We asked all students if they have ever been written up before, and if they answered the question “Yes”, they were directed to another set of questions. Specifically they were asked, “Was the RA was fair and just in the process?” and, “In the meeting regarding your charges, was the RD or Dean respectful during the process?”

* Out of 300 responses to the question: “Have you been written up?”
  + 99 students have been written up
  + ⅓ of the sample

We asked students if they think public safety is in the dorms too much, too little or just right and compared the responses to if they have ever been written up. Below is a table explaining the results of the 304 responses to this question:

|  |  |  |  |
| --- | --- | --- | --- |
| Have you ever been written up? | The amount of time public safety is in the dorms is: | | |
|  | Too much | Too Little | Not Enough |
| Yes | 56 | 41 | 2 |
| No | 34 | 139 | 32 |

**How would you grade your interactions with Public Safety?**

We asked students to grade their interaction with Public Safety on a scale from A through F. This question was based on a 13-point scale, A was ranked as a score of 13, and F was ranked as a score of 1.

* Public Safety received a mean score of 9.43 (between B/B+)

**Was the RA fair and just during the process?**

We asked students who were written up to grade the RA on a scale from A through F how fair and just they were during the process of being written up. This question was based on a 13 point scale, A was ranked as a score of 13, and F was ranked as a score of 1.

* RA’s received a mean score of a 7.71 (between C/C+) for being fair and just

**When having a meeting regarding your charges, was the RD or Dean respectful during the process?**

We asked students who were written up to grade their RD or Dean on a scale from A through F on how respectful they were during the process of getting their charges. This question was based on a 13 point scale, A was ranked as a score of 13, and F was ranked as a score of 1.

* RD’s and Deans received a mean score of 9.69 (between B/B+) on being respectful during the process of getting charges.

**Being Written Up vs. What feeling comes to mind when you hear “Student Affairs”?**

We compared the responses of students who have/have not been written up to the results of their responses to the question “What feeling comes to mind when you hear Student Affairs?” (please note, this is the first feelings oriented question, before participants were fully informed on what Student Affairs encompasses.). Using a one-way ANOVA, we note significance at p<.000. Students who have been written up have more negative perceptions of Student Affairs than students who have not been written up. Below are the results:

|  |  |  |
| --- | --- | --- |
| Have you been Written up? | Number of responses | Mean Score for Student Affairs |
| Yes | 99 | 2.76 |
| No | 205 | 3.11 |

\*Measured ona five pointLikert scale with 1= “Miserable” 3= “Satisfactory” 5= “Delightful”

**Traits**

We listed traits associated with the Aaker (year) model and asked students how each trait described Student Affairs as a brand. The traits we used were ‘honest’, ‘reliable’, ‘friendly’, ‘sincere,’ ‘available’, ‘up-to-date.’ There was a total of 327 responses to this question, and this question was asked after they knew the offices Student Affairs encompassed. Below are the means of how each trait describes the Student Affairs’ brand:

|  |  |
| --- | --- |
| Trait | Mean Score |
| Honest | 3.30 |
| Reliable | 3.28 |
| Friendly | 3.49 |
| Sincere | 3.38 |
| Available | 3.50 |
| Up-to-date | 3.35 |

\*Measured on a five point Likert Scale with 1= “Not At All Descriptive” to 5= “Extremely Descriptive”

**Faculty Response Section**

We asked faculty, staff and administrators if they knew what the DORS initiative was and offered them the opportunity to select “Yes”, “Somewhat”, and “No” as their response. Below reports the answers faculty responded to:

|  |  |
| --- | --- |
| Response Options | Frequency |
| Yes | 16 |
| No | 3 |
| Somewhat | 1 |

We also asked faculty the following three questions. Note all questions were based on a six-point scale.

* **Question:** “In general, how have you interactions been with public safety?” (1= “Very Bad”, 6= “Very Good”)
* 19 responses, minimum score of four, highest score of a six. The mean score public safety interactions with faculty received for faculty was 5.21.
* **Question: “**Student Affairs is an effective complementary support system to academic affairs.” (1= “Strongly Disagree”, 6= “Strongly Agree”)
* 19 responses, minimum score of 2, highest score of 6. The mean score for student affair complementing academic affairs was a 4.68.
* **Question: “**Student Affair effects enrollment and retention at Siena.” (1= “Strongly Disagree”, 6= “Strongly Agree”)
* 19 responses, minimum score of 2, highest score of 6. The mean score for student affairs affecting enrollment and retention at Siena was a 5.21.

**ADDITIONAL SECONDARY DATA**

Please note that this section is included late in the report intentionally, as this was the last piece of information that was reviewed prior to fully analyzing all data and making our recommendations. We did not want SRI reports to influence our own evaluation of focus group videos.

**Focus Group SRI Report**

The SRI Focus Group Report covers the main points, especially the weaknesses or points of improvement, as illustrated above in our summary of the focus groups. SRI uses student involvement as a large factor of student satisfaction at this school. They make a number of recommendations around logistics, entertainment, and the implementation of a Personal Engagement Plan (P.E.P). Below is an outline of the recommendations they suggested.

* Logistics
  + Create places for students to congregate outside of their dorms such as an on-campus coffee shop or bar
  + Improve the gym facilities for non-athletes
  + Address diversity by adding additional programming and by partnering with a historically African American college as a “sister school”
  + Change the perception of Public Safety as a “police state” by easing some of the alcohol rules such as the “in the presence of” clause
* Entertainment
  + A large event similar to Siena Fest should be held in the Fall as well as the Spring. A homecoming festival, Fall festival, or Siena Olympics would improve student morale
  + Hold additional programming later at night that is age-appropriate
    - Students claim there is no place to go and nothing to do later at night
  + Several students believe there should be an audit of where all their tuition goes or to simply audit where their student fees go each year
  + Provide places outside of the dorms on campus for activities such as pool, Ping-Pong or other non-drinking activities
* Personal Engagement Plan (P.E.P.)
  + All incoming students receive a Personal Engagement Mentor, with whom they develop a professional relationship and a Personal Engagement Plan
  + Mentor will be a full-time faculty member or Siena administrator
  + Mentor would develop a professional relationship with the student outside of academics
  + Mentor would express a personal interest in the student and help them pursue their interests and get involved.

In reviewing these recommendations, we note that some of the above recommendations have already been implemented to some degree. We see the on-campus coffee shop in Casey’s, which also provides a place outside of the dorms for students to hang out, as well as the campaign to raise money for a new gym. Below are some of the recommendations are ones that we feel could be expanded on and are incorporated in our recommendations below.

**RECOMMENDATIONS**

Below is a list of detailed strategic recommendations that we think will enhance the Student Affairs brand positively. All recommendations are based on our knowledge of consumer behavior, marketing, branding, and communications, along with the results of our literature review articles, focus group, the SRI focus group videos, our polling data, and our survey data.

**Important Literature Review Findings**

In one of the literature review studies, students were asked what some of the typical traits are that they consider when looking for a college. We believe that knowing these factors students use to make a college decision are beneficial for you when considering our further recommendations:

* Driving Factors to consider for students making a College Choice
  + When asked to choose one among the four deciding factors, Image or Reputation was chosen significantly more
  + Reputation and academics were the two most important factors with cost and location following closely behind
* Found in their study: Main differences between public and private universities
  + Tuition is more money, and does not cover all costs (ex: books)
  + Public schools resist changes in core mission

**Increase Marketing Communications**

The current awareness levels of Student Affairs are very low. Few knew what the brand encompassed when asked, and this was a common theme across all of our data collection methods. Additionally, when people knew all of the offices Student Affair encompassed, their overall feelings towards the brand were generally increased.

From our secondary preliminary research, we found that having passionate people and employees involved with the brand, “Brand Champions”, are one of the most beneficial assets a brand can have. These are people who will positively promote the brand, and create positive interaction with the brand and other people.

We recommend Student Affair to have a few students, at least one from each class year, to be a brand ambassador (opinion leaders). This brand ambassador would relay any information about Student Affairs related events or announcements to their peers. We think a brand ambassador will help the brand gain recognition and trust. Consumer behavior tells us that people trust someone with experience and someone who is similar to them.

Consider more direct communication and education about some of the “rules.” What we mean by this is clearly communicate what rules law is enforcing and what rules are being enforced by Siena. As Dean Felio said, he wanted students to feel as if they were being treated fairly when leaving a meeting with him. Explaining this to students would help them understand why certain things are the way they are. This can be done through marketing communications. A good way to approach this would be during freshman orientation.

**Create & Communicate a Unified Mission Statement**

For a brand to be seen as unified, every person involved with the brand must pursue the same message through their actions, communications, and the way each office is run. When asked, students said it did not matter and it would not make a difference if Student Affairs was seen as one brand or not, however if Student Affairs wants to be seen as a unified, overarching brand they must build awareness around that fact. Having a unified mission that binds each department together is important to build a brand image and pursue a positive, consistent, image.

Once the brand is unified with a specific message being pursued through their actions, perhaps a Student Affairs logo could be created that each office in the division would use (ex: create stickers for the door of each Student Affairs run office).

Hosting a contest to get students involved in creating this logo would be a way to boost student involvement on campus, and from our findings, students who are more involved are generally more satisfied with their experience at Siena. Additionally it would generate awareness of the Student Affairs brand itself. Keep in mind when designing this logo or creating the logo contest, the Student Affairs mission needs to be conveyed. A way this logo could be used is by listing the office name on the sticker, followed by the new logo, and then Student Affairs after it.

**Student Affairs Fact Sheets**

We found that students who were more involved not only had a better perception of the brand but also got more out of their time at Siena and enjoyed their experience more. The SRI Focus groups had a mix of involved and non-involved students. The involved students were vocal about their experiences being a good one, that they had a lot of opportunities to get involved and that they felt they were able to meet more people, feel a greater sense of community and be less likely to get into trouble. Also, in many of the director’s interviews there was evident theme that you were striving for a noticeable sense of community to be developed. To create this sense of community we believe you need student buy-in and investment in not only their academics but also their extracurricular. We therefore recommend trying to increase involvement and to promote this we recommend having the faculty serving as academic advisors for students give an updated fact and activity sheet to the student focusing on ways to get involved.

They could speak with the student about which activities would interest them the most and how they could get involved. This could complement recommendations about academic groups and clubs to be involved with. This way you are meeting the target audience at least twice a year and not only increasing brand awareness but hopefully motivating students to get involved when they may not have before.

We believe this to be a less rigorous method of meeting the target audience than the SRI recommendation for the Personal Engagement Plan in that Professors are already having to meet with their students to organize classes for the next semester, make sure the student is on track to graduate and have their credits met. This is essentially just another way of assuring the student is on track with developing connections outside of class and reaping all the benefits that Siena College offers.

These fact sheets could have a list of opportunities for students to get involved with, not only clubs but leadership positions, events coming up for the semester, and contact information of people that can assist in getting the student involved. You can also refer people to a possible Blackboard folder, which we address in our next recommendation.

**Set up a “Campus Life” Blackboard Folder**

Through our recommendations we aimed to boost communication with Students. Currently the Digest does not serve as an effective method of communication as many students do not actually read through it. With the new changes to the digest that are going to be implemented next semester which involve the articles to be divided into section, it will be even more effort for students to sort through, and through our research we definitely took notice to the fact that many students do not necessarily like to exert much added effort. We also found your website to be fairly hard to find and it did not have much beneficial content. Students responded that besides the typical means of contact (email, social media, etc.), Blackboard was a good way to get in contact with them. So similar to the “Housing” folder that is on Blackboard, you could develop a “Campus Life” folder.

Allows for a direct source of communication, which would be a folder on the home screen of every Siena students Blackboard. Things you could include in this folder are way students can get involved, leadership opportunities, Campus Life News, Contact information for each division and possibly a page for each division that articulates what they offer to the student.

This, as our other initiatives, will help to create recognition and awareness of the brand as a whole. It will also help to reinforce the fact that that Student Affairs f seeks to enhance life outside the classroom. This will help to show students all the ways that you are attempting to do this.

**Change Name to “Campus Life”**

Currently, there is little recognition of the brand. When asking students their perceptions of Student Affairs our initial response was usually “What is it?” In our focus group we gave out a pre-test survey in which we asked participants to classify what departments they thought fell under Student Affairs; not one person answered anywhere close to right. Then when we did our polling in the SSU we had a question that asked students what they thought about Student Affairs and nearly all of the 54 participants had to be told what Student Affairs encompassed.

We believe this is the perfect was to “recreate” or “rebrand” your image, revitalizing it firstly with a new name. “Campus Life” creates an association with life on the campus, as opposed to the term “student” which often times is directly related to academics, something the brand does not encompass. In the drag and drop question on our Qualtrics survey where students were asked which department each office fell under, many students believed the primarily academic offices also fell under Student Affairs (Tutoring, The Writing Center, Academic Affairs). Again, having the term “student” in your title may be one of the reasons students are making these connections.

When looking at comparable colleges and what they called their “Student Affairs” department, we came up with the following results:

* + - Marist: Student Life
    - Fairfield: Campus Life
    - Loyola: Campus Life
    - Iona: Campus Resources
    - Niagara: Student Affairs

To go about changing the name to “Campus Life” we recommend doing a competition similar to the one we will describe in the next recommendation. Even though you are bound to the logo that Siena College imposes on you, you could create a competition among students as to who could create the best creative design to use on distributed material to differentiate yourselves from the other Siena College departments. As discussed earlier we believe it would be beneficial to increase marketing communications, so this could be a logo, picture, signature, etc. which you could attach to all your communications, creating a noticeable connection between all your efforts. This competition could not only build brand awareness but also brand involvement. Essentially, getting people to realize you are a diverse entity, which is very

**Launch a “We are Listening” Campaign**

We are most excited about this recommendation, as we believe this will be one of the most beneficial avenues of gaining brand recognition and support. Through our research we found students felt they were not being heard, and that the concerns they were voicing were being dismissed. In our focus groups we also heard students say they felt they were being treated like children, which could be a side effect of feeling dismissed.

In our research into the Student Affairs brand and activities we found an email address at the bottom of one of the documents, [wearelistening@siena.edu](mailto:wearelistening@siena.edu). We think this is a great concept and something you could truly capitalize on, even though currently it is nearly impossible to find. We recommend partnering with the Graphic Design class and having them come up with visually appealing, “We are listening” logos. This alone will increase interaction with the brand. Similar to the last recommendation you could create a competition for most creative or most visually appealing logo and utilize the skills of current students to design a recognizable logo.

For this campaign we essentially recommend seeming more receptive to students. Bridging the gap between students and administrators, which makes students feel “watched”, or “like children.” You can put the logo and the email on a poster with possibly a Saint Bernard puppy (see picture in appendix) and hang them around school. Similar to the drinking posters that were hung up two years ago, that were wildly successful and resulted in many students around campus being able to recite the alcohol facts which were on the posters. Another successful campaign that generated a lot of student buzz is the stall stories. We believe you could strategically place the posters on the inside of bathroom stalls as well as on door to catch student’s attention, essentially meeting the target audience where they are.

Even though our research indicates that email is the best way to communicate with students we personally found that students do not take notice to emails coming from people/departments they do not know and that they’re sometimes bombarded with emails. Siena itself had tried to address this problem through creating the digest but when asking students, most responded that they actually do not look at the digest at all. For this reason along with the fact that social media is where we reached the most students ourselves we recommend you can create a Facebook or Twitter which allows you to have more dialogue with students directly. This will enable you to vocalize the efforts you are taking to respond to student’s requests, or even just the great things that is being done by the department every day.

Another disconnect we found in our research that is to be expected but we believe could be something to address is the ways in which disciplinary actions are handled. As you can see in the section above that summarized our Qualtrics findings, students who had been written up before felt that Public Safety was in the dorms too much. In our focus group, students voiced that when they heard the jingling of a Public Safety officers keys coming down the hallway they felt nervous, even though they may not have been doing anything wrong. These students had also felt that some of the rules in place are too strict, causing Siena to be known as “Soviet Siena.” Obviously, this is not a good connotation to have. While we understand that many of these rules that have to be enforced are not decided on by Student Affairs, and therefor there may not be any changes in policy that can be made, an effort that can be made is being vocal about the rules that you have to enforce. Having the “We Are Listening” forum will allow for you to openly communicate the laws that have to be enforced. We found that after talking to Mr. Papadopolus we were more understanding of where they were coming from as Public Safety officers and that they were there to assure student safety. Again, this new avenue will allow for you to highlight the good things that Student Affairs does every day that goes unnoticed and assure students that administration is in fact not out to get them, but just there to enhance student life while on Siena’s campus.

If students feel they are being listened to, and their concerns are being addressed, this will create a “buy-in” and students will feel be more responsive to any changes that are being made.

**CONCLUSION**

Upon being tasked with rebranding Student Affairs, we first set out to see how other schools had dealt with internal branding and the roles such a department played at other schools. We then looked to the directors of each office within Student Affairs to truly understand the scope of every facet of the department. From there we looked to the students themselves to understand their perceptions of Student Affairs as a brand. Through focus groups, surveying, and polling, we were able to identify weak points that could have an effect on the brand.

From our literature reviews the overarching theme we noticed was that with any sort of branding or rebranding, it was crucial to first assure that there were no weaknesses that would result in the brand not being well received no matter the efforts. Themes we saw in our research was that students felt that they were not being heard or that their opinion did not matter. To address this we recommended the “We Are Listening” campaign to show students that you really are in fact being receptive to their concerns. Another theme that came to fruition in our research was that students that were more involved had better perceptions of not only Student Affairs but also Siena as a whole. We recommend that to increase student satisfaction on this campus you try and increase overall involvement in the student body. To do this we believe you should identify brand ambassadors and opinion leaders to help spread your messaging. Further we suggest that you partner with faculty and other advisors to students and equip them with a Student Affairs fact sheet. This becomes a talking point or an information sheet of opportunities for students to get involved. We also believe that increasing and improving your current communications (for example, making the web page easier to find and more informative) with students will help increase awareness and perceptions of the brand. It is our hope that these recommendations will allow you to highlight the great aspects of your department that enhance the student experience outside the classroom.

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**Media Bingeing: A new type of marathoning**

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***Abstract***

*Progressive increases in viewing freedom due to internet media providers have given consumers more access to television. This convenience has caused many to overindulge on media stimuli. Often referred to as “media bingeing,” this habit is quickly becoming a concern. We conducted a qualitative and quantitative study in order to further understand motivations behind bingeing tendencies. The results propose the forming of one-sided, unconscious bonds between viewers and characters. We believe this bond is one of the main factors influencing bingeing behaviors. This study is important since it sheds light on a consumer’s need to overindulge, which presents marketing opportunities and challenges.*

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**Introduction**

How many episodes of a show should one watch in a sitting? Media Bingeing is quickly becoming the viewing habit of choice for television fans. Companies such as Netflix and Hulu have made fortunes giving people the ability to watch almost any show at the touch of a button. This new access to an immense library of TV series and movies is turning addictive practices into common pleasures. Viewers are getting so immersed in their favorite shows that they can’t help but watch more, all while showing intriguingly similar characteristics as substance and food abusers. What is more surprising is that the general population has little problem with binge viewing while substance and food addictions are socially unacceptable. In this research, we investigate motivations behind the drive of current consumers using a qualitative and quantitative study. We provide insights on why consumers are so susceptible to this kind of stimuli and why society is apparently oblivious to the issue. This paper will share current research on the topic, our research methodology and findings, possible future research avenues, and ethical implications for companies supplying the media.

**Literature Review**

Defined as a rapid consumption of a large amount of substance in a short time period (Goldsmith 2013), bingeing is most often related to food and obesity. In fact, marketing researchers can draw upon this rich research stream as we face a paucity of research in marketing related to this rather recent phenomenon. One can easily recognize that common tendencies of internet media subscribers follow textbook symptoms and compulsions associated with those addicted to food.

Media bingers appear to be compelled to watch hours of shows and movies due to an over responsiveness to video stimuli (Vervaet 2004). Like their food counterparts, the exposure to stimuli eventually produces an emotional reliance in the human psyche. Viewers feel dependent on the stimuli to feel whole throughout their daily lives. As is evident with constant cravings to view a following episode, people become fully addicted to the happenings of a show (Lloyde 2013). These moods are intensified as people realize that their programs are a mere mouse click away at any point during the day.

Fans of television series are more susceptible to media bingeing due to the ability to follow characters and plot seamlessly from one episode to the next. Shows are so well produced and put together that viewers feel an elevated sense of existence while escaping their self-awareness (Vervaet 2004). People enter into the fantasy world they are watching and feel hollow once taken away from it. Similar to those bingeing on food, the subject’s brain blocks external negative emotions while viewing creating an escape from common daily life. The feelings are a result of chemical imbalances within the brain which put the viewer in a trance like state (Ascharya 2012). Similar to the high a drug can provide, people try to recreate the feeling of happiness felt when bingeing on media. This feeling is commonly obsessed over as people find themselves thinking about a show’s events during the day (Kolotkin 1987).  This behavior also creates a mental reasoning that allows for continued bingeing behavior (Vervaet 2004). Since shows are available in rapid installments without commercial or weekly breaks, there is little stopping people from viewing large strings of episodes. The show is essentially a drug that people become addicted to indulging upon.

Another reason behind the new trend of media bingeing is the apparent lack of physical side effects incurred by the viewer. Watching hours of their favorite shows seems harmless and actually condoned by the society around them (think water cooler banter!). As is with food and substance bingers, a feeling of invincibility is common while performing the action (Vervaet 2004). The apparent lack of consequences is due in part to the inability to see *immediate* changes affecting the body. Long periods of inactivity are known to lead to heart disease and obesity issues. If routine bingeing sessions take place in a person’s life, these complications are put on a fast track to reality (Rollin 2013). Other mental complications include a decrease in a viewer’s social skills. Although silly to think of, long term media bingeing sessions cut away drastically at the time a person interacts socially with others. These degrading skills can carry over negatively into one’s job or family life (Rollin 2013).

Recent developments of internet media platforms such as Netflix and Hulu have shown a profitable market made up of media bingers. The latest attempt to capitalize on this group was made by the internet media company Netflix with their release House of Cards. This is the first documented, multi episode series designed to be viewed in one sitting (Stelter 2013). Creators eliminated the common flashbacks and recapping segments found at the beginning of following episodes. Instead, they assume that viewers are aware of the show’s happenings at every point during the thirteen episode release (Stelter 2013). People who are for this style of watching say the ease of continuation allows for a more engrossing and satisfying experience (Riccio 2013). Viewers can commit to their couches and watch without the irritating inconvenience of commercials and weekly breaks between episodes (Ricco 2013).  Do consumers actually realize that they are bingeing? What are some factors that may lead to media bingeing?

**Methodology**

To explore these research questions, we conducted a two-phased qualitative and quantitative study to understand motivations for media bingeing. For the qualitative study, a total of four focus groups were conducted with thirty participants ranging in age from seventeen to seventy. Participants were selected based on their familiarity with internet based viewing platforms such as Netflix, Hulu, or Amazon Prime. Focus groups were followed by a short survey provided to some of the participants that were willing to respond. This survey further inquired participants about their viewing habits, show choices, and personal feelings about media companies.

**Phase One**

Focus group one consisted of ten participants ranging in age from eighteen to twenty seven years old. This group was organized to represent a college and post graduate demographic. Discussion centered on the addictive natures of Netflix and touched on the platform’s current formatting. When asked if they have ever planned on watching one or two episodes only to end up watching many more, almost every participant answered with a “yes.” When asked individually about the reasons behind this, participants replied with “its addicting” and “you can’t just watch one episode.” Later questions inquired if participants felt that Netflix encourages them to watch more. Answers immediately focused on auto and post-play features followed by replies such as “they are manipulating us.” Respondents were aware that these features are meant to encourage more viewing but jokingly laughed about the premise. Participants also revealed that they were “happy” once a series has concluded. A sense of closure appeared to be a motivator for subjects in this group.

The second focus group consisted of seven participants ranging in age from eighteen to forty seven. This group included two mothers and their daughters in order to get a parental opinion on the subject. Discussion centered on the teen’s viewing habits, social lives, and the mother’s opinions on the behavior. When asked if they have ever looked forward to viewing their programs, all of the teens said “yes.” Immediately after this answer, a respondent piped up with “I’d rather watch Netflix than be social.” Both mothers laughed after these responses. This focus group shared feelings of regret after realizing the amount of media they had consumed during a period. The feeling was not seen as a deterrent to participants from continuing the same viewing habits.

Focus group three consisted of eight adults ranging in age from forty to seventy. This group was combined in order to receive feedback from those working full time jobs or retired. Those working full time described their viewing habits as “a way to relax” after a long day at work. They admitted that attending to their children prevented them from watching shows for an extended period of time. Full time workers did not seem to binge on media regularly. Those that were retired exhibited viewing habits not seen in previous focus groups. They admitted to turning on Netflix and leaving the program running throughout the day, stopping to sit and watch an episode on occasion. Shows left on by this group were The Big Bang, How I Met Your Mother, and Parks and Recreation. Although they were not intently viewing for long periods, the stimulus was left on for the entire day. Their reasoning was simply that they enjoyed the extra noise in the household.

The final focus group consisted of five college students ranging in age from twenty to twenty one. Discussions focused on viewing habits during and outside of school along with their favorite shows. The most surprising results came when asked if they have ever watched a majority of a series in a single sitting. Almost every participant answered with a strong affirmative. One individual admitted that he had watched full seasons in a single day “several” times. They shared that the free time given over the summer almost forced them to watch out of shear boredom. During the school semester however, they revealed that their viewing times decreased immensely and the viewing habits differed as well. When asked if a season’s conclusion brought an empty feeling, respondents shouted “absolutely” without hesitation. One individual admitted that he “wanted to cry” after the series finale of his favorite show. Respondents also revealed that their bingeing was not due to exciting cliffhangers at the end of each episode but rather the availability of the show. Simply having the option to watch the next episode made them want to continue.

**Phase Two**

Following these groups, respondents were requested to fill out a short survey to further understand their tendencies and 20 (out of 30) of them were willing to respond. Respondents were again asked if they felt that the interface of Netflix encourages them to watch more. The answer was a strong yes with 75% of the participants answering. In discussion, participants revealed that they usually plan to sit and watch a specific number of episodes when using the programs. With features such as post play and show recommendations they felt a lower level of control when using these platforms. They also admitted to watching more than planned due to the convenience and ease of the interface. Recent updates to Netflix give strong evidence for an attempt to keep users on their sofas for longer periods of time. Respondents showed that they were so interested they “couldn’t help but watch more” and let the platform play another episode.

Later questions asked participants how many episodes they usually watch at a given period of time. When asked if they have ever watched a majority of a single season in one day, about one-third of the respondents (35%) answered with a “yes.” The amount of episodes per TV season varies greatly, but it is safe to assume that the respondents spent at least five to six hours watching their shows at one time. This is with minimal breaks between episodes and an intention to get as far into a season as possible. Discussion focused around shows such as House of Cards, Arrested Development, Breaking Bad, One Tree Hill, Prison Break and Mad Men. Although not nearly the majority, this is still a surprising amount of people when considering how much time is devoted to their shows. A large portion of those that said “yes” were in the twenty to thirty five age ranges. What is also interesting is that respondents binged on shows with a variety of genres. They did not focus on thrillers or shows with heavy action as would be anticipated. This, along with discussion evidence, supports the idea that cliffhangers are not the primary reason behind the bingeing.

Respondents were eventually asked, point blank, if they had ever felt addicted to the shows they watch. After gathering results, 60% said yes. This didn’t appear to be the answer during the group discussions. In the focus groups some individuals were comfortable admitting their addiction, but not nearly 60%. People appear to be uncomfortable speaking aloud about their need for media stimuli and personal viewing habits. Respondents were more than happy to share their love for a particular show but not their reasons behind viewing. Apart from answers such as “I love it” and “it’s exciting” viewers didn’t give a concrete answer as to why they view. In other groups, participants didn’t think they could be addicted to Netflix even though they admitted to constantly thinking about an episode’s event during their day. Society hasn’t realized that this form of consumption can be considered an addiction. We believe that this is due to the lack of visible side effects that other forms of bingeing foster.

One of the final questions asked on the post discussion survey wondered if respondents have ever felt personally attached to a character in a show. The majority responded with a yes (65%). We felt this was a very interesting answer since participants admitted to forming relationships with fictional characters. This one sided relationship can be backed by the emotion expressed while in discussion about said characters. We feel that this one sided relationship with characters drives people to watch more in order to sustain the relationship. They are essentially watching the shows to spend time with their favorite character. This would also explain the “emptiness” felt once a series has concluded, akin to a relational break up. We plan to further investigate this motivation and its connection to media bingeing.

**Quantitative approach**

We are in the process of conducting a quantitative study to understand connections between viewers and their characters. This is being done in the form of an online survey created using the program Qualtrics. Our survey is composed of four primary sections for each individual to respond to. The Contingencies of Self-Worth (CSW) Scale developed by Crocker, Luhtanen, Cooper, and Bouvrette of the Ohio State University was used to gauge the similarity of viewers to their characters using self-worth.

Section one consists of questions asking about how respondents see themselves and their agreement to a number of statements. These statements are taken from The Contingencies of Self-Worth (CSW) Scale. Each statement falls within one of seven categories within the scale. The categories are; family support, competition, appearance, God’s love, academic competence, virtue and approval from others. Answers to each of these will give a broad understanding of a respondent’s self-worth.

The next section of our survey inquires about the viewing habits of the respondent. These cover how each person views, how they feel when watching, how they feel when not watching, and if they believe a relationship exists with their favorite character. Questions also inquire about how many hours a respondent has viewed in the last two weeks and whether or not addictive feelings have been felt.

Section three first asks for information about the respondent’s favorite character (age, gender, relationship status). The next set of questions are the exact same as the ones from section one. The respondent is now instructed to answer as their favorite character and not as themselves. This will create responses from the survey taker’s perspective that can be compared to their own answers from section one. We plan to compare the responses of section one and three to first see how similar or different a viewer and character are and then analyze their viewing habits.

The final section inquires about a respondent’s age, gender, marital status and other demographic information. If a respondent has never used a media viewing platform such as Netflix or Hulu, they are sent to this section following the completion of section one.

Once we have a sustainable amount of responses, we plan to analyze and form conclusions to present at a future date.

**Ethical Implications**

The push of companies to develop a market of bingers and addicts certainly presents an ethical dilemma. Recent updates to viewing programs have created “post-play” features that automatically play the next episode in a series (Chatila 2013). Viewers don’t have to physically move to switch to another episode. Although updates have limited this feature by asking if viewers want to continue (after 3 episodes), it does not appear again after clicking agree. Content providers seem to be encouraging people to binge unhealthily in return for increased revenues. Again, this is not perceived to be negative in society’s eyes. Although media companies are purposely creating shows that form addictive habits in their viewers, few people seem to see a problem with it. Popular press articles largely encourage viewers to binge with promises of a better viewing experience (Riccio 2013). An easier understanding of characters, ability to find small plot developments and a more in depth analysis of show events are all reasons suggested in these articles.

What is also interesting is that companies seem to be unable to provide enough content for their users; the demand seems to have not been estimated to be this high. Due to the uncountable tastes and preferences of customers, there has yet to be too many shows on a platform such as Netflix. They are unable to overprovision their product, resulting in a never ending demand for more content from viewers (Lukas 2013). With new shows designed to appease media bingers, content will be viewed and finished faster than ever before. This is leading up to a great expansion in the internet media industry as well as the number of platform specific programs like House of Cards (Stelter 2013).

**Conclusions**

Our study has found preliminary support for theories of partner-like relationships, addiction, and dependence on media stimulation. Our results are based on three focus groups and a small number of written responses, and therefore must be subject to further empirical research in order to be generalizable. Our quantitative study is pending results as we gather an acceptable amount of responses. Respondent testimonials and discussions show clear attempts of media providers to turn their customers into addicts. Results support that these strategies are working, with the majority of those interviewed confessing to a show addiction (60%). Participants have also revealed a possible one-sided relationship with their favorite characters. We believe that these unconscious relationships are one of the primary reasons behind media bingeing tendencies. Findings also show that the lack of societal concern could be another main driver for those bingeing on television. With no negative public opinion, consumers feel invincible while indulging on media. We suggest that future research include further quantitative studies targeting these relationships felt between viewers and their fictional counterparts.

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**The susceptibility of an Impulse Consumer**

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*Abstract*

*Our research involved investigating consumer susceptibility to impulsive spending in a shopping environment and assessing whether their mood as well as other potential variables, affected their judgment at the point of purchase. The research objectives we hoped to accomplish was to see if mood truly does affect a consumer’s willingness to spend money that they originally did not intend on spending. In addition, we also hoped to discover whether a “pleasant” consumer is more willing to spend more money than an “unpleasant” consumer. Classifying “pleasant” and “unpleasant” consumers was made possible by using John Mayer’s “Brief Mood Introspection Scale” which separates sixteen different moods into these two categories.*

*Our data was collected using a combination of exploratory, descriptive, and causal research. This was put together in our survey that was administered to males and females over the age of 18 using a snowballing technique to obtain a minimum 200 responses. The survey items were created with responses tailored to a 7 point Likert-type scale to correctly measure the values from strongly disagree to strongly agree. The final questionnaire was made with 14 items measuring every independent variable in our conceptual model such as mood/mindset, demographics, and psychographics.*

*After administering the survey and analyzing the data, there were many findings that we were pleased to discover. As we hypothesized there is a positive correlation between a “pleasant” consumer and their willingness to spend more money. In addition to this finding, it was also found that “pleasant” consumers will be more susceptible to making impulsive spending decisions. One discovery that surprised us was when it came to our third hypothesis about certain variables such as gender, age, and income, possibly making a consumer more susceptible to impulse purchases. After looking at the results we concluded that because the level of significances for each of these variables data analysis, that there was absolutely no correlation between any of the factors we hypothesized affecting consumer impulsivity. This was a critical discovery because it not only proved a hypothesis wrong, but also shows how important the mood of a consumer is.*

*Based on these findings, we know that business owners need put a greater importance on situational influences that cause “pleasant” moods amongst their customers during their time at the store and at the point of purchase. One way to do this would be to put a greater emphasis on altering the layout of the store so that as soon as a consumer enters they are more likely to develop a “pleasant” mood. Another possibility could be the implementation of a thorough training regimen to all employees in order to make them more aware of how to make customers more likely to become in a “pleasant” mood and consequently spend more money during their time at the store. We have gathered from our research information that will be incredibly valuable to any client that is interested in knowing more about their target consumer’s buying habits and in return generating more money.*

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**Introduction**

When originally choosing the topic for our research one subject that appealed to both my associate and I was impulse purchasing. We agreed that more often than not we found ourselves leaving a store having purchased a product that going into our shopping experiences we had no intention or inclination of buying. That realization made us wonder why this was happening and what caused us to make such impulsive purchases? Is there one variable in particular that makes a consumer more susceptible to making impulse purchasing decisions in a store? Rather, is it a combination of factors that can be implemented in a store that will make an individual more susceptible to making an impulse purchase? These questions served as the basis of what we set out to answer through our research.

The information that we receive from this research will not only serve as a way to address our own curiosity but gives us knowledge that is highly beneficial to those who have careers in managerial and marketing fields. For instance if our research concludes that the location of a certain product is what makes an individual the most susceptible to making an impulse purchase, than a manager or marketer can use that information we provide and place products around their store in a way to provide as much customer spending as possible. Regardless of what the business is, the bottom line is always the same: making money. At the basic core our research gives answers on how to make more money and is invaluable to a company.

**Research Method and Procedures**

**Literature Review**

The hypothesis proposed by Richins that “emotion is viewed as a valenced affective reaction to perceptions of situations” (Richins 1997) is very important when approaching the managerial implications of our study. It tells us that a consumer’s mood is based off of perceptions of situations around them, if a manager could find a way to influence those situations, there might be a better chance of selling the product to the consumer. Using this hypothesis, and excluding results that come from interest, surprise, sleepiness, droopiness, self-confidence and abandonment, Richins assesses the range of emotions that are most frequently experienced in consumption situations.

After several attempts and procedures, it was evident that those consumption situations in which sentimental value of the product was evident, those consumption emotion sets emphasizing sentiment, showed greater predictive validity than those associated with negative feelings, such as anger or fear (Richins, 1997). This result helped us shape our hypothesis, and gave us the idea that products that give the consumer a feeling of sentimental value cause consumers to pay more money, and products that evoke negative feelings cause them to spend less.

The prior study done by Richins (1997) was very important towards our research as it gave a range of emotions involved with consumer spending. The study consists of 16 identifiable clusters that are comprised of 43 descriptors in total (items.) These descriptors identify a massive range of “emotions” from anger to happiness that assisted us when deciding which emotions to focus on with consumer spending. Richins (1997) gives us an idea of the most prevalent emotions present when a consumer purchases something.

Next, when determining our mood scale, we chose a “Brief Mood Introspection Scale: BMIS” (Mayer, 1988). This study presented mood as being comprised of two elements, the direct experience of the mood, and mood as a result of thoughts or feelings referred to in the study as the “Meta level”. This study separated 16 different moods into “pleasant” and “unpleasant” categories. For our research, we chose to construct our survey so that respondents were given items in the same order as Mayer’s study. We did this in order to stay as accurate as possible in regards to the scale.

Lastly in our literature review process, was finding a previously conducted project centered on consumer impulsivity to shape that aspect of our questionnaire. With this in mind we settled on Puri’s “Consumer Impulsiveness Scale: CIS” (Puri 1996). Puri’s objective in this research was similar to our own in which she was trying to determine in consumers impulsive decisions were determined by “chronic values or situational characteristics” (Puri 1996). Using this logic she developed a two factor method consisting of a “prudence” subscale composed of seven items, and a “hedonic” subscale, composed of an additional five items (Puri 1996). These same 12 items from her subscales were in incorporated into the first question in our survey (see Appendix 1) on a 7 point Likert fashioned scale, just as Puri had done in her research. With these sources we feel very confident that we sufficiently gathered secondary data pertaining to the variables established in our conceptual model and were able to use those to help shape our scales to provide us with extremely accurate and thorough results.

**Research Design**

For our research design, a variety of exploratory, descriptive, and causal research were used to collect and analyze our data. We used exploratory research as a means to gain a deeper understanding of our hypothesis, thoughts, feelings, and motivations of each respondent. Our most effective form of exploratory research was our literature review. During our literature review, we used multiple studies from the past that were similar to our study to develop scales, ideas, and better shape our research problem.

Descriptive data provides answers to who, what, when, where, and how questions. This data is important because it provides much needed answers to decision makers. We gathered our descriptive research using a detailed survey. By putting a majority of the questions on a scale, we were able to retrieve numeric data that analyzed each respondent by their purchasing behaviors.

Finally, we used causal research when designing our research questions to gather primary data. Oftentimes, we would ask the respondent, “When I am \_\_\_\_ (Happy, Sad), I tend to spend more money.” This question is an example of a cause and effect question. This type of research was extremely important to our study because it offered us an opportunity to assess and explain the cause and effect among moods and their impact on spending behavior.

**Sampling**

When collecting our data, we used non-probability sampling methods. The samples were collected based on convenience, using snowballing and our own judgment as a means to find participants. The target population for our study was male and females above the age of 18. In order to increase our number of respondents, we used primarily email, text messaging, and word of mouth to ask respondents to take our survey. Our desired sample size was determined primarily on previous research by Dr. Michael Pepe and his familiarity with the sample sizes typical with other research projects he had conducted at Siena College.

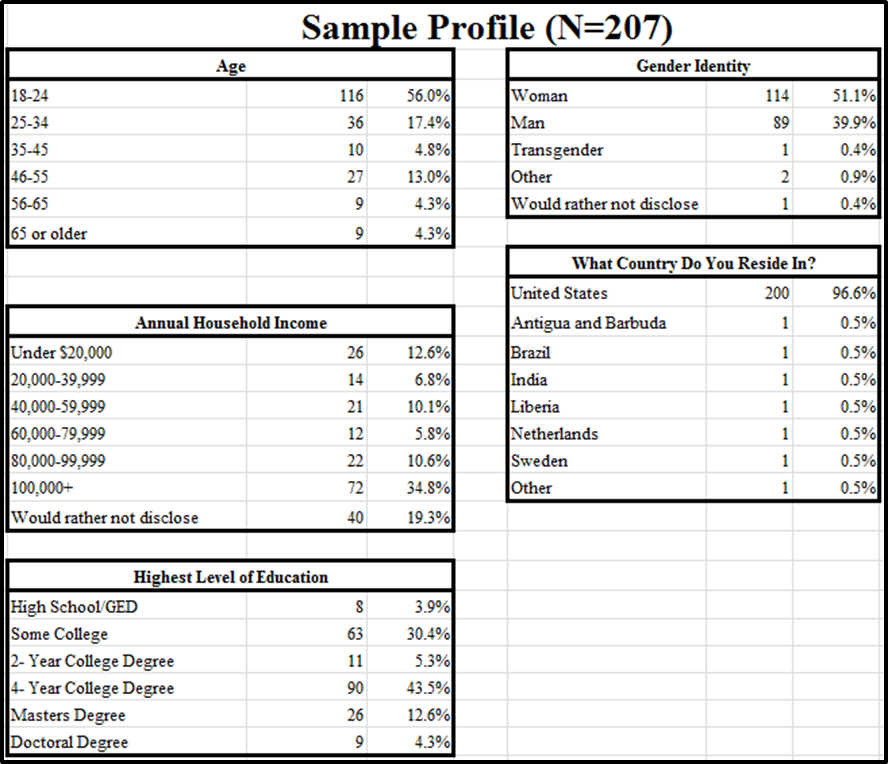
**Scales and Validation**

As stated above Puri’s “Consumer Impulsiveness Scale: CIS” (Puri 1996) was what we used to measure the impulsive behavior of our respondents. Since impulsivity was the dependent variable in this study, we wanted to make sure our results were as accurate as possible. One step we took to try and ensure this was using the same 12 items, in the exact same order as Puri. This was done with the hope that we would be able to use this previously conducted survey as a benchmark with our own research and not have to worry about whether the order of the items listed could have skewed the results in any way.

Secondly, using “Brief Mood Introspection Scale: BMIS” (Mayer, 1988) we narrowed down moods into two categories, “pleasant” and “unpleasant”. We modified this scale so that each mood, was covered by an individual item, and then measured on a 7-point Likert fashioned scale. The “pleasant”, and “unpleasant” moods were separated by a page break so that “pleasant” moods were addressed followed by “unpleasant” on the next page. The study done by Mayer is done in a similar fashion, splitting the “pleasant” and “unpleasant” categories when addressing respondents.

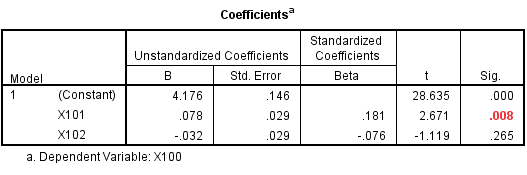
**Survey Design and Implementation**

Our survey consists of 9 items collecting a wide range of data including the CIS scale, the BMIS scale, causal research questions, descriptive research questions, demographics and screening questions. Determining the layout of the questions was done by modeling the scales used in our literature review, and previous experience from Dr. Michael Pepe.



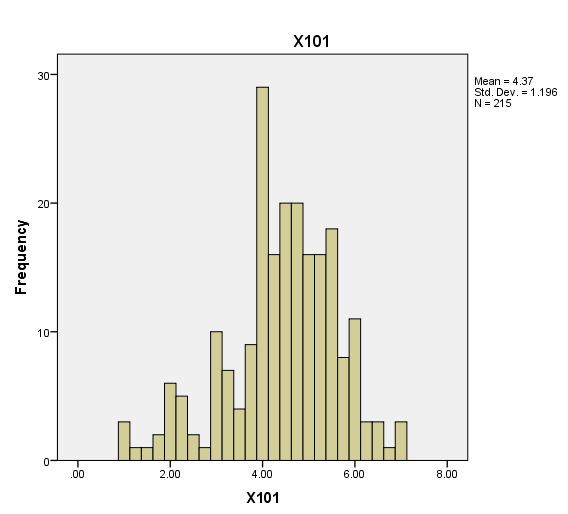
**Data Analysis and FIndings**

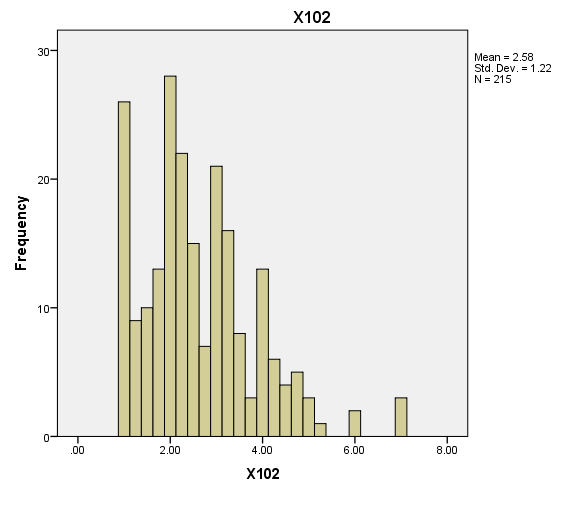
**Hypothesis**: “Pleasant” consumers will be more susceptible to making impulsive decisions compared to “unpleasant” consumers.



**Results:** As we hypothesized X101 (the “pleasant” consumers) are more susceptible to making impulsive purchasing decisions compared to X102 (the “unpleasant” consumers). This can be correlation can be seen through the level of significance shown above which is .008. For this test we set X100, Puri’s CIS, as the dependent variable and tested the means of X101 and X102 against X100.

**Hypothesis**: “Pleasant” consumers will spend more money than “unpleasant” consumers.

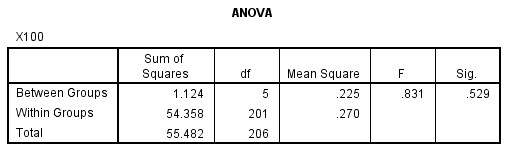




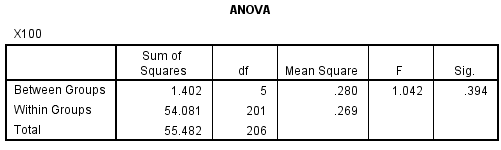
**Results:** According to the survey results, we do not fail to reject our hypothesis. Out of a 7-point scale, the “pleasant consumer” (X101) mean was 4.37. The “unpleasant consumer” (X102) mean was a 2.58. This indicates that a consumer who is “pleasant” is more likely to agree when asked if he or she would be willing to spend more money while shopping.

**Hypothesis**: Certain variables (education, age, gender, and income) make a consumer more susceptible to making an impulsive purchasing decision.

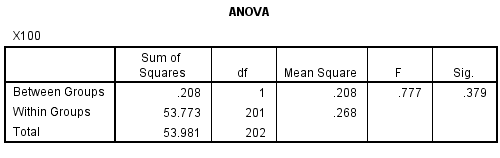
Education



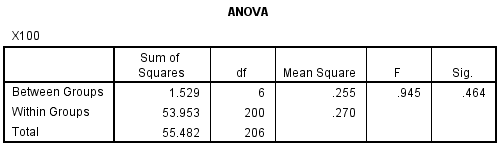
Age



Gender



Household Income



**Results:** Based on the level of significances for each of these four variables, there is no correlation between any of them and the likelihood that they would make a consumer more susceptible to impulsive purchasing decisions. This went against our initial beliefs.

**Conclusions and Recommendations**

The objective of this research was to analyze if our dependent variable, consumer impulsivity, was impacted by a number of different independent variables including mood and certain selected demographics. Though the results did not match up exactly with all three of our hypotheses, we still feel that there is great value in what was found in this research. The first of that being in regards to how much the mood of a consumer affects not just impulsive purchases, but in fact consumer behavior as a whole.

As shown above in the *Data Analysis and Findings,* we were able to come to two different conclusions about how mood impacts consumers. The first finding of great significance was that “pleasant” consumers are more susceptible to making impulsive purchasing decisions, compared to an “unpleasant” consumer. This conclusion is based on and justified by the level of significance, which came out to be .008. The second finding that we found to be important states that “pleasant” consumers are willing to spend more money compared to “unpleasant” consumers. This was found as a result of comparing the two means of the “pleasant” and “unpleasant” consumers. As a result of the mean for the “pleasant” consumers being higher than that of the “unpleasant” it can be concluded that a “pleasant” consumer is more likely to agree to spending more money when shopping. Obtaining these answers was critical for us as researchers because it not only pertained to our objective, but also points us in the right direction for making recommendations based off of our results.

Our data shows that compared to demographics which had no correlation with impulsivity, mood is one of the biggest drivers for consumer behavior. With this knowledge we can now start to look into what these would mean for a business more specifically how they could ensure that customers in the store are most likely to become in a pleasant mood while in the store and at the point of purchase. One example of an industry that already exhibits this sort of behavior for attracting customers are supermarkets. It is certainly not by accident that the first scent that enters a patron’s nose upon entering the store is of fresh made baked goods. Regardless if the customer notices the smell or not, subliminally, when they now think about that store, that supermarket has increased their chances of being thought of as a pleasant place, merely based off of the warm aroma that they deliberately placed close to the door. This same principle is what we highly recommend more stores look into. Based off our research, we can confidently say that if a store inhibits customers into a pleasant mood, they in return increase their chances of that customer impulse buying, and spending more money.

Our recommendation to managers would be to educate themselves more with situational influences and as well as implement variables around their store to try and promote “pleasant” feelings amongst consumers. This would mean to set up the store with bright and lively colors as well as upbeat music to keep the customer feeling “pleasant” leading to more sales. We would also recommend a very thorough and precise training method for all employees in order to teach them to interact with consumers to try and inhibit that “pleasant” sense of personability. This would include protocol on greeting the customer, helping them through the store, and giving recommendations to various products and services.

**Managerial IMplications, Limitations, and Future Research**

**Managerial Implications**

For almost all businesses the bottom line is the same and that is to make the most money. We recognized this and realized that if we were to conduct research that could give a manager the knowledge on how to make more money, than we would have a successful project. This thought process is what eventually lead us in choosing to examine what makes a consumer more likely to impulse spend upon entering a store. One of the main reasons that we decided on this topic is primarily for how significant we believe the managerial benefits are from gaining further insight into this topic. After running our data and analyzing the results, our research shows a depiction of how truly affected a consumer’s behavior, specifically their spending habits and impulsivity can be by their moods. Obtaining these answers gives us the opportunity to present this information to a company’s decision makers which will in return give those decision makers the chance to implement our findings in their store to try and generate as much money as possible.

**Limitations**

Even though we took every step possible to help ensure that our research was done as accurately and as thoroughly as possible, there were certain limitations that could not be avoided. Though we firmly believe that none of these limitations majorly prohibited or constrained the outcome of our research, they are still necessary to address for future research purposes. Some of the limitations include:

* *Time constraints* - we are completely confident that the work we completed during the thirteen weeks was the absolute best that we could have done with the given amount of time however we are also confident that having more time to complete the project would have resulted in further discoveries as to the susceptibility of an impulse consumer.
* *Participant responses*- Although we obtained our goal of having at least 200 participants take our survey, 200 people is still a rather small sample. Increasing the amount of responses may have lead to different and perhaps more thorough results.
* *Lack of respondent diversity*- Due to our means of distribution many of our respondents were most current college students within the same age demographic. Broadening the respondents demographics could give further insights as to what makes consumers impulse buy the most.
* *Survey Compatibility*- Our survey was posted on a website (Qualtrics) that can sometimes be hard to use on a phone. If a respondent opened the survey on their phone they may have not been able to complete it due to compatibility or because the formatting made completing the survey difficult and they became frustrated. This may be one of the leading reasons as to why our incidence rate was not 100%.
* *Item Wording*- Even though almost all our items were sourced from scholarly references, as with anything, the wording and meaning of all items are up to the interpretation of the respondent and their perception of a question or word could have been different than what we intended.

**Future Research**

As we hypothesized and our research concluded, a “pleasant” consumer is not only willing to spend more money compared to an “unpleasant” consumer, but also more susceptible to making impulsive purchasing decisions. Getting these answers is important because it not only gives us the opportunity to present this to a manager, but in fact gives us foundation for what direction our future research could go. As previously mentioned “emotion is viewed as a valenced affective reaction to perceptions of situations” meaning that the mood of a person **can be** influenced by outside forces (Richins, 1997). Our next step as market researchers would be to gain insight into exactly what those outside forces are and how a manager could implement them into a store. This could be done by examining the phenomenon of situational influences. It has already been shown that situational influences such as purchase task, social surroundings, physical surroundings, temporal effects, and antecedent states play a role in impacting consumer purchasing decisions (Kerin, 2013). Using this as a basis of rationale we would next look to learn the most effective ways for business to inhibit a “pleasant” mood amongst their patrons. Discovering how to make a consumer more likely to be in a pleasant mood upon entering a store gives us the opportunity to say to a manager, “we know what consumers will spend the most money in your store AND we know how to ensure your store does everything it can to attract these customers as best as possible”, and that information is extremely valuable.

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**THE EVER-PRESENT TEMPTATION OF SOCIAL MEDIA: COLLEGE STUDENTS’ FEAR OF MISSING OUT AND SELF CONTROL**

***Sarah Burr, Siena College***

***Cheryl Buff, Siena College***

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***Abstract***

*Social media allows everyone to broadcast personal information that would have otherwise been privy. Individuals (particularly college students) are susceptible to feelings of being left out when viewing the social media posts of others. This concept is known as the fear of missing out, or the acronym FOMO. The present research compares the relationship between a behavioral measure and a psychological measure of FOMO. Measures of FOMO are also compared against social media habits and behaviors. Lastly, the relationships between FOMO and the psychological factors of self-control and self-presentation are explored.*

*A survey was distributed to 201 participants, primarily college students. Results supported the hypothesis that there was a correlation between behavioral and psychological FOMO. Length of time spent on social media is statistically significant in relation to only psychological FOMO. Frequency of checking social media is statistically significant in relation to only behavioral FOMO. Both behavioral and psychological FOMO have a moderate, inverse relationship to self-control. Lastly, only behavioral FOMO has a moderate, positive relationship to social media self-presentation. Implication of the results and direction for future research are discussed.*

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**Introduction**

For today’s younger generation, it is becoming increasingly harder to imagine a time when cell phones were not a prevalent part of social life. Whether positively or negatively, mobile devices are affecting the way in which individuals interact with each other. Previously, mobile devices were used strictly for simple phone calls and perhaps text messaging. With the introduction of the Internet on mobile devices, users can constantly be connected to not only their own personal life, but also the lives of all on social media sites. In a Nielson study (2014), half of smartphone owners visit social media sites on their mobile devices daily. In addition, mobile social media app usage increased 37% from the prior year (Nielson 2014). Communication without barriers has made individuals today to feel that no matter their efforts, they will always be “missing out” on something that their peers are involved in.

This “fear of missing out,” otherwise known as the increasingly famous acronym FOMO, can be defined as the “pervasive apprehension that others might be having rewarding experiences to which one is absent, and is characterized by the desire to stay continually connect with what others are doing” (Przybylski et al., 2013, p. 1841). From this formal definition, FOMO can also be characterized by an uneasy and all-consuming feeling that one is missing out (JWT Intelligence, 2012, p. 4). Though FOMO is not necessarily a concept that came about solely due to the introduction of Internet-enabled mobile devices, constant connection has definitely amplified this psychological concept.

**Social Media**

The influence of social media sites on communication today is immense. Social networking has become common practice and perhaps the easiest way to communicate with others. The emergence of mobile social media sites now allows virtual communities to not be restricted by spatial boundaries. Mobile broadband communications and smartphones provide a bridge from the physical world and the wealth of information on the Internet. Mobile phones enabled with social media sites can reconnect the user’s virtual community in a physical sense (Zhang, 2013, p. 92). Considering this, it is becoming increasingly harder to imagine a culture where social media sites are not always present. For this present research, we will focus on social media sites that are most popular with the millennial generation and provide a platform for personal information sharing. Facebook, Twitter, and Instagram have revolutionized the way that college students today use technology to communicate the activities of their lives (Duggan & Smith, 2013, p. 4-6). Other sites, such as sites as Pinterest, LinkedIn, and Google+ are also used; however secondary research focused on the most popular social media sites as a measure of total number of younger users.

Facebook can still be considered the overall leader in terms of popularity (Duggan & Smith, 2013b, p. 1). Out of the 829 million daily active users of Facebook, 654 million of those users are active on a mobile device (Company Info 2014). As of 2013, 71% of online adults are Facebook users making it the dominant social media site. In addition, Facebook remains the most popular among a diverse group of demographics in ways in which other social media sites are not (Duggan & Smith, 2013, p. 13). However, there is an apparent shift in social media sites, as others options are increasing in popularity as well.

The landscape of social media sites are changing beyond the format of Facebook sites. Twitter is a social media site with a simple mission “to give everyone the power to create and share ideas and information instantly, without barriers” (About Twitter, 2014). This site allows users to create 140 character “tweets” to send out to their followers. There are 271 million monthly users of Twitter, 78% of which are also active on mobile devices (About Twitter, 2014). In addition, 29% of millennials, ages 15-34, use Twitter (Smith, 2014). In some sense, Instagram can be considered the visual version of Twitter. Instead of self-expression through copy, users can post and edit pictures with various effects. As of April 2014, teens ranked Instagram as the most important social network, followed by Twitter and then Facebook (MarketingCharts staff, 2014). With 200 million monthly active users currently, the number of users has nearly doubled in the past year proving that Instagram is making a name for itself (Bennett, 2014). These statistics show how the landscape of social media sites is undoubtedly changing.

**Fear of Missing Out**

The popularity of social networking has brought the acronym “FOMO” to the spot light. FOMO or “fear of missing out” is defined by an uneasy feeling or constant anxiety that you are missing out. This uneasy feeling could be attributed to missing out on what others are doing, what others know about, or even what others possess in comparison oneself (JWI Intelligence, 2012, p. 4). Social angst toward missing out has always existed, but with real-time digital updates from social media sites, anxieties are at an all-time high. Sarah Miller said it best when she stated that “Social media is kerosene to FOMO’s fire” (Miller, 2012).

Given that the scholarly research available for FOMO as a concept is scare, one of the leaders in the development of FOMO research has been Andrew Przybylski et al. (2013), who focused on establishing an empirically based understanding of FOMO. He drafted a scale to reflect the fears, worries, and anxieties of that an individual may experience in social situations thus creating a scale to measure FOMO. Using the scale to calculate experiential and behavioral FOMO score, this research determined that higher levels of FOMO lead to lower overall mood and life satisfaction. Also, the urge to check social media sites transcended into unacceptable behavior. Those who reported to be high in FOMO were more likely to use Facebook during a university lecture or while driving (Przybylski et al., 2013, p. 1847).

Concurrently to Przybylski’s et al. (2014) development of a FOMO scale, Abel (2013) and then further improved by Abel et al. (2014) were also researching the design of a scale to measure FOMO. Through secondary research, it was postulated that someone higher in the psychological indicators of feelings inadequacy, anxiety, and irritability and lower in self-esteem would also have high FOMO. Through review and selection of extant scales, a scale was proposed and tested to measure psychological FOMO. The specific extent scales used were Feelings of Inadequacy Scale, a shortened 6 item version of the State Trait Anxiety Inventory and the Irritability Questionnaire. Also the Self-Esteem Scale by Rosenberg was selected (Abel et al., 2014, p. 384-1). Conversely to Przybylski et al. (2014) which created a scale to measure behavioral and experiential FOMO, the scale created by Abel et al. (2014) measures the psychological FOMO.

Compulsivity of checking social media sites is a concept that appears relational to the degree of FOMO in an individual. The adoption of mobile devices in recent years has made it only easier to be connected at all time. As stated by Hato (2013), “this phenomenon is ascribed to the fundamental human need for being connected with our social environment any time without physical constraint” (p. 3). It has been established that adolescents with higher FOMO tendencies often check their smartphone subconsciously (Rosen, 2012). Hato examined the extent to which people engage in checking their smartphone out of FOMO. It was determined that those who agree more strongly to regularly checking their phone out of FOMO will also check their phone more frequently (Hato, 2013, p. 34). Also, those who experience high levels of FOMO are more likely to use their smartphone, even if already involved in another activity (Hato, 2013, p. 35). Lastly, the assumption was supported that people who fear missing out on rewarding experiences and activities also check their phone regularly (Hato, 2013, p. 35).

As noted before, scholarly research around the FOMO concept is scarce. However, many viral and Internet publications have been published about the “FOMO” crisis. An article in the New York Times describes how one’s own posting on social media can generate FOMO in another unsuspecting person (Wortham, 2011, p. 2). Caterina Fake, the co-founder of the photo-sharing service Flickr, stated “Social software (social media) is both the creator and cure of FOMO... it’s cyclical,” (Wortham, 2011, p. 2). It is becoming increasingly harder to escape a sense of FOMO today.

Secondary research brought us to consider that FOMO may spark two types of behaviors in college-aged social media users. First, there is the possibility that individuals use social media to help curb their feelings of missing out. In other words, those with higher degrees of FOMO are more likely to check social media sites because they wish to be “in the know.” Conversely, individuals with higher degrees of FOMO may also wish to stay detached from what they are missing out on, thus this fear leading them to avoid logging onto social media sites. Both situations are plausible, and will be addressed in the present research.

**Self-Control**

All individuals have the capacity to exert a degree of self-control in the situations they are presented with. Self-control can be defined as “the ability to override or change one’s inner responses, as well as to interrupt underside behavioral tendencies (such as impulses) and refrain from acting on them,” (Tangney et al., 2004, p. 274). From this definition, having self-control is a positive characteristic because it generally indicates refraining from automatic responses or behaviors. Altering states or behaviors reflect the ability of self-control, and a scale has been developed to measure this characteristic in an individual. Baumeister & Heatherton (1996) identified four major domains of self-control which they considered important to include in the measure of self-control – they are controlling thoughts, emotions, impulses, and performances. Through practicing control of these four measurement concepts, it can be assessed how likely an individual will practice restraint (Baumeister and Heatherton, 1996, p.4).

Internet enabled cell-phones have been increasingly associated with impulsivity and addiction, specifically for social media sites. It is undeniable that cell phone use has increased in recent years. In April 2009, only 31% of cell phone owners used their phones for internet or email. As of May 2013, 63% of cell phone owners use it for this purpose (Duggan & Smith, 2013a, p. 4). Billieux et al. (2008) established a Problematic Mobile Phone Use Questionnaire that measured uncontrolled mobile phone use on the basis of measuring self-perceived dependence. The purpose of this questionnaire was to determine what extent self-control has to do with mobile phone usage interfering with actual social activities. Findings of this study confirmed that increased actual use of mobile phone is related to components of impulsivity. In addition, high urgency and low perseverance are significant predictors of dependency on mobile phones (Billieux et al., 2008, p. 1205). Similarly, checking a mobile phone can be considered a “guilty pleasure” in the sense that it offers a smaller, earlier reward in contrast to delayed gratification (Panek, 2014, p. 563). Self-control has proven to greatly predict social networking sites usage, specifically in students who should otherwise be doing school work (Panek, 2014, p. 570). Overall, an individual’s degree of self-perceived self-control and FOMO in regards to social media site usage should be further examined, as is a purpose in the present research.

**Self-Presentation**

Individuals have always been conscious of the way in which they are presented to others. Impression management is another term that is used for self-presentation. Leary (1996) defined this as “the process by which people convey to others that they are a certain kind of person or possess certain characteristics” (p. 34). To a certain extent, behavior is constrained by our concerns with the impressions others have (Leary, 1996, p. 34). For the millennial generation, others’ impressions can conflict with their identity formation, which is still occurring. Sociologist Marc A. Smith notes that young people are more engaged in identity formation and focus on the influence of others (JWI Intelligence, 2012, p. 11). According to a 2012 study, about 67% of adult millennials believe that it is important that social media sites profiles convey a certain image of oneself (JWI Intelligence, 2012, p. 8). While self-presentation has always been a concern of individuals, the influence of social media sites is something that will be investigated more in this study.

Examples of self-presentation in social media sites today include the basic functions of profile/site pictures, status updates, and uploading images and videos. Recent research shows that psychosocial well-being, self-efficacy and personality are associated with online self-presentation (Michikyan et. al, 2014, p. 179). Furthermore, recent research suggests that youth present their “self” in a variety of ways: the real self, the ideal self or the false self (Michikyan et al., 2014, p. 180). In other words, these variations of “self” can be an accurate representation, a wishful representation, or a not fully truthful representation. In combination, social media allows a platform for the exploration of self-presentation, no matter which “self” the individual choses to present. In the present research, the relationship between self-presentation will be examined in social media setting in regards to FOMO. Individuals may tend to post “highlights” of their lives, as to create a more positive impression of their lives. This raises the question, are people self-presenting in a way on social media in order to somehow “spark” FOMO in others?

A purpose of this present research is to create a scale that measures social media self-presentation through behaviorally orientated items. The behavioral questions were drafted and derived from 2 extant scales. Michikyan et al. (2014) examined links between neuroticism, extraversion and presentation of the self of Facebook. With this study, the Self-Presentation on Facebook Questionnaire was created. Though this scale was not provided publically, some questionnaire items were given as example questions (Michikyan et al., 2014, p. 180). Secondly, Lennox and Wolfe (1984) provided a Revised Self-Monitoring Scale based off of Snyder’s 1974 Self-Monitoring scale. Basic concepts of self-presentation, social comparisons, and self-monitoring were used from this study to help established behavioral questions (Lennox & Wolfe, 1984, p. 1362). The review of extant scales and use of past research were collaborated to create items that are postulated to measure social media self-presentation and to create a “Social Media Self-Presentation” scale in the present research.

**HYPoTHeSIS DEVELOPMENT**

The primary goal of the current research was to measure FOMO in college students and evaluate their FOMO scores in relation to other psychological and social behavior. Specifically, the relationships of self-control, social media self-presentation, and general social media use tendencies are of interest. Accordingly, the following hypotheses are proposed to explore these relationships.

Przybylski et al. (2013) and Abel et al. (2014) created scales that measure FOMO as a construct. These scales have been operationalized and used to explore FOMO more completely. As both scales purportedly measure the same construct, we wish to explore the relationship that exists between them. Przybylski et al. (2013) created a scale to measure behavioral FOMO while Abel et al. (2014) creates a scale measuring psychological FOMO. It is expected the scales will be significantly correlated in a positive direction. Thus, an individual with a high FOMO for the Przybylski et al.(2013) scale will also have a high FOMO score for the Abel et al. (2014) scale. Therefore:

H1: There will be a significant and positive relationship between behavioral FOMO as measured by Przybylski et al. (2013) and psychological FOMO as measured by Abel et al. (2014).

The psychological concept of deficient self-regulation and media addictions emerging from Internet use is a timely issue. Deficient self-regulation is defined as lapses of self-control that can be associated with unregulated media behavior (Tokunga, 2012, p. 14). Social media sites offer an escape and satisfy entertainment and information needs. Due to this dependency for information that an individual with FOMO has, it can be assumed that they would get absorbed and spend a large amount of time on social media site. This not consistent with the findings of Abel (2013), who found that there was no significant difference in duration of time spent on social media and levels of FOMO. However, exploring this possibility with a new sample will be of interest. Notwithstanding Abel (2013), we hypothesize that:

H2a: Individuals who use social media for longer periods of time on a daily basis will have higher behavioral FOMO as measure by Przybylski et al. (2013) than those who use it for less time daily.

H2b: Individuals who use social media for longer periods of time on a daily basis will have higher psychological FOMO as measured by Abel et al. (2014), than those who use it for less time daily.

The term FOMO is characterized by the fundamental human need to be connected with our social environment without any physical constraint (Hato, 2013, p. 35). With this generation’s dependency on mobile phones enabled with social media applications, checking social media sites has never been easier. The overall checking behavior of people who checked their phones out of FOMO also checked their mobile phones more frequently in general (Hato, 2013, p. 35). Abel et al. (2014) found there to be a significant relationship between frequency of checking and FOMO. We seek to replicate earlier findings and hypothesize that:

H3: Individuals who check social media more frequently will have higher behavioral FOMO as measure by Przybylski et al. (2013) than those who check less frequently.

H3: Individuals who check social media more frequently will have higher and psychological FOMO as measured by Abel et al. (2014), than those who check less frequently.

Self-control is the ability to override or change one’s inner responses as well as to interrupt undesired behavioral tendencies and refrain from acting on them (Tangney, 2004, p. 274). The concept of self-regulation also comes into play with social media use, as individuals can often act on impulses and check social media sites often. It was determined that college student’s self-control is negatively associated with amounts of leisure media use (Panek, 2013, p. 569). Based off this conclusion, checking social media is often due in part to fulfilling a guilty pleasure.

The use of smartphone causes social media sites to seamlessly accompany people at anytime and anywhere. That being said, when people feel FOMO, they have cell phone that are social media site enabled in their pocket. The most common way that people alleviate FOMO is to go on Facebook (JWI Intelligence, 2012, p. 39). Based on the availability of social media sites, someone who has low self-control will not be able to restrain his or herself when they feel FOMO. Thus we hypothesize that:

H4: Individuals who have a higher behavioral FOMO as measured by Przybylski et al. (2013) will have low general self-control. There will be an inverse relationship between self-control and behavioral FOMO.

H4: Individuals who have a higher psychological FOMO as measure by Abel et al. (2014) will have low general self-control. There will be an inverse relationship between self-control and psychological FOMO.

Self-presentation is crucial in social media sites because they are used to manage impressions toward others and shape relationships (Hong et al., 2012, p. 340). The information that people upload on their social media sites can be identified under two personality claims. The first is identity claims, symbolic declarations that individual make in order to convey how they would like to be seen. Secondly, behavioral residue refers to the inadvertent cues left by one’s behavior. People make personality judgment of a person based on the elements that are placed on social media sites. Both identity claims and behavioral residue produce how an individual presents his or herself on social media (Hong et al., 2012, p. 340).

It is rare that self-presentation is anything but positive, as “it is unthinkable in most instances for someone to create a negative self-presentation” (Hong et al., 2012, p. 340). Young adults with high neuroticisms may present the self on Facebook to show who they want to be and use social comparisons to impress others to a greater extent. Neuroticism is characterized by many of the same personality dimensions of FOMO – anxiety, fear, frustration, and jealousy (Michikyan et al., 2014, p. 180). Therefore, it can be hypothesized that those who exhibit feelings of FOMO will be more concerned about their presentation on social media:

H5: Individuals with higher behavioral FOMO as measured by Przybylski et al. (2013) will have a higher social media self-presentation score. There will be a positive relationship between concern with behavioral FOMO and social media self-presentation

H5: Individuals with higher psychological FOMO as measured by Abel et al. (2014) will have a higher social media self-presentation score. There will be a positive relationship between concern with psychological FOMO and social media self-presentation

**Methodogoly**

**Survey Development**

As noted, Przybylski et al. (2013) led a large-scale, international study to create a scale that measures FOMO. A three-part study, Przybylski et al. (2013) attributed FOMO to self-determination theory, or the human need to satisfy competence, autonomy, and relatedness. It is believed that relationships between these basic needs and social media engagement can be linked by FOMO (Przybylski et al., 2013, p. 1841). The goal of this study was to operationalize the construct of FOMO, to which a 32-item scale was drafted, which reflects the fears and anxieties than can produce modern-day FOMO. This was later reduced into a final 10 item scale, measured on a 5 point Likert Scale with verbal anchors:1 = “Not at all true of me”, 2 = “Slightly true of me”, 3 = “Moderately true of me”, 4 = “Very true of me”, 5 = “Extremely true of me” (Przybylski et al., 2013, p. 1847) . This scale is used to measure behavioral/experiential FOMO in this present research.

Concurrent to Przybylski et al. (2013) establishing a FOMO scale, Abel (2013) was doing the same, however on a more psychological level. Abel et al. (2014) argued that those who experience FOMO are experiencing irritability, anxiety, inadequacy and self-esteem issues. These psychological components were deemed as the most relevant to measuring FOMO. Extant scales were used, including the Feelings of Inadequacy Scale, shortened State Trait Anxiety Inventory, the Irritability Questionnaire, and lastly the Self-Esteem Scale. After combing these scales and evaluating them, a 37-item scale was proposed to represent FOMO, which was later reduced to 10 items. These items were assessed using an 8-point Likert-Type scale, verbally anchored with “Never” to “Always” (Abel, 2013). The scale was subsequently reevaluated and reworked. Consistent with scale development approaches, Abel et al. (2014) eliminated items that loaded strongly across multiple components and eliminated factors with poor reliability. A final analysis resulted in a 3 factor solution, which included the factors assigned “Sense of Self/Self-Esteem,” “Social Introversion/Introversion-Extroversion” and “Social Anxiety” (Abel et al., 2014). After this the reworking of this data, a stronger measurement of FOMO was determined. For this present study, the scale established by Abel et al. (2014) will be used to measure psychological FOMO.

The self-control scale used was the Brief Self-Control Scale; an extant scale to measure self-control was established with 93 items encompassing all the spheres of self-control failure (Tangney et. al 2004). Specific topics that were covered in the review include control over thoughts, emotional control, impulse control, performance regulation, and habit breaking. From the original 93 items, the scale was reduced to 36 items, and then finally the Brief Self-Control Scale was established with 13 items. The items are assessed using a 5 point Likert scale with verbal anchors of “Not at all” to “Very Much” (Tangney et al., 2004). As indicated, this is the scale that will measure self-control in this present study.

Self-presentation questions were drafted from secondary research and extant scales with the purpose of creating a scale to measure Social Media Self-Presentation. Self-Presentation on Facebook Questionnaire by Michikyan et al. (2014) and Revised Self-Monitoring Scale by Lennox & Wolfe (1984) were the extant scales that were used to assist in developing a Social Media Self-Presentation Scale. Ultimately 10 questions were included, with one eliminated due to consideration prior to scale analysis. The first 5 items were asked on a 7 point Likert-type scale with verbal anchors of “Strongly agree” to “Strongly disagree.” The following 4 items were asked on a 7 point Likert-type scale with verbal anchors of “Never” to “Always.” The intent of creating this scale was to measure self-presentation behavior on social media sites in this present study. The data was in fact acceptable for factor analysis (KMO = .778, p = .000)

Lastly, in order to examine the actual usage of social media sites, a variety of questions were asked of the participants. These questions consisted of how often and for how long individuals go on certain social media sites. The social media sites that were chosen for analysis came from a Pew Research Study of the most popular social media sites (Duggan & Smith, 2013b, p. 1). In addition, demographic questions were asked. These included gender, level of education, age group, and GPA range.

**Distribution**

A pretest was distributed a class of undergraduate students in a private Northeast college (n=22) in a pen and paper format. Debriefing was used to assess survey clarity and design. After generally positive feedback and no refined changes, the survey was then distributed to larger populations. The survey was implemented in the online survey tool, Qualtrics. The survey was distributed through social media platforms, personalized e-mails, general mass e-mails, and through a campus-wide newsletter. It was also encouraged to share the survey link with others. Though no incentive was given, it was made known that results would be helpful and vital for the sake of the research. Thus, a convenience sample of primarily college students, as the target demographic of the study, was employed. There was a total usable 201 respondents for final data analysis out of the total 337 respondents that clicked on the survey link but may have not completed it.

**Social Media Self-Presentation Scale Development**

The 9-items purported to measure self-presentation on social media site were assessed using factor analysis. Principal components analysis and an orthogonal rotation using Varimax were used to evaluate the 9-items. Factors loading below .3 would not be considered, however all loaded stronger than this. The final analysis resulted in a 2 factor solution, and consistent with scale development guidelines, the factors that had Eigenvalues over 1 were accepted. The first factor performed very well and the second factor performed moderately well, both with Cronbach’s alpha above or near Nunnally’s suggested 0.70 (Nunnally, 1978). Specifically, Factor 1 which we labeled behavioral self-presentation had 7 items and Cronbach’s alpha of 0.82. Factor 2 which we labeled self-presentation honesty had 2 items and a Cronbach’s alpha of 0.68. Since the items loaded correctly on 2 components and were internally consistent, these 9 items can be postulated to measure Social Media Self-Presentation and be used as a scale.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| *Component* | Initial Eigenvalues | | | Extraction of Sums Squared | |
| Total | % of Variance | Cumulative % | Total | % of Variance |
| 1 | 3.548 | 39.424 | 39.424 | 3.548 | 39.424% |
| 2 | 1.610 | 17.888 | 57.312 | 1.610 | 17.888 |
| 3 | 0.973 | 10.813 | 68.125 |  |  |
| 4 | 0.672 | 7.469 | 75.594 |  |  |
| 5 | 0.593 | 6.588 | 82.182 |  |  |
| 6 | 0.551 | 6.119 | 88.182 |  |  |
| 7 | 0.407 | 4.522 | 92.823 |  |  |
| 8 | 0.369 | 4.103 | 96.926 |  |  |
| 9 | 0.277 | 3.074 | 100.00 |  |  |

**Reliability of Scales**

In addition to analyzing the new Social Media Self-Presentation scale, analyzing internal consistency of the other scales was conducted. According the Przybylski et al. (2013), the behavioral FOMO scale had strong internal consistency with a Cronbach’s alpha coefficient reported of 0.87. In the current study, a Cronbach’s alpha coefficient of 0.90 was reported. In the Abel et al. (2014) study, the psychological FOMO scale had good internal consistency. Loading on three components, the internal consistency of social interactions/introversion component had a Cronbach’s alpha coefficient of 0.69, social anxiety with a Cronbach’s alpha coefficient of 0.85 and sense of self/self-esteem with a Cronbach’s alpha coefficient of 0.88 (Abel et al., 2014).In the present study, there was an improvement of internal consistency, as the social interactions/introversion component has a Cronbach’s alpha coefficient of 0.88, social anxiety with a Cronbach’s alpha coefficient of 0.96 and sense of self/self-esteem with a Cronbach’s alpha coefficient of 0.88. According to Tangney et al. (2004), the Brief Self-Control Scale had strong internal consistency with a Cronbach’s alpha coefficient of 0.83. In the current study, the Cronbach’s alpha coefficient was comparable at 0.82. All scales proved to be internally consistent with the present study’s sample. To operationalize each measure, a score for each scale was created by summing individual scale items for each participant for each scale. Therefore, each of the 201 respondents has a Przybylski FOMO score, an Abel FOMO score, a Self-Control score, and a Social Media Self-Presentation score.

**Results**

As noted, primarily college-aged students were the target participant for this survey. There was a 2:1 ratio of female to male respondents in the current survey, which was somewhat higher than the distribution of the sample population. Most of the participants of the survey were within the four standard years of college education, with about 9% either graduate school or not in school. A greater majority came from either the junior or senior class years. That being said, 91.4% of the participants were between the ages of 18 and 22. Lastly, the most common GPA was between 3.5 and 3.89, with the about 76% of the respondents having a GPA over 3.0.

The frequency of checking social media tended stay between 1 and 19 times a day. The largest bracket of time is 1-4 times a day, and 54.8% of respondent check under 10 times a day. Additionally, it must be examined how long individuals use, view, and participate in social media each time they log on. The majority of respondents, 75.6%, stated that they use social media for under 10 minutes. Furthermore, an even greater majority of 91.5% check for less than 20 minutes when they use social media.

Facebook appears to be the most popular social networking site, with about 60% of the respondents checking it at least 1-4 times a day. Twitter is the next most popular, followed closely by LinkedIn and Instagram. Myspace is barely used at all. For the most part, if an individual checks a certain social media platform, it will be between 1 and 9 times a day.

**Hypothesis 1**

The relationship between behavioral FOMO as measured by Przybylski et al.(2013) and psychological FOMO as measured by Abel et al. (2014) was investigated by using Pearson product-moment correlation coefficient. Preliminary analysis were performed to ensure no violation of the assumption of normality, linearity, and homoscedasticity. There was a medium, positive correlation between the two variable (r =0.46, n=201, p <0.005) with higher levels of behavioral FOMO associated with higher levels of psychological FOMO. The correlation coefficient is 0.463, proving to be statistically significant (p < .005). This correlation coefficient is moderately strong, according to Cohen’s (1988) effect size, measuring the strength of relationship between the two variables. The R2 value is 0.214, showing the variation in one FOMO scale accounts for 21.4% of variation the other FOMO scale.

Correlation between Przy\_FOMO and Abel\_FOMO

|  |  |  |  |
| --- | --- | --- | --- |
|  | | Total\_Abel\_FOMO | Total\_Przy\_FOMO |
| Total\_ Abel\_ FOMO | Pearson Correlation  Sig (2-tailed)  N | 1  200 | 0.463\*\*  0.000  200 |
| Total\_Przy\_FOMO | Pearson Correlation  Sig (2-tailed)  N | 0.463\*\*  0.000  200 | 1  200 |

Our hypothesis is supported, that individuals will score similarly when measuring behavioral and psychological FOMO. To evaluate the way in which FOMO relates to each of these variables, both the Przybylski et al. (2013) behavioral FOMO scale and Abel et al. (2014) psychological FOMO scale will be used separately in the analysis process for each of the following hypotheses. We wish to see if there is a difference between respondent’s behavioral and psychological FOMO in regards to the following research questions. For ease of comprehension in the result section, the total scores for Przybylski et al. (2013) FOMO scale will be referred to as Przy\_FOMO and the total scores for the Abel et al. (2014) FOMO scale will be referred to as Abel\_FOMO

**Hypothesis 2**

2A.) Przy\_FOMO and Length of Time on Social Media

An ANOVA was used to assess the relationship between behavioral FOMO and length of time spent when logged onto social media, using Przy\_FOMO scores. There was no statistically significant relationship between behavioral FOMO and time spent logged on to social media (F=0.984, p = 0.376). We will fail to accept the hypothesis that behavioral FOMO will be higher for those who check social media sites more often.

Analysis of Variance – Przy\_ FOMO and Length of Time

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Sum of Squares | Df | Mean Square | F | Sig. |
| Between Groups | 136.753 | 2 | 68.377 | 0.984 | 0.376 |
| Within Groups | 13684.747 | 197 | 69.466 |  |  |
| Total | 13821.500 | 199 |  |  |  |

2B.) Abel\_FOMO and Length of Time on Social Media

Similarly, an ANOVA was used to assess the relationship between psychological FOMO as measured by Abel\_FOMO and length of time spent on social media. The ANOVA supported our hypothesis was supported (F=3.870, p=0.022). There is a relationship between psychological FOMO and duration of time spent on social media.

Analysis of Variance – Abel\_FOMO and Length of Time

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Sum of Squares | Df | Mean Square | F | Sig. |
| Between Groups | 1095.128 | 2 | 547.564 | 3.870 | 0.022 |
| Within Groups | 28016.554 | 198 | 141.498 |  |  |
| Total | 29111.682 | 200 |  |  |  |

**Hypothesis 3**

3A.) Przy\_FOMO and Frequency of Checking

An ANOVA was used to test the relationship between Przy\_FOMO and the frequency of checking social media sites. Our hypothesis was supported, as there is as statistically significant relationship (F=9.965, p =<0.005). There is a relationship between behavioral FOMO and frequency of checking social media sites

Analysis of Variance – Przy\_FOMO and Frequency of Checking

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Sum of Squares | Df | Mean Square | F | Sig. |
| Between Groups | 1823.580 | 3 | 607.860 | 9.965 | 0.000 |
| Within Groups | 11650.882 | 191 | 60.999 |  |  |
| Total | 13474.462 | 194 |  |  |  |

3B.) Abel\_FOMO and Frequency of Checking

The relationship between Abel\_FOMO and frequency of checking social media was tested using an ANOVA. There does not appear to be a relationship between psychological FOMO and frequency of checking social media (F=1.143, p=0.333). We fail to accept our hypothesis.

Analysis of Variance – Abel\_FOMO and Frequency of Checking

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Sum of Squares | Df | Mean Square | F | Sig. |
| Between Groups | 490.417 | 3 | 163.472 | 1.143 | 0.333 |
| Within Groups | 27320.301 | 191 | 143.038 |  |  |
| Total | 27810.718 | 194 |  |  |  |

**Hypothesis 4**

4A.) Przy\_FOMO and Self-Control

The relationship between Przy\_FOMO and self-control as measured by the Tangney et al. (2004) was investigated by using the Pearson product-moment correlation coefficient. There was a medium, negative correlation between the two variables (r=-0.337, n = 200, p < 0.005). Higher levels of behavioral FOMO were associated with lower levels of self-control. A correlation coefficient of -0.337 appears to be moderately strong, according to Cohen’s (1988) effect size. The R2 value of 0.114 means that 11.4% of variation of behavioral FOMO is explained by the respondent’s degree of self-control. Our hypothesis is supported; individuals with higher behavioral FOMO will have lower self-control.

Correlation between Przy\_FOMO and Self-Control Scale

|  |  |  |  |
| --- | --- | --- | --- |
|  | | Total\_Self\_Control | Total\_Przy\_FOMO |
| Total\_Self\_Control | Pearson Correlation  Sig (2-tailed)  N | 1  200 | -0.337\*\*  0.000  199 |
| Total\_Przy\_FOMO | Pearson Correlation  Sig (2-tailed)  N | -0.337\*\*  0.000  199 | 1  200 |

4B.) Abel\_FOMO and Self-Control

Using Abel\_FOMO, the relationship between psychological FOMO and self-control was explored using the Pearson product-moment correlation coefficient. Again, there was a moderately strong, negative correlation between the two variables (r=-0.307, n=199, p<0.005). This relationship showed that higher psychological FOMO was indicative of lower levels of self-control. The correlation coefficient of -0.307 is acceptable by Cohen’s (1988) effect size. Additionally, an R2 value of 0.094 shows that 9.4% of variation in psychological FOMO is due to respondent’s self-control. Our hypothesis is supported; there is an inverse relationship between psychological FOMO and self-control.

Correlation between Abel\_FOMO and Self-Control Scale

|  |  |  |  |
| --- | --- | --- | --- |
|  | | Total\_Abel\_Fomo | Total\_Self\_Control |
| Total\_Abel\_FOMO | Pearson Correlation  Sig (2-tailed)  N | 1  201 | -0.307\*\*  0.000  200 |
| Total\_Self\_Control | Pearson Correlation  Sig (2-tailed)  N | -0.307\*\*  0.000  200 | 1  200 |

**Hypothesis 5**

5A.) Przy\_FOMO and Social Media Self-Presentation

Przy\_FOMO and Social Media Self-Presentation’s relationship was measure by using Pearson product-moment correlation coefficient. There was a positive correlation between the two variables (r=0.45, n=200, p<0.000). According to Cohen (1988), this is a moderately strong correlation, and also proves to be statistically significant. The R2 value of 0.201 means that 20.1% of the variation of behavioral FOMO is due to the respondent’s Social Media Self-Presentation . Our hypothesis was supported, as behavioral FOMO has a significant, positive relationship to Social Media Self-Presentation.

Correlation between Przy\_FOMO and Self-Presentation Scale

|  |  |  |  |
| --- | --- | --- | --- |
|  | | Total\_Self\_Presenation | Total\_FOMO\_Przy |
| Total\_Self\_Presenation | Pearson Correlation  Sig (2-tailed)  N | 1  200 | 0.449  0.000  199 |
| Total\_FOMO\_Przy | Pearson Correlation  Sig (2-tailed)  N | 0.449\*\*  0.00  199 | 1  200 |

5B.) Abel\_FOMO and Social Media Self-Presentation

The relationship between Abel\_FOMO and Social Media Self-Presentation was investigated using Pearson product-moment correlation coefficient. There was weak relationship between these two variables (r=0.195, n=200, p < 0.005). The weak, positive correlation is below Cohen’s (1988) effect size. This does not support our hypothesis that psychological FOMO has a positive relationship to Social Media Self-Presentation scores.

Correlations between Abel\_FOMO and Self-Presentation Scale

|  |  |  |  |
| --- | --- | --- | --- |
|  | | Total\_Abel\_Fomo | Total\_Self\_Presentation |
| Total\_Abel\_FOMO | Pearson Correlation  Sig (2-tailed)  N | 1  201 | 0.195\*\*  0.000  200 |
| Total\_Self\_Presentation | Pearson Correlation  Sig (2-tailed)  N | .195\*\*  0.000  200 | 1  200 |

**DISCUSSION**

Mobile devices and social media enable an anytime-anyplace connectivity that has radically changed not only our communication habits but also the way we keep up with the lives of others. FOMO helps explain this notion of always wanting to be connected. .First, Przybylski et al. (2013) is concerned with the experiential and behavioral factors that are attributed to FOMO. Secondly, Abel et al. (2014) is concerned with FOMO in regards to the psychosocial aspects of irritability, anxiety, and feelings of inadequacy.

As seen in the result of hypothesis 1, there is a moderate correlation between the relationship of behavioral and psychological FOMO. This could be due to the fact that Przybylski et al. (2013) and Abel et al. (2014) used JWI Intelligence (2012) as a seminal publication for secondary research. This piece is one of the first published pieces about FOMO in the modern technological age. The ideas and concepts from this piece were used to grasp a better understanding of FOMO for both authors. The end goal for both Przybylski et al. (2013) and Abel et al. (2014) was the same; both wanted to both measure the construct of FOMO. A respondents differences in scores between the two scales could be due to them being a more action-orientated person (thus, scoring higher in Przy\_FOMO) or being more concern with psychological perceptions of self (scoring higher in Abel\_FOMO). Further research is needed to create an all-inclusive scale that measure both behavioral and psychological FOMO. However, we tested each hypothesis using both FOMO scales separately. However, since there was a significantly relationship it can be assumed that both scales to a certain extent measure fear of missing out as a construct.

Hypothesis 2 found that the relationship of length of time that an individual spends on a social media site is only statistically significant with psychological FOMO. Behavioral FOMO was characterized by the thought of “reducing the cost of admission for being socially-engage,” or exerting less energy to be equally as social (Przybylski et al., 2013, p. 1841). That being said, this could be why the length of time spent on social media sites does not correlate with behavioral FOMO – a quick interaction on the basis of FOMO is all that is needed to relieve this urge. Rather, an individual who has a higher degree of psychological FOMO bases their feelings more on the fear of ostracism and social comparison theory (Abel, 2013, p. 3). In order to fully compare oneself against peers, a longer stay on social media sites is needed, thus resulting in the correlation between psychological FOMO and length of time logged on.

The frequency of checking social media sites was the focus of hypothesis 3, and proves to be statistically significant only in relation to the behavioral FOMO scale. As found in Przybylski et al. (2013), those with high FOMO scores are more likely to check social media after waking, during meals, before going to sleep, during lecture and while driving (p. 1846). Behaviorally, it has been supported that those high in FOMO scores aggressively seek ways to check social media. With this behavioral measurement of FOMO, it seems to play a key role in explaining social media site engagement. Furthermore, it seems as if the more popular social media sites (Facebook, Twitter, and Instagram) have a statistically significant relationship between the frequency of checking and behavioral FOMO scores. Since these sites are the most popular in college aged students, they are most likely the platforms a respondent checks when desiring to get their FOMO fix (Duggan & Smith, 2013). The psychological measure of FOMO proved not to be statistically significant in regards to frequency of checking social media. This could be due the fact that the Abel\_FOMO scale measured anxiety in the respondents. State anxiety is an individual’s level of anxiety over relative short periods of time (Wilt et al., 2011, p. 989). Someone with state anxiety relevant to FOMO would most likely be anxious to view social media temporarily after the realization that they missed out on something. Therefore, someone scoring high in psychological FOMO may have state anxiety, thus creating an anxiety of checking social media sites too often.

In regards to hypothesis 4, higher levels of both behavioral and psychological FOMO proved to be statistically significant in regards to lower levels of self-control. As expected, both measures of FOMO had an inverse relationship with the self-control. It could be to the nature of social media sites. Social media sites and other webpages are constantly being updates with a stream of real-time information, conversation, and images (JWI Intelligence, 2012, p. 4). That being said, there is always some new piece of information available to us whenever we log onto social media sites. It is this temptation to learn the new information, to be “in the know” that can test the self-control of logging on. When wanting to use social media sites to learn what peers are doing, there is an impulsivity that comes over an individual to reach into their pocket and press one button to log on. The ability to control this impulse was the purpose of measuring general self-control and then applying it to a social media setting. Behaviorally, it can be concluded that if an individual fears they are missing out on something, they will not have the self-regulatory ability to stop themselves from learning what they are missing out on. In a psychological sense, an individual with high FOMO will have feelings of anxiety and insecurity if they do not know exactly what their peers are up to. The only way to fulfill this knowledge gap is to log on to social media and interact with peers.

For hypothesis 5, the correlation between behavioral FOMO and Social Media Self-Presentation is moderate. The correlation between psychological FOMO and Social Media Self-Presentation is weak. The moderate relationship between behavioral FOMO could be attributable to the notion that self-presentation is the main behavioral component of social media usage. About 60% of respondents to a recent survey stated that it is important for their social media sites convey a certain image (JWI Intelligence, 2012, p. 8). It was found that the action of “self-disclosure” or disclosing personal information to others represents an intrinsic value such as food and sex (Tamir & Mitchell, 2012, p. 8038). The reward and satisfaction of receiving others approval through self –presentation often experienced on social media sites seems to be specific to FOMO. In addition, social media has been characterized by social one-upmanship, in which individuals broadcast their behaviors online, instilling a sense of missing out in others (JWI Intelligence, 2012, p. 7). Presenting oneself on social media sites could be done just to make others feel as if they are missing out. Psychological FOMO not having a strong correlation with Social Media Self-Presentation could be indicative of the how this was measured. The Abel\_FOMO measured feelings of inadequacy, anxiety, or irritability. If an individual is characterized by any of these psychological factors, they may be less willing to post or self-present themselves on social media.

Additionally, one question was used to be answered as a usage question in terms of understanding behavior. The question “If I feel I am missing out on something, I am likely to check social media” was asked of respondents to see if FOMO causes people to want to log on to social media or avoid social media. In both Przy\_FOMO and Abel\_FOMO, there was a significant relationship between the respondents overall FOMO score and this FOMO behavioral question. The behavioral FOMO (F = 40.256, p = 0.00) is statistically significant, as is psychological FOMO (F = 4.940, p = 0.01). This suggests that if an individual has a FOMO sensation, they are more likely to seek out checking social media than avoiding it.

**IMPLICATIONS**

From a business perspective, the concept of FOMO is an age-old problem with a modern twist due to technology. FOMO used to be a simple feeling, but with modern, multi-media outlets to gain information from, FOMO is now quantified as a full-blown psychological condition (JWI Intelligence, 2012, 12). 83% of respondents in a recent survey stated that their life is in overdrive; further more over 50% said that they never have ample time to new interests and explore new topics or endeavors (JWI Intelligence, 2012, 8). A marketer often instills a sense of urgency for purchasing a product or service. Using social media sites to promote products and showing an individual’s peers using a certain product will instill this urgency or FOMO in a consumer. If a business can increase the popularity of their product or service in a way in which customers post about it on a social media site, this is the cheapest and perhaps most effective way to spread awareness. The most effective strategy a business can use FOMO to their benefit is to have consumers post about their business. This could be through contests in which mentioning the company in a post could elicit prizes or acknowledgement from the organization. Alcoholic beverage companies are well aware of FOMO. Both Smirnoff and Heineken have launched campaigns relying on sensations of FOMO that is experienced when a party or event is not attended (JWI Intelligence, 2012, 13). Companies such as this appeal to the demographic of the present research, as most of the participants of the survey were college-aged and concerned with their social activity involvement. By harnessing this power and understanding FOMO, marketers could use these feelings to drive purchase intentions and consumers’ motivations. In regards to social media site usage and degree of FOMO, marketers can further incorporate consumers’ desires to belong though using social media as a motivational tool.

Beyond the business implications, there are more benefits that can be achieved from gaining a better understanding of FOMO. If the relationship between self-control and FOMO can be fully understood, then perhaps some preventative changes could be made in regards to dangerous mobile phone behavior, such as driving. An understanding of self-presentation and FOMO can be beneficial in regards to each individual user of social media sites, and how they can use these platforms to reach the full potential of self-expression. Understanding FOMO is a benchmark into understand how this generation will continue to communicate with each other in an ever-growing social media setting.

**LIMITATIONS AND DIRECTION FOR FURTHER RESEARCH**

A major limitation of our research is the sample. It was a convenience sample collected mainly from the same university in similar friend groups. The diversity of the survey results was lacking. The purpose of the survey was to test FOMO and psychosocial factors in college-aged students. However, for further research a broader survey sample that is more diverse and extends past a college setting may prove to enhance the results. Also, the sample size was moderate, with 201 usable respondents.

Another limitation is the concept of smart phone. The survey was distributed to primarily college-aged students with the assumption that all the respondents had mobile phones enabled with social media sites. Some respondents may not have a smartphone and the accessibility to social media sites is not as easy as those with the technology. In further research, examining the duration of smartphone use or solely computer-use of social media sites may provide more reliable results.

For further research with the same sample, it would be of interest to see the relationship between the psychological factors that were measured and behavioral FOMO. Abel\_FOMO, self-control, and Social Media Self-Presentation are used to measure psychological variables predicting behavioral FOMO. These psychological factors could explain behavioral FOMO, as measured by Przybylski et al. (2013). Completing a regression analysis where the dependent variable is Przy\_FOMO and the independent variables are Abel\_FOMO, self-control, and self-presentation could create an avenue for further research.

**CONCLUSION**

The understanding of FOMO and its relationship to psychosocial concepts is becoming increasingly important. Self-control and self-presentation have proved to play a significant role in the way in which FOMO is manifested in an individual. The fear of missing out is a concept that will only increase with popularity, as will the popularity of social media sites. Dividing the concept between psychological and behavioral factors is only the beginning in understanding the full implications of this concept. FOMO is a timely concept that will have to monitor and control in accordance to the changing platform that is social media sites.

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**Bringing Soccer to America: A Cross-Culture Comparison for Sports Marketing Implications**

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# *Abstract*

*The most popular sport in Europe inarguably, is soccer. However in the United States, soccer is considered to be a niche sport. It was not until 1996 that the United States had formed their modern day professional soccer league - Major League Soccer. The current study identifies 18 variables from the Sport Interest Inventory Scale (SII) to develop measurable variables that compare a cross-cultural sample of how consumers embrace the sport of soccer. Data was collected in the United States (n=88) and thirteen countries in Europe (n=207). Confirmatory factor analysis of the scale based on a survey of (n=295) respondents indicate that there are significant comparable factors in how consumers of different cultures consume soccer. Our findings will be of interest to international marketers engaged in sport marketing*

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**INTRODUCTION**

Soccer is considered the most popular sport throughout the world. In United States, soccer is seen as one of the least popular sports at the professional level. The US market has the best sports coverage and media platforms in the entire world. So why is the world’s most popular sport, not popular in the grandest media environment? The response to this question might provide insights for sports marketers in terms of cultural perceptions, consumer motivations, and fan commitment.

The purpose of this study is to extend the prior work of consumer motivations of soccer fans and players. We also wanted to explore factors to gain a better understanding of soccer consumption in multiple countries using developed scales.

In this study, we collected data internationally (Europe) as well as the United States, to best compare and address our research questions regarding perceptions of soccer internationally, that might provide insights on the relatively lower popularity of soccer in the US. Our research instrument included a series of questions, for soccer fans and sports fans in general. We wanted to know consumer attitudes towards attending live sporting events, playing and watching sports (including soccer). We also included questions about sports merchandising in the survey. The data that we have collected is in fact significant and provides insight to our research questions.

In this study we will consider factors using one scale that contributes to sport consumption (soccer). The Sport Interest Inventory (SII) (Funk et al., 2001) to provide a foundation for data collection. Applying this scale allows us to better target soccer players and fanatics.

This paper is organized in the following manner. We begin by examining historical accounts of soccer and its popularity. In subsequent order we will examine past research then our methodologies, findings, and our concluding remarks.

**Soccer: A Historical Perspective**

**Europe**

It is believed that the first type of soccer started in China and spread to Europe. Soccer has always been a part of European history. In medieval England, the rules for this type of soccer were loose, these soccer games were rough and many young men were hurt while playing it. These casualties were invariably those who might have been needed for the army - young, fit men. It is said that soccer was often banned throughout English history, because Kings wanted their men to be honing fighting skills instead playing soccer risking injury. However Kings were never able to truly ban soccer from the people. Throughout the English history, Kings were never able to truly prevent their peoples from playing soccer

Today the epicenter of soccer is in England and has indeed over time soccer has spread throughout Europe.

For instance, in Spain, British immigrants working in mining and railroads popularized soccer. Italy’s soccer history followed roughly the same timeline as Spain’s, with first clubs emerging in late 1800s. In Italy, British, Swiss, and Italian upper class embraced the sport. The game today is purely administrated by Italians upper class leaders. France and Germany exhibited similar timelines as Italy and Spain; however, soccer faced other sports such as cycling and gymnastics as competition. In France, Scots and English living in Paris introduced soccer, with some French students founding their own squad around the same time.

Modern day soccer was developed in England throughout the 1860’s. In 1863, the Football Association (FA) was formed and created a standard set of rules. Over time, multiple countries created their own chapter of the FA. In 1886 the International Football Association Board (IFAB) created an international standard set of rules. In 1904 the Federation Internationale de Football Association (FIFA) had joined forces with the IFAB and now both organizations govern modern day soccer.

**United States**

Soccer has been a niche sport in United States since its birth. History suggests that as early as 1620s Pilgrims played a form of soccer with the Native Americans. By 1921 the United States had formed its first professional soccer league. Over time the professional soccer league(s) through the United States history have folded and reformed into the modern day Major League Soccer (MLS- formed in 1996). Surprisingly, the first soccer tour of international premiere teams coming to the US was the year 1930. These friendly matches have been played in the United States throughout their soccer history as well. In 1975 the world’s greatest soccer player of all time (so they say) came out of retirement to play in the US for the NY Cosmos. Pele was signed to help grow the sport in the USA.

Currently soccer in the United States is using similar tactics to grow the sport. Every summer during the off-season, top big-named clubs from around the world come to the United States to compete in friendly tournaments. The objective of these international tours is to build soccer in America, also to expand the brand of international clubs. Also teams in the MLS are signing high-profile players (such as David Beckham) to play in the MLS to further extend their brand internationally, but mainly to fill seats and build the sport in the country.

**Overview**

Despite the long history of soccer in the USA and countless children playing recreational soccer, the long-term financial performance of the sport has been weak. MLS does not enjoy the following of NBA and NFL. Europe is said to have the top leagues, every nation in Europe has at least one major soccer league: England (English Premier League), Spain (La Liga), Italy (Serie A), Germany (German Bundesliga), France (Ligue 1), Portugal (Liga Sagres), Netherlands (Eredivisie), Turkey (Turkish Premiere Division), Greece (Greek Superleague) etc. These soccer leagues have lower divisions beneath their top leagues, similar to the MLB’s farm-system. In most European leagues, teams are promoted and relegated from the ‘A’ division and ‘B’ division leagues, deepening on the standings. (Example: At the end of a season, the three teams that have finished lowest in the standings are relegated to the lower league, while the top three teams of the lower league are promoted to the upper division for the next season.) On average there 18-20 teams competing in these European professional leagues.

Consider the attendance in some of these leagues (www.soccerstats.com). In the German league (Bundesliga) the average fan attendance in 2013 was 42,803. For the English Premier League, the average attendance of 2013 was 36,300. And lastly the Spanish league (La Liga) averaged 27,037 fans in 2013. By comparison, the MLS averaged 18,594 in 2013 according to Kennedy (Kennedy)

In the United States, MLS consists of 19 clubs. Within the next 2 years there is expected to be a total of 22 clubs in the MLS. Below the MLS there are semi-pro and amateur leagues: Player Development League (PDL), and the National Premiere Soccer League (NPSL). Unlike European leagues, the MLS, NPSL, and PDL do not have a relegation system

Top teams in the European leagues play in an intercontinental league called the Champions League. Fans travel all across Europe and pay high prices to support their teams. In the European (UEFA) Champions league, the average attendance was 44,873 fans in 2013. North America also has an intercontinental champion’s league (CONCACAF Champions League). The CONCACAF consists of 41 nations/territories in the North Western Hemisphere. Each nation/territory has their own professional soccer league where their teams can earn the opportunity to compete in CONCACAF tournaments. The average attendance of the CONCACAF league was 9,974 in 2013. A difference of 34,899 spectators compared to the European champions league.

The fans of these leagues are quite different compared to American sports fans. It has not been uncommon for fights, murders and riots to occur annually that are associated with soccer fanatics. Soccer hooliganism dates back to the nineteenth century with rivalries of teams from the same city or local area. Fans would attack each other, players, and referees. Today Hooliganism has been greatly reduced, however, there are still some instances throughout the world. February, 8, 2015, twenty people were killed during a riot at a soccer match in Egypt. This event occurred just three years after a similar incidence, leaving 74 dead.

MLS does not face this challenge. Though soccer has been starting to grow in the United States over the past decade, it has not quite reached a ‘hooligan’ level. There have been no reported riots, or deaths that are affiliated with the MLS. The MLS fans have begun calling themselves ‘ultras’; the fan in-between a soccer mom and a hooligan. “Ultras, also known as supporter groups, are bands of diehard soccer fans who root for a particular team. They've existed in the U.S. since Major League Soccer had its first kickoff in 1996, taking inspiration from their European counterparts. They're the fans you'll find in the same section in every game chanting, singing, cheering and jeering along to the action on the field while drumming, tossing streamers and, on occasion, setting off a flare or two.” (Fernandez)

**The American Outlaws**

The American Outlaws established in 2007, is a group of dedicated supporters of the United States National Soccer teams. The American Outlaws formed to void the lack of consistency from game to game regarding support. “In a sea of American football, baseball, and NASCAR fans we felt we were “outlaws” of the sports world; supporting a sport that most people didn’t know much about or cared little about.” (The American Outlaws)

**Past studies**

Acceptance of sports in a culture has been an issue of interest to researchers for several years. For instance, Sutton et. al (1997) looked at this through fan identification construct, they looked at correlates of social fans, focused fans, and vested fans, in terms of team characteristics. They concluded that an increase in player accessibility to the fans facilitated quicker adoption among the general public, it retained fans and added new fans. Gladden and Mine (1999) showed that winning performances lead to higher brand equity in professional sports. They also were able to conclude that enhanced brand equity contributed to the bottom-line through merchandising opportunities. The Psychological Commitment to Team (PCT) scale posited by Mahony, Madrigal, and Howard provided a valid segmentation schema that led to pragmatic solutions for professional sports teams. The SII scale (originally developed by Sloan 1987, modified by Milne & McDonald in 1999, and further altered by Funk in 2001) led to Funk’s contributions. The seminal work of Funk, Mahony, and Ridinger (2002) that offered the Sport Interest Inventory (SII) scale that has since become foundational to much of the cultural adoption work in the sport marketing arena.

Funk, Ridinger, and Moorman (2003) used the SII in the WNBA adoption context and concluded that the contextual factors developed for women’s professional sport were rated favorably by all respondents: players serving as role models (ROL: mean on a 7-point scale = 6.16), supporting competitive opportunities for women (SWO: mean = 6.00), and wholesome environment (WHO: mean = 5.86). Although all three factors had relatively high mean scores, only two, ROL and SWO, contributed to the regression equation. Entertainment value and wholesome environment were not among the 10 most influential factors explaining level of consumer support. SII factors have been previously confirmed and used to examine fans and spectators of men’s and women’s sport, we use this scale in the international sport marketing context.

Another study (Mahony, Nakazawa, Funk, James and Gladden 2002) that guided our efforts used the same scale in the Japanese Premier League (J. League).The primary purpose of this study was to identify and examine the influence of specific motives on the behavior of J. League spectators. The relationship between team attachment and vicarious achievement (r = 0.90) was especially intriguing in terms of our study of soccer in the USA. Based on prior work we examine two research questions: How is soccer consumed in the USA versus in other cultures? What are the salient differences in terms of watching, participating, and supporting soccer? Further, what are the implications of such distinctions for merchandising sales?

**Methodology**

To empirically examine our research questions, our data collection instrument consisted of 64 items relating to psychographics, demographics and the various SII constructs (Funk et al., 2001) discussed above. All items were measured on a 7-point Likert-type scale that ranged from strongly disagree (1) to strongly agree (7). Using the conceptual framework of the SII, we surveyed participants in two continents to examine differences across perceptual factors in sports consumption (soccer) between the United States of America and Europe. The SII scale we used measured 17 constructs: interest in sport, interest in players, bonding with friends, drama, bonding with family, aesthetics, customer service, excitement, entertainment value, sport knowledge, vicarious achievement, escape, wholesome environment, socialization, interest in team, community and role models.

**Data Collection**

The data for the current study was collected using an online survey in the United States. In Europe, thirteen countries were represented, with a majority of the respondents from Italy. European respondents completed surveys using paper and pencil. For our respondents in Italy, we translated our original survey into Italian to best produce comparable results and the rest of the countries responded to the English version of the survey. We achieved a sample size of 295 (USA: 88 and Europe: 207). The profile of the samples is provided in the Table 1. Majority respondents were students (80.7%) and non-student respondents made up about 20% of the sample. Also most respondents indicated that they live in the suburbs (47.1 %). It was noticed that respondents from the US sample, on average have a higher household income than the non-US sample.

**Table 1. Sample Profile (n=295)**

|  |  |  |  |
| --- | --- | --- | --- |
| **Characteristics** | **USA**  **(n=88)** | **Non-USA (n=207)** | **Total (n=295)** |
| **Gender** |  |  |  |
| Male | 53 (60.2%) | 130 (62.8%) | 183 (62.0%) |
| Female | 35 (39.8%) | 77 (37.2%) | 112 (38.0%) |
| **Level of education** |  |  |  |
| Grade school | 0 (0.0%) | 5 (2.4%) | 5 (1.7%) |
| High School/GED | 5 (5.7%) | 155 (74.9%) | 160 (54.2%) |
| Some College or Trade school | 46 (52.3%) | 11 (5.4%) | 57 (19.3%) |
| Associates Degree | 7 (8.0%) | 9 (4.3%) | 16 (5.4%) |
| Bachelor’s Degree | 27 (30.7%) | 18 (8.7%) | 45 (15.3%) |
| Graduate or Professional Degree | 3 (3.3%) | 9 (4.3%) | 12 (4.1%) |
| **Employment status** |  |  |  |
| Student | 64 (72.7%) | 174 (84.1%) | 238 (80.7%) |
| Employed Full-time | 7 (8.0%) | 12 (5.8%) | 19 (6.4%) |
| Employed Part-time | 15 (17.0%) | 14 (6.8%) | 29 (9.8%) |
| Unemployed | 1 (1.1%) | 7 (3.4%) | 8 (2.7%) |
| Retired | 1 (1.1%) | 0 (0%) | 1 (0.3%) |
| **Geographical Designation** |  |  |  |
| Suburban | 66 (75.0%) | 73 (35.3%) | 139 (47.1%) |
| Urban | 7 (8.0%) | 80 (38.6%) | 87 (29.5%) |
| Rural | 15 (17.0%) | 54 (26.1%) | 69 (23.4%) |
| **Age** |  |  |  |
| 18-25 | 84 (95.5%) | 173 (83.6%) | 257 (87.1%) |
| 26-40 | 2 (2.3%) | 22 (10.6%) | 24 (8.1%) |
| 41-60 | 1 (1.1%) | 11 (5.3%) | 12 (4.1%) |
| 61+ | 1 (1.1%) | 1 (0.5%) | 2 (0.7%) |
| **Household income** |  |  |  |
| $25,000 or less | 6 (6.8%) | 106 (51.2%) | 112 (38.0%) |
| Between $25,001-$50,000 | 10 (11.4%) | 14 (6.8%) | 24 (8.1%) |
| Between $50,001-$100,000 | 22 (25.0%) | 6 (2.9%) | 28 (9.5%) |
| $100,001 or more | 32 (36.3%) | 3 (1.4%) | 35 (11.9%) |
| I would rather not disclose | 18 (20.5%) | 78 (37.7%) | 96 (32.5%) |

**Findings and Conclusions**

We tested the data for differences using ANOVA (Analysis of variance), with a special focus on country specific differences between U.S. & and non-U.S. respondents in our sample. Results related to frequency of *watching* sports the difference was significant. (U.S.: x̄ = 5.19; σ: 1.837); (Non-U.S.: x̄ = 3.80; σ = 1.952) the significance is at the 0.01 level. (F=32.688; p: 0.0001). On the question about frequency of *playing* sports, again a significant difference was found. The mean value for U.S.( x̄ = 4.94; σ: 1.770) Non U.S. (x̄ = 4.19; σ = 1.509) was significant at the 0.01 level. (F=14.007; p: 0.0001). On the question of how often one *attended a game*, results were significant. The mean value for U.S. ( x̄ = 3.19; σ: 1.267) Non U.S. (x̄ = 2.26; σ = 1.217) which was significant at the 0.01 level. (F=35.711; p: 0.0001):

We then proceeded to examine the purchase of sports merchandise, such as buying and wearing team apparel in order to *identify* with a team of choice. Results indicated that the difference was significant. The mean value for U.S.( x̄ = 2.67; σ: 1.531) Non U.S. (x̄ = 4.58; σ = 1.898) which was significant at the 0.01 level. (F=30.653; p: 0.0001). When asked if team merchandise was bought to *show support* for the team, differences were significant. The mean value for U.S. ( x̄ = 4.36; σ: 1.959) Non U.S. (x̄ = 5.49; σ = 1.376) which was significant at the 0.01 level. (F=15.058; p: 0.0001)

**O**ur findings indicate that there is in fact a significant difference in how frequently respondents attend sporting events, watch sports through media platforms and play sports across the two samples. This helps us understand the cross-cultural behaviors relating to not only soccer, but other sports in general. Also we have found that consumers of sports world-wide purchase “stylish merchandise.” We have also found that American consumers do not feel as connected with the team as much as consumers do in other countries. We continue to collect data and our larger research project will relate to strategies that could build and grow soccer and the brand of soccer in the United States.

**Marketing Implications**

To increase the popularity of soccer within the United States, a strategic, long term marketing plan should be put in place. Americans *watch* and *attend* sports rather frequently therefore soccer should be positioned to follow the current ‘popular’ sports trends. Additionally, MLS and US Soccer would benefit by building their brand through national advertising campaigns with selective media.

US Soccer has great potential to grow as the MLS expands. Adding more teams to their professional league raises availability for consumers. Within the next decade or so, MLS would greatly benefit by creating a second tier league or a ‘farm system’. Creating a semi-pro and amateur league is more cost effective than creating a new franchise, also this helps build the current brand. Providing more opportunities for team & player exposure, will create a sense of attachment and loyalty to, the brand and the overall sport.

In addition to building player & team attachment, creating stylish sports merchandise is a key factor to brand success. Fans reported, (greater abroad) they purchase sport merchandise to show their support and associate them with an identity; this give soccer teams the opportunity to build a favorable reputation to appeal to their consumers. Fans also reported that they will purchase sports merchandise if it stylish. Designing a wide product line with respected sports brands will produce greater sales, and exposure for US Soccer and MLS franchises.

**Limitations**

While conducting this research we have faced many limitations. When in Europe we faced a language barrier and had to have this survey translated to produce comparable results. On top of the translation, like any language not everything translates to the same literal extent. Also while in Europe we faced problems with technology and found that to conduct this research more effectively was to rely on old fashioned methods using paper and pen.

**Future Research**

In the future, we plan to continue to analyze our data collected in various ways to produce optimal implementations. Also we aim to track global and American trends of soccer. Further data collection will occur to produce a larger sample size of individual nations. After analysis of our constructs, we would be able to created detailed implications and determine the most efficient/feasible options.

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**AN ASSESSMENT OF MUSIC CONSUMPTION TRENDS FOCUSING ON THE EFFECT OF MUSIC STREAMING**

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***ABSTRACT***

*This paper is set out to examine the current trends in music consumption. It will test our hypothesis that music streaming (such as Spotify, Pandora or Soundcloud) is becoming the new trend in listening to music. To investigate our hypothesis we have collected information from 462 respondents via an online survey. Since 111 of our respondents were from various countries outside of the US; we were allowed to then examine differences of US consumers compared to international consumers. The following paper will show our findings and discuss the methodology behind our study.*

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**INTRODUCTION**

One of the most influential products in our lives is music and the way people listen to it is constantly changing. Beginning in 2014, we began to study what form of consuming music is most popular and who exactly uses each available platform for listening. We believed that the emergence of music streaming platforms over the internet such as Spotify or Pandora Radio was the most popular. To examine our hypothesis we conducted a survey with a total of 462 respondents, this includes respondents from the following countries: United States of America, Spain, Argentina, Australia. Austria, Brazil, Canada, Chile, Colombia, Costa Rica, Denmark, France, Germany, India, Ireland, Italy, Japan, Jordan, Malaysia, Mexico, Nicaragua, Paraguay, Peru, Portugal, Russia, South Korea, Sweden, United Kingdom, Uruguay. The questions we asked allowed us to figure out what type of platform individuals were using as well as the most frequent streaming program. Since we collected responses from a wide range of individuals across the globe (about 24% of our respondents being international), we could analyze both domestic and international trends. Aside from geographic location we collected a wide range of demographic and psychographic variables as well as music tastes. This allowed us to draw many conclusions about the way music is listened to. The following study will help individuals understand what different people are using to listen to music and help determine the particular segment that uses each platform. With this information artists and record labels can better tailor their concentration and offer the highest number of fans the most effective way to listen to music. This paper is structured with the next section on prior research, followed by a review of our methodology and our main findings. We will then conclude our paper with final recommendations based off of our findings.

**PRIOR RESEARCH**

Before starting this study, a brief literature review was conducted to gather more insights and determine if anyone else has studied these trends. Some of the past studies that we found to be influential included “Music Experience and Behaviour in Young People.” by David Bahanovich and Dennis Collopy, “Consumption Patterns, Digital Technology and Music Downloading.” by Luca Molteni and Andrea Ordanini, and “Why Pay if its Free?” written by Theodore Giletti. Each of these studies looks at music consumption and digital music consumption as a whole.

The insights gathered from these past studies shows us that people prefer music digitally and that electronic music devices are becoming the most popular form of entertainment. The Bahanovich and Collopy study reflects that although electronic music devices are extremely popular and that many of these devices allow an individual to stream music for free, ownership over a particular song or collection of music is an important factor. This helps explain how companies that charge fees or sell music are still popular and able to stay profitable. The Giletti study looks at how behavioral norms and attitudes affect preferences in music consumption; this was very influential and helped us determine how to shape our survey.

**METHODOLOGY**

**Descriptive**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Sample Profile (n=462) | | | | |
|  |  |  |  |  |
| Gender | |  | Age | |
| Male | 42.40% |  | 18-20 | 31.20% |
| Female | 57.60% |  | 21-25 | 26.80% |
|  |  |  | 26-30 | 3.90% |
| Ethnicity | |  | 31-50 | 24.50% |
| White | 76.80% |  | 51+ | 13.60% |
| Hispanic/Latino | 16.70% |  |  |  |
| African American | 2.20% |  | Education | |
| Native American or Alaskin Native | 0.20% |  | Current Student | 37.40% |
| Asian/Pacific Islander | 3.00% |  | High School/GED Degree | 1.70% |
| Other | 1.10% |  | Some College | 12.80% |
|  |  |  | College Degree | 16.90% |
| Country | |  | Graduate Degree | 31.20% |
| US (Domestic) | 75.97% |  |  |  |
| International | 24.03% |  | Employment\* | |
|  |  |  | Full Time | 33.10% |
| Household Income\* | |  | Part Time | 30.50% |
| $1,000-$25,000 | 22.10% |  | Internship | 8.90% |
| $25,001-$50,000 | 11.70% |  | Unemployed | 26.80% |
| $50,001-$75,000 | 16.50% |  | \*For Household Income and Employment percentages don’t add up to 100% because .6% of respondents skipped each question. | |
| $75,001+ | 49.10% |  |
|  |  |  |

**RESEARCH DESIGN AND SAMPLING**

For our research study on music consumption, we used a self-administered online survey. This research is descriptive in nature and our target population consisted of both males and females over the age of eighteen. To reach our targeted number of respondents we used a variety of non-probability samples. The first sampling technique we utilized was convenience sampling. We sent our survey to our friends, teachers, co-workers, families and anyone who we could easily contact. Our second sampling technique was judgment sampling. We used this type of sampling to receive responses internationally. We contacted specific friends and family members who live abroad and could understand the language. Finally, we used snowball sampling. People who received our survey were asked and encouraged to distribute our survey among their contacts. This proved to be very helpful in reaching our targeted response number.

**SURVEY DESIGN AND IMPLEMENTATION**

We chose to use a descriptive survey by collecting primary quantitative data. We designed our survey to discover how people consumed music, with a focus on streaming music and purchasing CDs. The survey was designed to guide respondents down different question paths depending on specific responses. For example, if a respondent did not use streaming programs then they would not answer questions pertaining to streaming.

The questions were geared towards discovering how people consume music and why. The questions used Likert type scales with a balanced neutral point.

When it came to implementing and distributing our survey we chose to use a self-administered online survey. We emailed our survey to close friends and family at first and then we utilized social media and emailed peers, faculty, and student organization groups on campus. From that point on we depended on a non-probability snowball effect created by our friends and family passing the survey to their contacts via email and social media. Sample questions from our survey include:

* On a typical day how many hours do you listen to music?
* How frequently do you use the following [listing platform] to listen to music?
* When streaming music, the program I use the most is?
* How many physical CD’s have you purchased in the last 6 months?
* How frequently do you listen to the following genres of music?

**SCALES AND VALIDATION**

When determining the scale for our questions, we used both nominal and interval scales. Using a Likert-type scale, we were able to find consumer preferences; typically the Likert scale is used for ordinal data, but we adapted the scale to be used with interval data.

The Chronbach’s Alpha for our psychographic scale is .784. We found this scale in the Handbook of Marketing Scales and used it in our questionnaire because of its reliability. According to the Handbook of Scales, the Chronbach's Alpha for extraversion is 0.68, agreeableness is 0.40, conscientiousness is 0.50, emotional Stability is 0.73 and openness to new experience is 0.45. Our Chronbach's Alpha is similar, in some cases slightly higher, which shows that our scale is just as reliable as Goslings, Rentfrow and Swann’s Five-Item Personality Inventory that was created in 2003.

The only other scale that we had a notable reliability for was our scale for the question asking why our respondents chose to stream music. This scale was influenced by a question taken from Luca Molteni and Andrea Ordanini in a survey issued in 2003 called *Consumption Patterns, Digital Technology and Music Downloading*. The question that Molteni and Ordanini used had nine different possible responses, but they were only used to check if respondents were influenced for downloads on “MP3 or P2P sites.” We narrowed these questions down to the ones that we found fitting for our survey and changed it to a seven point Likert type scale that applied to music streaming. This new scale we created is called the “Drivers of Music Streaming” scale. When we tested the Cronbach's Alpha for the Drivers of Music Streaming scale we created, it resulted in an extremely reliable value of .839.

Additionally the Drivers of Music Streaming scale that we have created could be even more reliable by removing one of the four items within it. This scale questioned why the individual streamed music and although the answers “it’s convenient”, “it’s easy to use” and “it’s free” worked well together our fourth option “I want to discover new music” took away from our scales reliability. We ran a Chi Square test on just the first three answers and this raised our Cronbach's Alpha to an even more reliable .880.

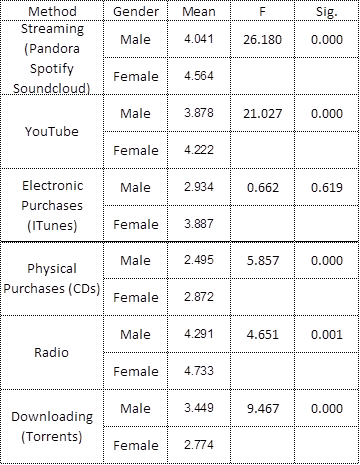
**FINDINGS**

When analyzing the data results, we first analyzed the results with the entire data set to discover the consumption preferences for the entire sample. Analysis of Variance (ANOVA) was used to determine statistically significant differences between reported means. When we obtained an idea of how our respondents consumed music as a whole, we split the data and ran statistical tests to compare music consumption patterns in the United States and internationally. We received responses from 29 countries and 24% (111 respondents) of our study’s responses came from outside the United States. Some major findings are listed below.

**DEMOGRAPHICS TO METHOD OF CONSUMPTION**

We started analyzing the data by examining the impact of demographic characteristics on what method people preferred when listening to music. The first characteristic we looked into was age. We discovered that there was a significant relationship between age and streaming, use of YouTube, physical purchases, radio and electronic downloads. (p = 0.000, 0.000, 0.000, 0.001, 0.000) Younger people tend to prefer streaming, YouTube and downloads while those who are older would rather listen to the radio or buy a physical copy of an album.

When examining the relationship between gender and favorite method of listening to music we discovered significant relationships with every option. Females obtained higher mean scores on every category other than downloading songs this has managerial implications as females tend to be more involved in how they listen to music.



Evaluating relationships between level of employment and preferred way of listening to music we encountered significant relationships between employment levels and streaming, YouTube, radio and downloading using torrents. (p = 0.000, 0.000, 0.002, 0.001) It is interesting to note that people with internships and part time jobs favor streaming while full time workers like the radio and the unemployed prefer YouTube.

Next we looked at the effect of household income in consumption type. We found significance with YouTube and purchase of physical CDs (p = 0.012, 0.005). We found an inverse relationship between household income and use of YouTube.

When we examined the impact of ethnicity on the preferred way of consuming music we discovered significance on streaming (p = 0.019). This however should be examined closer and we recommend further research as our sample profile was predominantly white and Hispanic with a much smaller representation of other ethnic groups.

Finally, we examined the impact of education on favorite method of listening to music. We found that the level of education of our respondents had a very significant relationship with the method they utilized. We found significance for all six methods examined, streaming, YouTube, electronic purchases, physical purchases, radio and downloading. (p = 0.000, 0.000, 0.016, 0.000, 0.033, 0.000) Current students are the most likely to favor streaming and downloading music through torrents. People with an education level of some college had the highest mean use of YouTube, those with a college degree are the most likely to buy their music electronically and people who have a graduate degree will be the most frequent buyers of physical CD’s and radio listeners.

**DEMOGRAPHICS TO STREAMING PROGRAM**

In addition to comparing demographics to favorite way of consuming music, we ran analysis to find out significance in differences among programs used to stream music. We started looking at age and found significant values for free Spotify, Pandora, Soundcloud and On-line radio. (p = 0.007, 0.017, 0.002, 0000) It is interesting to note that there is a direct relationship with age and use of On-line radio. On the other hand there is an inverse relationship with Pandora and age and younger respondents used Soundcloud more than older respondents. This is an important finding as streaming programs may use this information to better target their customers.

We also found interesting trends when we looked at a gender’s impact in using a streaming program or another. We found significant values for Spotify Premium, Pandora and Soundcloud. (0 = 0.000, 0.000, 0.003) While males are more frequent users of Spotify Premium and Soundcloud, females are substantially bigger users of Pandora.

In terms of the impact education has on streaming program, we found significant values for free Spotify, Pandora, Soundcloud and On-line Radio. (p = 0.010, 0.000, 0.000, 0.000) It is interesting to note that there is an inverse relationship between level of education and Soundcloud. At the same time, there is a direct relationship with education level and use of On-line radio streams. Lastly, Pandora which has the highest reported means seems to be the preferred streaming outlet for current students.

Ethnicity also presented significant p values for Pandora, Soundcloud and On-line radio. (p = 0.004, 0.011, 0.089) Means for this test were different but as stated above further research must be done to have a more accurate understanding of the impact of ethnicity on music consumption.

The next demographic we looked at was employment. This was the first demographic to yield significant values for all five streaming programs available. We found significant P values for free Spotify, Spotify Premium, Pandora, Soundcloud and use of online radio streams. (p = 0.000, 0.089, 0.007, 0.005, 0.001) The most likely users of Pandora and free Spotify are people who are interning. The most likely users of Spotify Premium as well as On-line radio streams have full-time positions. Finally the unemployed are the most likely users of Soundcloud.

The last demographic we examined was household income. For this demographic we found significance for Spotify Premium and Pandora. (p = 0.061, 0.002) As was the case for most tests, Pandora reported the highest overall means.

**PSYCHOGRAPHIC CHARACTERISTICS TO CONSUMPTION TYPE**

In order to get a more complete idea of our respondents and how their characteristics affected the way in which they consume music we ran the same tests but with psychographic characteristics as the independent variable. The first characteristic we looked at was enthusiasm. We found significance for, streaming, YouTube and electronic purchases. (p = 0.020, 0.028, 0.024) The next characteristic we looked at was agreeability for which we found significance with electronic purchases and download of music. (p = 00.79, 0.048) For emotional stability we found significance with radio use. (p = 0.004) When we looked at organization, significance was found for radio and downloading. (p = 0.054, 0.003) The fifth characteristic we looked at was people who consider themselves musicians. For this psychographic we found significance for downloading and both types of purchases, physical and electronic. (0 = 0.074, 0.060, 0.039) Finally we compared openness to new experiences to favorite consumption method and found significance for streaming, downloading and using YouTube. (p = 0.000, 0.052, 0.048)

**PSYCHOGRAPHIC CHARACTERISTICS TO STREAMING PROGRAM**

We then further explored the impact of psychographic characteristics on how people listen to music by finding the impact of these characteristics on preferred streaming program. We did not find as many significant values as we originally expected. The first trait we looked at was organization for this; we found significant values for use of Pandora and Soundcloud. (p = 0.000, 0.042) In the case of emotional stability, the results where similar, the two programs showed significance again. (P = 0.078, 0.042)

When comparing means for agreeability and streaming program we discovered that Pandora was the only mean that presented significance. (p = 0.030) This was also the case for people who considered themselves a musician. (p = 0.042) For the remaining Psychographics we found no significant values and no psychographic characteristic presented significance for Spotify or On-line radio.

**IMPACT OF TIME SPENT LISTENING TO MUSIC**

We examined the relationship between daily amounts of time a person listens to music to their favorite way of listening to music. We discovered significance for streaming, YouTube, electronic purchases, radio and downloading. (p = 0.000, 000, 0.017, 0.034, 0.000) In the case of streaming, using YouTube and downloading there is a direct relationship between the hours and the mean use of the method. In the case of streaming the means were noticeably higher than in any of the other characteristics. People who listen to music for three hours or more seem to prefer to listen to music through one of the various streaming programs.

Since we found strong relationships between the amount of time a person listens to music every day and streaming, we compared the time to favorite streaming program. We found significance for Pandora and Soundcloud. (p = 0.006, 0.000) We also found a direct relationship between use of Soundcloud and daily hours a responded listens to music. Finally there was no statistical significance between hours a person listens to music to the number of physical albums they buy.

**IMPACT OF DIFFERENT GENRES OF MUSIC**

In our study we decided to see how fans of different music genres consume music. The genres we examined included: Rock/Metal, Pop, Alternative, Rap/Hip Hop, Country/Folk, Electronic/EDM, and Jazz. It was not possible to include every genre in this paper so we chose a limited amount that we think could give a good representative idea of different tendencies. We first looked at Alternative music which gave us significant p values for streaming YouTube physical purchases and downloading. (0 = 0.000, 0.014, 0.085, 0.017) When looking at streaming program specifically we could only find significance for both free and premium Spotify. (p = 0.024, 0.042)

The next genre we looked at was Rap/Hip Hop. We found significance for Streaming, YouTube, Physical purchases, electronic purchases and downloading. (0.000, 0.000, 0.081, 0.009, 0.000) Furthermore, we found that there is a direct relationship between listeners of this genre and use of YouTube and an inverse relationship with physical purchases. When taking a closer look at preferred streaming program in relation to Rap music we encountered significant values for Soundcloud, Pandora and Online radio stations. (p = 0.000,0.037, 0.025) There was a direct relationship between this genre and Sound cloud but Pandora presented the highest means across the board.

When it comes to Rock and Metal music, we found that there is significance with four of the ways to consume music. We found significant P values for streaming, YouTube, physical purchases and downloading. (p = 0.007, 0.072, 0.071, 0.014) When looking closer at streaming we found significance for free Spotify and Spotify Premium. (p = 0.001, 0.035)

The next genres we examined were Country and Folk. For this question we obtained significant values for streaming, YouTube and radio. (p = 0.000, 0.007, 0.007) We found notably high mean values for radio. When we further looked into preferred streaming program we saw that there was significance in use of free Spotify and Soundcloud but Pandora still showed the highest means. (p = 0.016, 0.000)

Jazz music was another genre that we decided to explore. For this specific type of music we found significant values for Physical purchases and for use of radio. (p = 0.000, 0.021) The means for radio use were notably high so it may be a good idea to have radio stations that focus on Jazz. Despite there not being significance with streaming in terms of overall method of consumption we still searched to see if there were any significant values for specific streaming programs. When running an analysis of variance between Jazz and streaming program we found statistical significance for three programs; Spotify Premium, Pandora and Online Radio Stations. (p = 0.000, 0.003, 0.002)

Next we decided to see how fans of Pop music preferred to consume music. For this genre we found statistical significance for; YouTube, electronic purchases and use of radio. (p = 0.005, 0.008, 0.017) We found streaming not to be significant and when we ran statistical analysis to see if there was significance with specific streaming outlets there was no significance found.

The last music genre that we used was electronic dance music (EDM) this is one of the fastest growing genres in the 21st century and many artists in this segment use different less conventional ways to distribute their music.

In this case we discovered significance for streaming, YouTube, physical purchases and electronic downloading. (p = 0.000, 0.000, 0.007, 0.000) There was a strong direct relationship between those who listen to this genre of music and streaming or using YouTube. When assessing streaming more closely, we obtained significant values for the free version of Spotify and Soundcloud. (p = 0.016, 0.000)

**DRIVERS OF STREAMING TO STREAMING METHOD**

In order to discover why people’s tendencies in music consumption are increasingly leaning towards streaming, we created questions that could help us explain why a person would choose to stream. The four drivers of streaming we studied were convenience, easiness of use, the opportunity to discover new music and the free available options that this method of music consumption provides. Convenience had significant p values for Pandora, Sound cloud and Online Radio. (p = 0.000, 0.099, 0.047) The more a person streams because of convenience the more they used Pandora; there was a direct relationship with this website. Convenience was the only driver of change that offered significance for the use of Soundcloud. In terms of choosing a program because it is easy to use there was significance for Pandora and on-line radio. (p = 0.000, 0.089) Similarly people who stream mainly because it is free provided significant relationship with Pandora, on-line radio and Spotify Premium. (p = 0.001, 0.006, 0.066) Spotify premium is not free so as it would have been expected there is an inverse relationship between use of Spotify Premium and choosing to stream mainly because it is free. Lastly, those who stream predominantly to discover new music provided the highest means for Pandora and significant values for Spotify Premium and free, Pandora and online radio. (p = 0.024, 0.018, 0.008, 0.028)

**OTHER DRIVERS OF MUSIC CONSUMPTION**

We also examined other factors that could determine what method a person would pick when listening to music. We looked at the impact of money on the program chosen. We found significance for electronic and physical purchases, radio and downloading torrents. (p = 0.002, 00.044, 0.018, 0.002) We also found four significant values for the relationship with the question stating that music is a big part of your life. The relationships were with Streaming, YouTube, Radio and Downloading torrents. (p= 0.000, 0.000, 0.025, 0.000) In this case the highest means were present for radio. Next we looked for relationships between favorite consumption method and the desire to keep up with the latest trends. In this case, we found significance with streaming, YouTube, physical purchases, electronic purchases and downloading torrents (0.003, 0.024, 0.004, 0.026, 0.001) finally, we looked at the impact of the importance an individual places on legality of an action when choosing a way to listen to music. We found significance for all six available methods, streaming, YouTube, electronic and physical purchases, radio and downloading. (p = 0.018, 0.060, 0.000, 0.000, 0.002, 0.000)

**INTERNATIONAL VS NATIONAL RESPONDENTS**

Due to the high level of international respondents we had received, we decided to see if some of the major trends we had discovered differ on a US and international level. To do this we split our data into the 111 international responses and remaining 351 US respondents. The following section will begin to look into some of the major differences found between these respondents. Note that we plan to expand on the international differences as we continue to analyze our data.We first examined age and the different ways to listen to music, while many of these outlets were significant in both parties, they didn't have many differences in trends, the one thing which was significant for domestic but not international was downloading/torrenting (p=.000 vs .297). Individuals in the US are more likely to download music, which in many cases involves illegal sharing over the internet and when it comes to age, the younger individuals are the ones downloading.

Next we examined gender, and we were surprised to find that streaming wasn't significant among international respondents and the overall means were lower than domestic respondents (p=.736). An overall analysis of streaming and demographics in the international section showed to be mainly insignificant except for one area. There was a difference when it came to education and, it was mainly current students who used streaming. We believe this correlates with age, and although individuals in the US of older ages are beginning to use streaming, it is still typically the younger ages that access streaming.

Additionally radio and again downloading were insignificant for international respondents and significant for domestic. In fact downloading was the only thing that was not significant for every demographic in our international sample; the leads us to believe that downloading and torrenting is not a widely popular thing outside of the US. Downloading music is a much younger trend and while it is not significant or as popular on an international level, in the US it is widely popular among young males. What we did find significant for international respondents was listening to music through YouTube. This was used more by females, but it showed no significance in genders for the US.

**CONCLUSIONS**

Overall, this study allowed us to examine many of the various drivers of music consumption. We were able to prove our hypothesis right; streaming is becoming the new emerging trend in music consumption. One thing to note is that traditional consumption methods such as radio and physical purchases are still prevalent in older ages and certain music genre fans; therefore they must not be forgotten. Also looking at just our international respondents, streaming is much less influential and used mainly by lower income individuals and younger ages.

As we continue this study we plan to run regressions on some of our variables and expand on the international research. This paper is reflective of the connections we have found so far and will be revised and expanded upon further data analysis. This final section will make a few recommendations for individuals in the music market, and is aimed to help artist, promoters and labels better understand who is using which form of consumption.

**FUTURE RECOMMENDATIONS**

Looking at the emergence of streaming, which we have determined to be the new trend in music consumption, the younger generations are the ones that access these platform. If you are trying to promote an artist or album that younger generations like more, than you should aim at using streaming platforms to release it through. Older generations still use radio and purchase CD’s but they are beginning to tap into online resources as well.

We believe that with all of the available options of listening to music, selling albums isn't an artist’s main goal anymore. The main goal of an artist should instead be getting their music in as many peoples headphones as possible. This is how an artist can become popular and begin to make money off live shows.

When looking at gender females tend to stream more, while males use downloads. This is why we believe that a lot of Rap/Hip Hop or Electronic Music artists that appeal to males more often, will release their music for free download. Lower incomes stream more also, which means that the wealthier individuals will always be around to purchase either electronically or physically.

Lastly, when marketing music make sure to adjust the outlet to fit the most preferred outlet of your fan base. For example we found that Hip Hop and Rap fans tend to prefer YouTube. This is why you see a lot of Rap artist releasing music videos and singles on YouTube. This varies for Country music fans, which still prefer the traditional radio outlet. While this will be different for each fan of the various genres of music, carefully studying our analysis on genre and listing platform can help you place your music in the most effective outlet.

**Appendix I: Survey**

**I see myself as:**

(Strongly Disagree 1- Strongly Agree 7)

Extraverted/Enthusiastic

Agreeable/Kind

Dependable/Organized

Emotionally Stable

Open to New Experiences

**Listening to music is a big part of my life.** (Strongly Disagree 1- Strongly Agree 7)

**I like to keep up with the latest technology.**(Strongly Disagree 1- Strongly Agree 7)

**I consider myself a musician.** (Strongly Disagree 1- Strongly Agree 7)

**Money is a factor when it comes to consuming music.** (Strongly Disagree 1- Strongly Agree 7)

**On a typical day, how many hours do you listen to music?**

0

1

2

3

4 or more

**How frequently do you use the following to listen to music?**

(Never 1- Very Frequently 7)  
          Streaming (Pandora/Spotify/Soundcloud)

YouTube

Electronic Purchases (iTunes)

Physical Purchases (CDs)

Radio

Downloading/Torrents

Other

**When streaming music, I use:**

(Never 1- Very Frequently 7)

Spotify (free)

Spotify (premium)

Pandora

Soundcloud

On-line Radio Stations

I don’t stream music

**I stream music because…**

It is Convenient

It is Easy to Use

Free

I want to discover new music

**How many physical CDs have you purchased in the last 6 months?**

0

1-2

3-4

5+

**I buy CDs to:**

(Strongly disagree 1- Strongly Agree 7)

Support the artist

Own a physical copy

Avoid less risk of getting deleted

Have control of what song I want to hear

**The following factors affect my music consumption (purchasing):**

(Strongly disagree 1- Strongly agree 7)

My access to a computer or internet

The cost

Smart phone capabilities

Influence of others

I want to support the artist

The genre of music

**How frequently do you listen to each genre of music?**

[Never - Very Often (1-7)]  
 Rock/Metal

Pop

Alternative

Rap/Hip Hop

Country/Folk

Electronic/EDM

Jazz

Other

**Demographic Questions:**

**Gender:** Male       Female

**Age:** 18-20   21-25   26-30   31-50   51+

**Ethnicity:** White    Hispanic/Latino   African American   Native American or Alaskan Native

Asian/Pacific Islander   Other

**In what country do you reside?**

Drop Down Menu for All Countries

**Education:** Current Student   High School/GED     Some College   College Degree   Graduate Degree

*\*SKIP QUESTION: If Current Question is selected, Skip to “Level of School”*

**What level of school are you currently enrolled in?** Freshman     Sophomore     Junior     Senior     Graduate Student

**Employment:** Full Time     Part Time    Internship   Unemployed

**Household Income:** $0-$25,000   $25,001-$50,000   $50,001-$75,000   $75,001+

**A PRELIMINARY EXAMINATION OF CULTURAL VALUES AS ANTECEDENTS OF ATTITUDE TOWARD THE AD IN TURKISH CONSUMERS**

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***ABSTRACT***

*It has been proven that Attitude toward the Advertisement (Aad) is a determinant of Attitude toward the Brand (Lutz 1985; MacKenzie and Lutz 1989). Therefore, Aad is an important value to marketing researchers and professionals alike. However, what determines Aad? By testing relationships between Religiosty, Ethnocultural Identification, and the components of Attitude toward the Ad in a sample of Turkish consumers, we seek to determine whether or not cultural values may be valid antecedents of Aad.*

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**INTRODUCTION**

The aim of this paper is to foray in to gauging the significance of cultural constructs as antecedents to Attitude toward the Advertisement. Beginning in the early 1980s, the importance of Aad in consumer behavior has been steadily growing, and this is because Aad has been shown to be a determinate of other variables of interest. Even in 1985, Lutz reported that “A growing number of empirical studies have documented the significant explanatory power of Aad”. However, there has been much less work put in to shedding light on that which *explains* Attitude towards the Advertisement. Though Lutz, MacKenzie, and others duly put effort in to exploring this branch of study, it has not yet been attempted to introduce the consumer’s cultural values in to the model of Aad antecedents. The likes of Hofstede (1980) and others have hypothesized and empirically demonstrated that cultural values are present and active in influencing various constructs and variables of consumer behavior. Furthermore, the construct of *peripheral processing* dictates that contextual factors, outside cues unrelated to information received from the advertisement itself, act as determinants of Aad (Lutz 1985). We seek to determine whether or not cultural values may be present and active in influencing Attitude toward the Ad.

Though many of the important studies completed in the 1980s (seemingly the time period of heaviest investigation in to the Aad construct itself) only focused on their own domestic region, usually the United States, we recognize the prominence of globalization in the current era. As such, we include data from more than one region, and more importantly, more than one culture. As the first step in a cross-cultural study, we are examining data from Turkish consumers, and in the future, we will compare these results to a sample from the United States.

A contextual literature review is first presented; hypotheses pursuant to the research objectives are then established; methodology is described; and results, conclusions, limitations and managerial implications are then reported accordingly.

**THEORETICAL BACKGROUND**

**Attitude Towards the Advertisement**

MacKenzie and Lutz (1989) write that Aad possesses “significant explanatory power.” Earlier yet, Mitchell (1981) showed empirically that Aad is a partial mediator of advertising’s effects on brand attitudes. It is this relationship which encouraged a myriad of subsequent papers exploring this dimension of consumer behavior. Shimp (1981) first published the now widely held conceptual distinction of ‘affective’ and ‘cognitive’ components of Aad. In this article, Shimp explains that the affective component of Aad refers to an attitude resulting “merely because the ad evokes an emotional response.” On the other hand, the cognitive component describes consumers forming attitudes towards advertisements “by consciously processing executional elements.” Shimp’s dual component model has been supported and cited by several subsequent studies (e.g. Biehal, Stephens and Curlo, 1992; Madden *et al.*, 1988).

**­Religiosity**

Both Wilkes (1986) and Mokhlis (2009) conceded that religion and religiosity are, due to their nature, without generally accepted definitions. Wilkes concluded that researchers must define religiosity “for every research effort.” As such, religiosity in this study can be defined as one’s self-perceived level of religiousness (further discussion regarding this decision is in **Measurement of Variables**). Note that *religiosity* differs from *religion* as well as *religious affiliation*.

**Multi Dimensionalism vs. Unidimensionalism:**

An important feature of religiosity within academic research is the debate between its being unidimensional or multidimensional (Schwartz *et al.* 1995; Mokhlis 2009; Wilkes *et al.* 1986). It is far beyond the scope of this paper to explore the intricacies of the specific dimensions of religiosity, however being that we of course chose to measure religiosity in one particular (unidimensional) way, (thereby forsaking multidimensional measurement) discussion of the advantages, disadvantages, and characteristics of both multi- and unidimensional conceptualizations of religiosity is necessary. The multidimensional or “specific” view takes measurement of religiosity as a combination of several individual values or dimensions, while unidimensional or “general” measurement of religiosity approaches the whole construct as one measurable dimension. (DeJong, *et al.* 1976).

Mokhlis (2009) and Wilkes (1986) contend that religion is most likely multi-dimensional in nature. Mokhlis (2009) writes that “Most research has focused upon indices of intrinsic (religion as an end), extrinsic (religion as a means), and quest (religion as a search) dimensions of religiosity.” However, the author adds that “there is no consensus among experts as to the number of dimensions that make up the religiosity construct”.

In their thorough analysis of the dimensionality of religiosity, DeJong *et al.* (1976)advocate for both sides of the argument. They found that, simultaneously, “there is clearly continuing evidence for multidimensions of religiosity” *and* “while beliefs, experience, and religious practices are operationally and conceptually different, these dimensions are closely tied together by a more global concept – a generic religiosity factor – of which they can be considered subdimensions.” DeJong *et al.* (1976) [also cited by Wilkes, *et al.* (1986)], states that:

“The generalized level has advantages (1) where data reduction is paramount … and (2) where religiosity is one of several competing explanations for some social pattern. On the other hand the specific level of definition is useful (1) for theory construction, particularly within the religiosity frame of reference, and (2) for studies on the determinants and consequences of specific cognitive, affective, or behavioral phenomena related to religion.”

To conclude; for the purposes of this research, relevant studies (e.g. DeJong, *et al.*, 1976; Schwartz, *et al.*, 1995; Wilkes, *et al.*, 1986) supported the notion that while religiosity itself (at a deeper level than is necessitated by this paper) is indeed a multidimensional construct, measurement as a single general variable is valid and appropriate in many circumstances.

**Relevancy & Use in Consumer Behavior:**

Though religiosity is traditionally under the cultural and psychological fields of study, its relevancy to consumer behavior has been well documented. In the present day, a myriad of studies focusing on (and supporting) the impact of religiosity within the scope of business have been successfully completed (Mokhlis, 2009). Wilkes *et al.* (1986) stated “religiosity has been shown to correlate with several attitudinal and behavioral variables, many of which relate to the consumer.” Mokhlis (2009) found that his empirical findings provided “some intriguing evidence of a causal link between religion and consumer behavior.”

**Ethnocultural Identification**

For the purposes of this study, ethnocultural identification is simply a self- reported measure of a respondent’s level of attachment to and identification with his or her cultural/ethnic group and heritage. This variable was selected based on the indication from past research that ethnocultural I.D. is positively related with both Traditionalism (Duckitt *et al.* 2010) and Ethnocentrism (Bizumic *et al.* 2009). Thus, the brief scale used in our study is efficient in helping to achieve the main research objective (attempting to indicate whether or not cultural values may be significant antecedents of Aad) because this one simple and easily tested variable is tied to various other cultural values.

**‘Antecedents’ or underlying determinants of AAd:**

The purpose of this investigation is to determine the significance of cultural values as antecedents of Aad. MacKenzie and Lutz (1989)1 referred to “discovering the nature of the underlying determinants of Aad” as “an important task in achieving a thorough understanding of its effects”. These researchers thus published a series of papers refining a model of antecedents to Aad, culminating in their 1989 publication. However, they did not cover cultural values in their investigation. It is the goal of this paper to determine whether or not studying the impact of cultural values is a worthwhile pursuit.

Petty (1983) published works detailing two different routes to attitude change, or persuasion. Of these routes, two were named - the *central* and *peripheral*. The central route to persuasion encompasses, as Petty himself puts it, a person’s “diligent consideration” of information which he or she perceives to be “central to the true merits of a particular attitudinal position.” In other words, the central route to attitude change involves the consumer’s processing of information directly related to the attitude in question and its subject. Lutz (1985)[[24]](#footnote-24) contends that when applying Petty’s model to Attitude toward the Ad, message content is the primary influence in this situation.

Petty’s (1983) peripheral route entails attitude changes which occur due to factors other than direct consideration of the issue & information received by the persuader. In this route, attitudes are changed based upon cues “associated with the attitude issue or object” or even “various simple cues in the persuasion context.” Petty even goes so far as to state that, due to peripheral processing of contextual cues, “a person may accept an advocacy simply because it was presented during a pleasant lunch”. Applied to Aad, in peripheral processing, the audience is affected more by the message’s source or contextual factors (Lutz 1985).

Lutz (1985) postulated that the determinants (or antecedents) of Aad are **not** all cognitive, and “in other words … Aad may also be formed through a more *peripheral processing mechanism.*” In the model published in his 1985 paper, Lutz posited Mood, a contextual factor, as the most *peripheral* direct antecedent of Aad (See Appendix). It is contextual factors’ acting as possible determinants of Aad which interests us most. If Mood and other contextual variables (such as an aforementioned pleasant lunch) may influence Aad, we propose that cultural values, which are ever present in the context of any person’s predicament at any time, may also act as determinants of Aad.

**RESEARCH OBJECTIVE**

The objective of this study is to determine whether or not cultural values may be valid and significant antecedents of Attitude toward the Advertisement in Turkish consumers. Achievement of this objective will be based on testing the following hypotheses.

**HYPOTHESES**

Due to the findings of Lutz (1985) and Petty (1983) relating to the impact of peripheral cues on variables within consumer behavior, specifically Aad, we hypothesize that:

H1: Cultural values will be antecedents of Attitude toward the Ad. The following cultural values will impact the attitude:

A. Religiosity

B. Ethnocultural Identification

Individual characteristics of consumers themselves can influence their attitudes. We form the hypothesis:

H2: Demographic variables will affect the relationship between Aad and its antecedents. The following variables will impact this relationship:

A. Age

B. Gender

C. Household Income

D. Level of Education

**METHODOLOGY**

In Turkey, questionnaires (in English) were distributed, in print format, to English speaking students at a medium sized private Turkish university with an urban campus. After a pre-test with feedback from a handful of respondents, modifications were made to eliminate confusion and streamline the response process. The final survey required approximately ten minutes to complete. Two versions of the survey were distributed. One group of respondents took a survey with American print advertisements (in English) for the mainstream Broadway musicals *Cats* and *Jersey Boys,* while the other took an identical survey featuring Turkish ads for the same productions, which were performed in Turkey at a comparable level of quality to their Broadway counterparts. This helped us account for the impact of advertisements which were foreign to Turkish respondents. No individual submitted both versions of the questionnaire. In the Turkish sample, 45 respondents saw the American advertisements, 45 saw the Turkishadvertisements.

We used version 21 of SPSS statistical software for all analysis.

**MEASUREMENT OF VARIABLES**

**Attitude Toward the Advertisement**

As per the findings of Bruner (2005, P.701), we measured attitude toward the ad via scales which covered the affective and cognitive components of the attitude, as well as a general measurement. The affective component was measured with a scale used by Okechuku and Wang (1988)3, which included items measuring the extent to which a respondent felt the ad to be interesting, appealing, impressive, attractive, and eye-catching. The cognitive component was measured using Homer’s (1995)3 scale, consisting of items which recorded to what extent the respondent thought the ad was believable, interesting, informative, well-designed, easy-to-follow, attention-getting, and clear. Lastly, an overall measurement of Aad was taken as the sum of four items used by Holbrook (1987)[[25]](#footnote-25).

**Religiosity**

As advocated by various researchers (e.g. Schwartz *et al.* 1995; DeJong *et al.* 1976; Wilkes *et al.* 1986), the measurement of religiosity as a unidimensional or multidimensional variable depends on the circumstances of the research at hand. This study utilizes the *general* or unidimensional measurement of religiosity. This route was taken due to various factors.

Religiosity, in this study, is being investigated as a determinant of Aad - the singular level of religiosity is being related to the *attitude*. When doing so instead of focusing on the impact of various components of *religiosity*, the unidimensional approach is desirable (Schwartz *et al.* 1995). Additionally, religiosity is not the only investigated potential determinant of Attitude toward the Ad, and this too suggests use of unidimensional measurement (DeJong *et al.* 1976). 2) The level of religiosity is being tested in respondents of vastly different cultures and religions. Schwartz (1995) argues that this situation requires emphasis of the “common denominator of religiosity rather than its discrete aspects”. 3) Although data reduction was not “paramount” as DeJong (1976) stated, as the questionnaire was distributed to speakers of English as a second language, as much simplicity as possible was beneficial to accurate and consistent results.

The specific scale used in this study was originated by Schwartz (1995), and is a self-rated measure of religiosity based on response to the question: “How religious, if at all, do you consider yourself to be?” We used a 7 point Likert-type scale, anchored by “Not at all religious” and “Very religious”. Both Mokhlis (2009) and Wilkes (1986) provided some information related to religious self-perceptions. Mokhlis reports that some have argued that “religion is highly personal in nature and therefore its effects on consumer behavior depend on individuals’ level of religious commitment or the importance placed on religion in their life.” Wilkes found that a person’s perception of him or herself being religious may have influences on cognitive and conative behavioral aspects.

**Ethnocultural Identification**

We used a modified version of the E.C.I.D. scale published by Duckitt *et al.* (2010). It is a two-item scale featuring the statements “I have a strong identification with my ethnic and cultural heritage” and “I have NO particular attachment to my own culture or ethnic group”. However, because of unfavorable reliability (Chronbach’s Alpha = -.128), we chose to only score the first item (I have a strong … heritage) for our E.C.I.D. measurement. This scale utilized a 7-point Likert-type response format, and anchors of “Very strongly disagree” and “Very strongly agree”, with “Unsure/Neutral” as a middle response.

**Demographics**

Demographic information used by this study included: Gender, Age, Nationality, Family Household Income [calculated for Turkish distribution at a rate of 1USD = 2.10 Turkish Lira; the approximate exchange rate at the time of data collection], and Level of Education.

Additionally, though the main objective was (as previously stated) to investigate cultural values’ impact on Aad, other variables having the potential impact this relationship were also measured on the survey. These included: prestigiousness (of the product), price perception (of the product), price consciousness, social desirability bias.

**RESPONDENT PROFILE**

**n= 87**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Gender | | |  | Age | | |
|  | # | % |  |  | # | % |
| Male | 48 | 55.2% |  | 18-24 | 82 | 94.3% |
| Female | 39 | 44.8% |  | 25-34 | 5 | 5.7% |
| Total | 87 | 100% |  | Total | 87 | 100% |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Annual Household Income | | |  | Education | | |
|  | # | % |  |  | # | % |
| $0-$20,000 | 31 | 35.6% |  | Did not graduate High School | 1 | 1.1% |
| $20,001-$35,000 | 18 | 20.7% |  | Current Undergraduate student | 46 | 52.9% |
| $35,001-$50,000 | 6 | 6.9% |  | Some college (Not currently a student) | 5 | 5.7% |
| $50,001-$70,000 | 12 | 13.8% |  | Undergraduate degree | 30 | 34.5% |
| $70,001-$100,000 | 3 | 3.4% |  | Post-Graduate degree | 3 | 3.4% |
| $100,001-$200,000 | 5 | 5.7% |  | Ph.D. | 2 | 2.3% |
| $200,001+ | 8 | 9.2% |  |  |  |  |
| Did not respond | 4 | 4.6% |  |  |  |  |
| Total | 87 | 100% |  | Total | 87 | 100% |

**RESULTS**

We used IBM SPSS Statistics v.21 for all statistical analysis. Frequencies and histograms were used, as well as one-way ANOVA for comparison of means, and simple linear regression for tests of correlation.

Note: Please see appendix X for all statistical output not reported in the text.

Out of the 90 collected responses, one was not sufficiently complete and two respondents did not report “Turkish” as their nationality. This brought the total sample size to **n=87**. Although we hoped to assess the impact of as many demographic variables as possible, we only had adequate data to analyze the effects of gender and education. Unfortunately, the variance in level of education in our sample was such that we were only able to focus on undergraduate students and those who had earned an undergraduate degree.

*H1: Cultural values will be antecedents of Attitude toward the Ad*

As mentioned previously, for the sake of efficiency, we chose to only measure two cultural variables, and chose Religiosity and Ethnocultural Identification (E.C.I.D.) because they have been shown to correlate with a myriad of other cultural values (Bizumic *et al.* 2009; Duckitt *et al.* 2010; Wilkes *et al.* 1986).

Due to an unfavorable reliability test (Chronbach’s Alpha = -.128), we chose to use only one of the two items in our E.C.I.D. scale (*I have a strong identification with my ethnic and cultural heritage*) to measure that variable. This unusual negative number may be one of the issues stemming from respondents taking this survey in English, a second language to them (discussed further in *Limitations*). The other item (*I have NO particular attachment to my own culture or ethnic group*) is reverse wording of the previous, and this fairly subtle distinction may have been lost in translation.

*H1A: Religiosity will be an antecedent of Aad:*

In this data set, we found **no** significant relationships between religiosity and the affective, cognitive, or overall components of Aad. This of course means that there are no grounds to support hypotheses H1A.

*H1B: E.C.I.D. will be an antecedent of Aad:*

We found that in the total sample, E.C.I.D. was positively correlated with the affective (F=5.459; p: .022; r2=.064) and general (F=5.424; p: .022; r2=.064) Aad components for only the *Jersey Boys* advertisements. We did not find any correlations between E.C.I.D. and Aad for the *Cats* ads.

When we separately analyzed males and females, we found that for men, E.C.I.D. had significant positive relationships with the affective (F=4.373; p: .042; r2=.092) and general (F=8.912; p: .005; r2=.175) components of the *Jersey Boys* advertisements. Men also had significantly higher affective attitudes towards those ads than women (Men x̄=4.7064; Women x̄=3.973). We also found that in women, E.C.I.D. was positively associated with affective attitudes towards the *Cats* ads (F=7.931; p: .008; r2=.177), though there was no significant difference between men and women in affective attitudes towards these advertisements.

These few correlations are the only relationships found between E.C.I.D. and the affective/cognitive/general components of both the *Cats* and *Jersey Boys* ads. Though some weak conclusions may be suggested (for example, that in men, E.C.I.D. is potentially correlative with Aad when the affective component is significantly high) we **do not** accept that our data shows sufficient evidence to support hypothesis H1B. Although there were a number of positive correlations, when put together, they do not give us a unified picture of a relationship between constructs. In our minds, the disconnectedness of these statistical correlations creates too much doubt and too much suggestion that these correlations may be coincidental.

In conclusion, our data **does not** offer sufficient evidence support cultural values’ acting as antecedents of Attitude toward the Ad in Turkish consumers.

*H2: Demographic variables will affect the relationship between Aad and cultural values.*

As ever in marketing, those with different characteristics and backgrounds tend to behave and consume differently. Therefore, we chose to spend time analyzing how these different traits affect our research. Unfortunately, our data was only sufficient to analyze the effects of gender and level of education, and sufficient responses were only provided for those currently seeking an undergraduate degree and those with an undergraduate degree.

*H2A: Gender will affect the relationship between Aad and cultural values*

As mentioned above in H1B:

**Men** had significantly **higher affective attitudes** to the ***Jersey Boys*****advertisements** than women. (Men x̄ 4.7064; Women x̄=3.973)

For **Men**, **E.C.I.D.** had a **positive relationship** with **affective attitudes** towards the ***Jersey Boys* advertisements**. (F=4.373; p: .042; r2=.092)

For **Men**, **E.C.I.D.** had a **positive relationship** **with general attitudes** towards the ***Jersey Boys* advertisements**. (F=8.912; p: .005; r2=.175)

For **Women**, **E.C.I.D.** was **positively associated** with **affective attitudes** towards the ***Cats* advertisements**. (F=7.931; p: .008; r2=.177)

We were not able to find any correlations between Aad and religiosity or E.C.I.D. for the entire sample, but when the same tests were performed separately on each gender, the above significances were found. While we do not have sufficient information to describe a consistent distinction between genders, the characteristics of the results changed substantially from those of the whole sample. This leads us to support the hypothesis that gender does, in some way, affect the relationship between cultural values and Aad.

*H2B: Education level will affect the relationship between Aad and cultural values*

Although we were only able to focus on those seeking undergraduate degrees and those who had already attained them, examination of these two groups was of course worthwhile. We found that those with undergraduate degrees were significantly more religious than those who were currently seeking them (Und. Student x̄=3.9500, Und. Degree x̄=4.77) however this is where the interesting finds stop. When these two groups were analyzed separately, we found no significant differences in the 3 components of Aad, nor did we find significant correlations between them and our 2 cultural variables in either group.

**LIMITATIONS**

We believe that the main weakness in this study stems from the survey distribution process. Firstly, due to time and financial constraints, we were forced to distribute it in English to Turkish respondents. Although the respondents were screened to ensure an adequate level of comprehension, English is of course a second language for them, and this (to an unknown degree) impacts their understanding of the items and therefore the validity of their responses.

Secondly, it is worth noting that when the paper surveys were handed out in common areas of a university, some students answered entirely alone, and some of those seated in groups were chatting with each other while filling out the questionnaire. While this issue would ideally be eliminated, the researchers were not in a position to avoid it.

Additionally, the authors recognize that the sample size of 87, while not wholly inadequate, is certainly sub-optimal in terms of conclusions and theoretical claims. Also, due in part to the relatively small sample size and as well simply to variance in the data, we did not have enough data to sufficiently measure many of the desired demographic groups.

**CONCLUSIONS**

Unfortunately, we are unable to exhibit sufficient evidence to support the claim that consumers’ culture has an influence on their attitudes toward advertisements. Though we were able to find some statistical correlations, they are too few and far between and there is no common theme to them. This, combined with the aforementioned weaknesses in our data set, leads us to speculate that the correlations we found do not possess sufficient validity to translate to conclusions that are practically applicable.

While we cannot support the relationship between culture and Aad, we also cannot support the non-existence of this relationship either. We conclude that while the theoretical background for the study is sound, our data set was not of high enough quality to support a strong argument in agreement or disagreement of the thesis.

**MANAGERIAL IMPLICATIONS**

As this research was rather inconclusive, this section will be brief and focus on the one hypothesis which we did support: that among Turkish consumers, gender affects the relationship between culture and attitude toward the ad. For marketing professionals, this means that when designing an advertising campaign to be run in Turkey, it is important to be conscious that even if the targeted male and female consumers have similar cultural backgrounds and values, they may have varying attitudes towards the advertisements produced. Creating segments based on culture alone may be inadequate, as the different genders in these segments may be divided as well. Generally, differences in the behavioral natures of comparable groups of consumers, including groups divided by gender, put emphasis on a target marketing strategy as opposed to a blanket strategy. This suggests that marketers should take the time to thoroughly pre-test their ads and control for differences in individuals of different genders. Additionally, if budget allows, separate advertisements tailored to men & women may be a viable option if these differences are significant enough.

**DIRECTIONS FOR FUTURE RESEARCH**

Due to the limitations of this study, we would be thrilled to see a similar endeavor performed with a stronger data set. An important step in that direction is to use a survey that is accurately translated to Turkish and otherwise optimized for Turkish respondents. Additionally, a more sound method of data collection; perhaps electronic distribution; and a much larger sample size will be extremely beneficial.

Another direction stemming from this research comes from our single-item measure of religiosity. This construct has multiple dimensions, and separately accounting for these dimensions may yield a deeper understanding of the issue.

Also, though religiosity and ethnocultural identification have been shown to correlate with other cultural variables, these others (i.e. traditionalism and ethnocentrism) were not tested here.

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**APPENDIX 1: SCALES MEASURED**

Attitude Toward the Ad (Cognitive)(Homer 1995)4

Not at all descriptive of the ad/Describes the ad very well:

1. Was believable

2. Was interesting

3. Was informative

4. Was well-designed

5. Was easy-to-follow

6. Was attention-getting

7. Was clear

Attitude Toward the Ad (Affective)(Okechuku 1988; Petroshius 1989)4

3. Interesting/Boring

4. Appealing/Unappealing

5. Impressive/Unimpressive

6. Attractive/Unattractive

7. Eye-Catching/Not Eye-Catching

Attitude Toward the Ad (Overall)(Holbrook 1987)4

1. I dislike the ad/I like the ad

2. I react unfavorably to the ad/I react favorably to the ad

3. I feel negative toward the ad/I feel positive toward the ad

4. The ad is bad/ The ad is good

Prestigiousness4

1. Prestigious (Low/High)

2. Exclusive (Low/High)

3. High Status (Low/High)

*Appendix I: Scales measured*

Price (Product)4

(Strongly Disagree / Strongly Agree)

1. The price of \_\_\_\_ is high.

2. The price of \_\_\_\_ is low. (r)

3. \_\_\_\_ is expensive.

Price Consciousness[[26]](#footnote-26)

1. I compare prices of at least a few brands before I choose one.

2. I find myself checking the prices even for small items.

3. It is important to me to get the best price for the products I buy.

Ethnocultural Identification Scale(Duckitt *et al.* 2010)

(Very strongly disagree / Unsure/neutral / Very strongly Agree)

1. I have a strong identification with my ethnic and cultural heritage

2. I have NO particular attachment to my own culture or ethnic group

Religiosity(Schwartz *et al.* 1995)

(Not at all religious/Very religious)

1. How religious, if at all, do you consider yourself to be?

Social Desirability Bias (M-C Short Form C)(Reynolds 1982)

(True/False)

1. It is sometimes hard for me to go on with my work if I am not encouraged.

2. I sometimes feel resentful when I don’t get my way.

3. On a few occasions, I have given up doing something because I thought too little of my ability.

4. There have been times when I felt like rebelling against people in authority even though I knew they were right.

*Appendix I: Scales measured*

5. No matter who I'm talking to, I'm always a good listener.

6. There have been occasions when I took advantage of someone.

7. I'm always willing to admit it when I make a mistake.

8. I sometimes try to get even rather than forgive and forget.

9. I am always courteous, even to people who are disagreeable

10. I have never been irked when people expressed ideas very different from my own.

11. There have been times when I was quite jealous of the good fortune of others.

12. I am sometimes irritated by people who ask favors of me.

13. I have never deliberately said something that hurt someone’s feelings.

Demographic Information

1. Gender (Male/Female)

2. Age (0-17 / 18-24 / 25-34 / 35-44 / 45-59 / 60-69 / 70+)

3. Nationality (Turkish / American / Other)

4. Annual Family Income Level ($0-$20,000 / $20,000-$35,000 / $35,000-$50,000 / $50,000-$70,000 / $70,000-$100,000 / $100,000-$200,000 / $200,000+) [Converted to Turkish Lira at 5/5/2014 rate of 1USD = 2.10 TRY]

5. Level of education (Did not graduate High School / High School Graduate / Current Undergraduate / Some College (Not a current student) / Undergraduate Degree/Post-Graduate Degree/Ph.D.)

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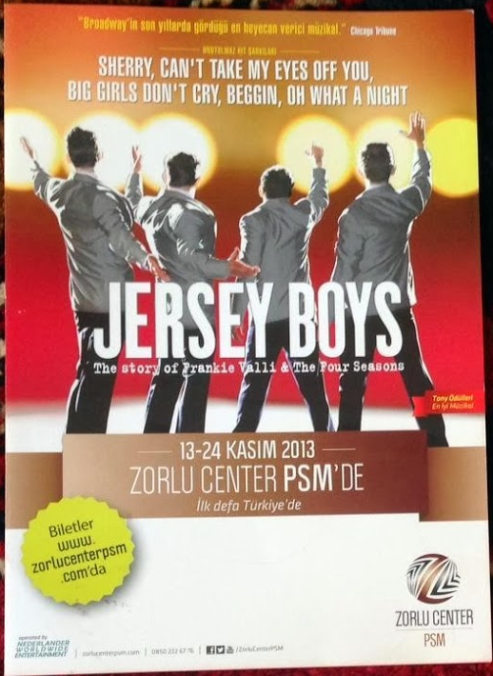
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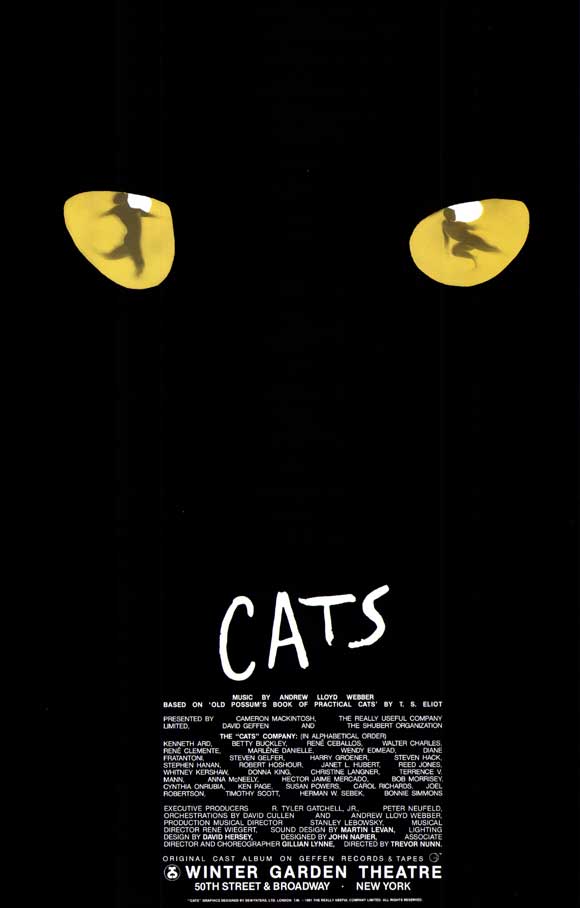
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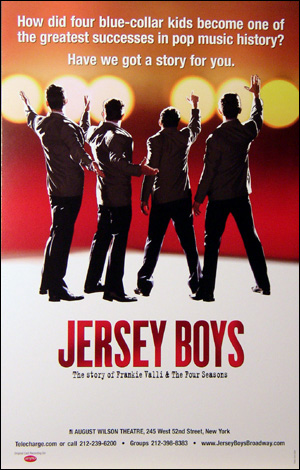
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**APPENDIX II: ADVERTISEMENTS PICTURED**









Appendix III: Selected Statistical Output

|  |  |  |  |
| --- | --- | --- | --- |
| Scale Reliability (Chronbach's Alpha) | | | |
| Scale | English Ads | Turkish Ads | Combined Sample |
| *Cats* Ads |  |  |  |
| Aad Cognitive | 0.915 | 0.767 | 0.876 |
| Aad Affective | 0.885 | 0.755 | 0.849 |
| Aad General | 0.910 | 0.785 | 0.863 |
| *Jersey Boys* Ads |  |  |  |
| Aad Cognitive | 0.896 | 0.908 | 0.902 |
| Aad Affective | 0.942 | 0.940 | 0.941 |
| Aad General | 0.951 | 0.940 | 0.946 |

|  |  |  |  |
| --- | --- | --- | --- |
| ANOVA - Males / Females | | | |
| Measurement | Males Mean | Females Mean | Sig. |
| E.C.I.D. | 4.2800 | 4.3800 | 0.7470 |
| Religiosity | 4.0600 | 4.2400 | 0.6460 |
| *Cats* Ads |  |  |  |
| Cognitive | 4.6565 | 4.8421 | 0.5200 |
| Affective | 4.4625 | 4.5538 | 0.7200 |
| General | 4.3777 | 4.7051 | 0.2600 |
| *Jersey Boys* Ads |  |  |  |
| Cognitive | 5.1201 | 4.8205 | 0.2570 |
| Affective | 4.7064 | 3.9730 | 0.0190 |
| General | 4.5598 | 4.2703 | 0.3690 |

|  |  |  |  |
| --- | --- | --- | --- |
| ANOVA - Education Level | | | |
| Measurement | Und. Student | Und. Degree | Sig. |
| E.C.I.D. | 4.1600 | 4.5300 | 0.2700 |
| Religiosity | 3.9500 | 4.7700 | 0.0320 |
| *Cats* Ads |  |  |  |
| Cognitive | 4.7298 | 4.8112 | 0.8030 |
| Affective | 4.4217 | 4.5200 | 0.7280 |
| General | 4.4783 | 4.4167 | 0.8470 |
| *Jersey Boys* Ads |  |  |  |
| Cognitive | 5.0266 | 4.7980 | 0.4350 |
| Affective | 4.3727 | 4.1931 | 0.6000 |
| General | 4.5407 | 4.1293 | 0.2290 |

Appendix III: Selected Statistical Output

|  |  |  |  |
| --- | --- | --- | --- |
| ANOVA - Turkish Ads (n=45) / English Ads (n=45) | | | |
|  | Turkish Mean | English Mean | Sig. |
| *Cats* Ads |  |  |  |
| itive | 4.9767 | 4.4966 | 0.0910 |
| Affective | 4.6000 | 4.4047 | 0.4400 |
| General | 4.5988 | 4.4535 | 0.6170 |
| *Jersey Boys* Ads |  |  |  |
| Cognitive | 5.1150 | 4.8469 | 0.3100 |
| Affective | 4.3675 | 4.4000 | 0.9180 |
| General | 4.5179 | 4.3415 | 0.5820 |
| Religiosity | 4.0900 | 4.1900 | 0.7950 |
| E.C.I.D. | 4.3200 | 4.3400 | 0.9410 |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Simple Linear Regression; Independent Variable = Religiosity | | | | |
| Dep. Variable | Sig. | R Square | Beta | F |
| *Cats* Ads |  |  |  |  |
| Cognitive | 0.771 |  |  |  |
| Affective | 0.55 |  |  |  |
| General | 0.633 |  |  |  |
| *Jersey Boys* Ads |  |  |  |  |
| Cognitive | 0.612 |  |  |  |
| Affective | 0.487 |  |  |  |
| General | 0.856 |  |  |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Simple Linear Regression; Independent Variable = E.C.I.D. | | | | |
| Dep. Variable | Sig. | R Square | Beta | F |
| *Cats* Ads |  |  |  |  |
| Cognitive | 0.587 |  |  |  |
| Affective | 0.147 |  |  |  |
| General | 0.722 |  |  |  |
| *Jersey Boys* Ads |  |  |  |  |
| Cognitive | 0.237 |  |  |  |
| Affective | 0.022 | 0.064 | 0.245 | 5.459 |
| General | 0.022 | 0.064 | 0.251 | 5.424 |

Appendix III: Selected Statistical Output

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Simple Linear Regressions; Independent Variable = Religiosity; Men / Women | | | | | | | | |
|  | Men | | | | Women | | | |
| Dep. Variable | Sig. | R Square | Beta | F | Sig. | R Square | Beta | F |
| *Cats* Ads |  |  |  |  |  |  |  |  |
| Cognitive | 0.505 |  |  |  | 0.712 |  |  |  |
| Affective | 0.067 |  |  |  | 0.341 |  |  |  |
| General | 0.245 |  |  |  | 0.440 |  |  |  |
|  |  |  |  |  |  |  |  |  |
| *Jersey Boys* Ads |  |  |  |  |  |  |  |  |
| Cognitive | 0.997 |  |  |  | 0.588 |  |  |  |
| Affective | 0.689 |  |  |  | 0.640 |  |  |  |
| General | 0.692 |  |  |  | 0.582 |  |  |  |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Simple Linear Regressions; Independent Variable = E.C.I.D.; Men / Women | | | | | | | | |
|  | Men | | | | Women | | | |
| Dep. Variable | Sig. | R Square | Beta | F | Sig. | R Square | Beta | F |
| *Cats* Ads |  |  |  |  |  |  |  |  |
| Cognitive | 0.486 |  |  |  | 0.077 |  |  |  |
| Affective | 0.717 |  |  |  | 0.008 | 0.177 | 0.359 | 7.931 |
| General | 0.371 |  |  |  | 0.06 |  |  |  |
|  |  |  |  |  |  |  |  |  |
| *Jersey Boys* Ads |  |  |  |  |  |  |  |  |
| Cognitive | 0.485 |  |  |  | 0.305 |  |  |  |
| Affective | 0.042 | 0.092 | 0.274 | 4.373 | 0.167 |  |  |  |
| General | 0.005 | 0.175 | 0.092 | 8.912 | 0.619 |  |  |  |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Simple Linear Regressions; Independent Variable = Religiosity; Und. Students / Und. Degrees | | | | | | | | |
|  | Und. Students | | | | Und. Degrees | | | |
| Dep. Variable | Sig. | R Square | Beta | F | Sig. | R Square | Beta | F |
| *Cats* Ads |  |  |  |  |  |  |  |  |
| Cognitive | 0.722 |  |  |  | 0.306 |  |  |  |
| Affective | 0.895 |  |  |  | 0.479 |  |  |  |
| General | 0.722 |  |  |  | 0.413 |  |  |  |
|  |  |  |  |  |  |  |  |  |
| *Jersey Boys* Ads |  |  |  |  |  |  |  |  |
| Cognitive | 0.995 |  |  |  | 0.794 |  |  |  |
| Affective | 0.884 |  |  |  | 0.544 |  |  |  |
| General | 0.814 |  |  |  | 0.751 |  |  |  |

Appendix III: Selected Statistical Output

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Simple Linear Regressions; Independent Variable = E.C.I.D.; Und. Students / Und. Degrees | | | | | | | | |
|  | Und. Students | | | | Und. Degrees | | | |
| Dep. Variable | Sig. | R Square | Beta | F | Sig. | R Square | Beta | F |
| *Cats* Ads |  |  |  |  |  |  |  |  |
| Cognitive | 0.955 |  |  |  | 0.800 |  |  |  |
| Affective | 0.754 |  |  |  | 0.379 |  |  |  |
| General | 0.507 |  |  |  | 0.324 |  |  |  |
|  |  |  |  |  |  |  |  |  |
| *Jersey Boys* Ads |  |  |  |  |  |  |  |  |
| Cognitive | 0.534 |  |  |  | 0.175 |  |  |  |
| Affective | 0.055 |  |  |  | 0.268 |  |  |  |
| General | 0.24 |  |  |  | 0.106 |  |  |  |

**UNITY HOUSE – NONPROFIT CONSULTING**

***Callan Weise, Siena College***

***Melinda Costello, Siena College***

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*During the fall 2014 semester, my MGMT 290 Consulting with Nonprofit Organizations class worked with Christine Nealon, The Director of Community Resources at Unity House.  Unity House is a Rensselaer County-based human service agency that provides a wide range of services to meet the otherwise unmet needs of people in our community who are hurting and struggling.  The project she presented to us was related to ReStyle, Unity House’s clothing thrift store.  She asked us to help her with two challenges – communicating to customers that the dollars they spend at ReSyle support Unity House efforts and adjusting the pricing plan so it encourages shoppers who can pay more for each garment to adjust their purchase price upward from the price marked on the tag.  The class followed the consulting process to address these concerns and agreed on solutions that respected the interests of all stakeholders.  Although in the context of the semester we were not able to implement the changes, we presented Christine with a complete plan for how the recommendations could be implemented.  This presentation will summarize our recommendations, implementation plan, and the process we used to approach this project.  It was rewarding to see our semester of hard work help an organization as dedicated as Unity House.*

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**IS THE ORGANISATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT PROVIDING BENEFITS FOR THOSE IN NEED?**

***Matthew Leggiero, Siena College***

***Joseph McCollum, Siena College***

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***ABSTRACT***

*Environmental cooperation and policy are both necessary to preserve resources and make sure that the world obtains sustainable growth. The Organisation for Economic Co-operation and Development is an organization developed to ensure that the countries involved keep the goal of sustainability and sustainable growth in mind. This goal has a positive benefit for poorer less developed countries. The data provided by the World Bank shows that this organization is more environmentally efficient per person and better at sustainability than the countries not a part of the organization. Sustainability here is thought of as Solow’s definition of sustainability which is intergenerational equity. This conclusion is supported by the comparison of CO2 output by members in the organization and the non-members and the trends shown by the data*

**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**INTRODUCTION**

Siena College is a Franciscan Institution founded on the DORS principle. The DORS principle stands for diversity, optimism, respect, and service. Siena College requires that each student fulfill requirements that include one class in heritage, social justice, diversity, and nature. This research focuses on the idea of the Franciscan tradition of the natural world. The Franciscan tradition *‘cultivates deepened appreciation for the entirety of the created world and heightened commitment to the effective stewardship of the Earth and all living things. The “Natural World” rubric welcomes courses which both investigate the natural world from a scientific perspective and also examine the impact and consequences of human involvement in natural systems.’* ("The Siena College Core.") This shows a need for exploration into cooperation and environmental impacts.

Many individuals recognize the fact that environmental cooperation and policy can lead to sustainability. There is intrinsic and extrinsic value in environmental policy and there is a common comparison to use when determining how ‘well’ a country is doing in this area of policy. The Organisation for Economic Co-operation and Development, or the OECD, is an international organization that works towards development, sustainability, expansion of world trade in both member and non-member countries. In a typical comparison, members are usually compared among other members or the organization as a whole; but how ‘well’ is the organization really doing in comparison to the rest of the world and the benefits that it provides?

The Organisation for Economic Co-operation and Development was developed as a response to the end of World War II and the need for co-operation for the reconstruction of Europe. Originally called the Organisation for European Economic Co-operation (OEEC), the founding of this organization in 1948 helped implement a recovery program through distribution of aid as put forth by under the Marshall Plan. One of the first goals of the OEEC was to reduce and eventually abolish the trade restrictions of the countries involved and also in 1958, the Organisation for European Economic Co-operation puts into place the standards for Seeds Schemes which relates to a certification or controlling of different foods and plants. ("Standards for Seeds, Tractors, Forest, Fruit and Vegetables - OECD.")

In the year 1961, the Organisation for Economic Co-operation and Development was created which superseded the OEEC. The original members of the OCED are Austria, Belgium, Canada, Denmark, France, Germany, Greece, Iceland, Ireland, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, Turkey, United Kingdom and United States. These Italy and Japan joined a few years after followed by Australia, Finland, and New Zealand in the late 1960s to early 1970s. The most current countries that have joined since 1994 include Chile, Czech Republic, Estonia, Hungary, Israel, Korea, Mexico, Poland, Slovak Republic and Slovenia. The OECD works with Russia, Brazil, China, India, Indonesia, and South Africa. Although they are not members, these countries work in cooperation with the organization to achieve the goals of the OECD ("Members and Partners - OECD."). As shown by pivot table #1, there are more OECD countries than non-OECD countries. In the OECD high income bracket, the majority of countries are in the Europe and Central Asia region while the majority of non-OECD countries are members of the Middle East and North Africa region. Since 2010, both OECD and non-OECD have added more countries in the Europe and Central Asia region.

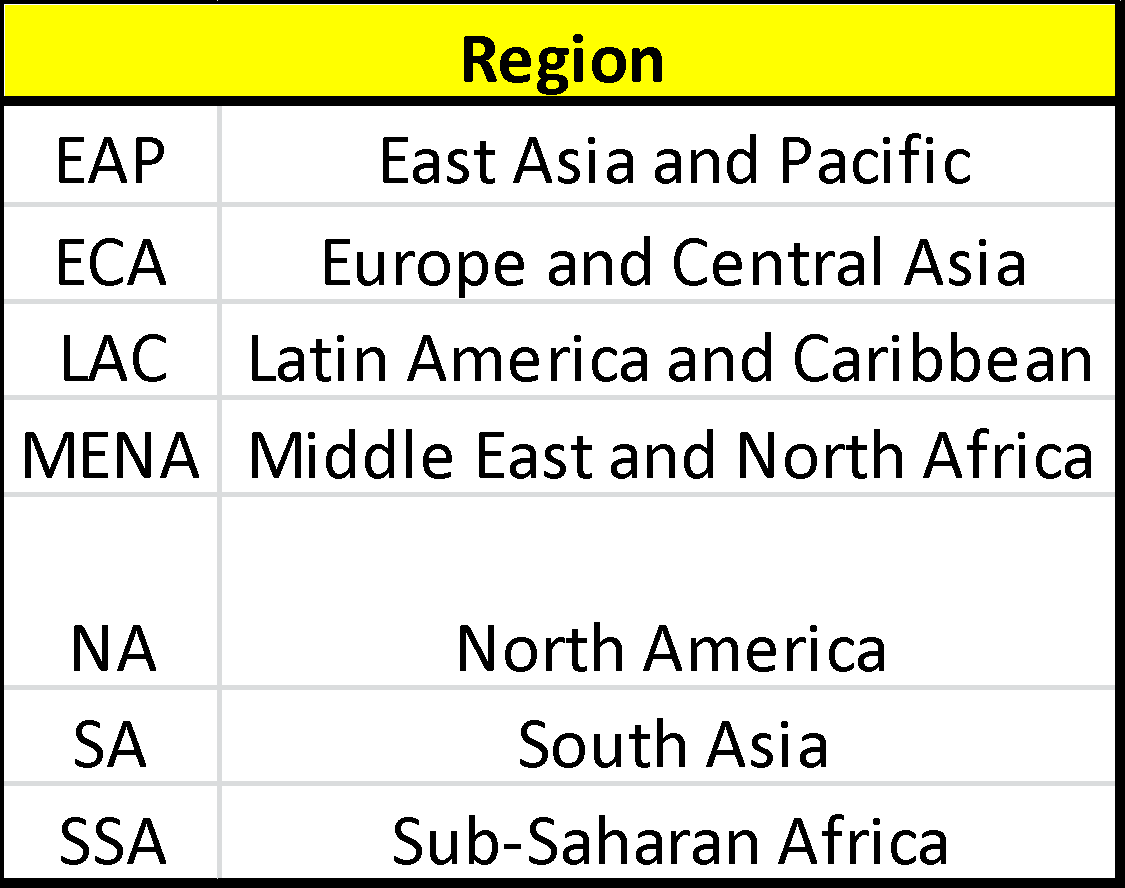
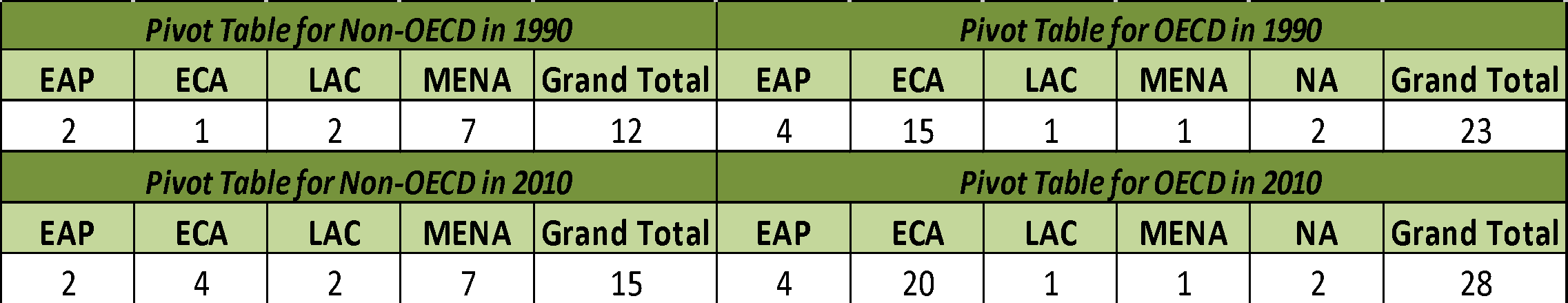


Table Key #1 (Table Key for Pivot Table #1)



Pivot Table #1 (Pivot Table of OECD and Non-OECD regions for years 1990 and 2010)

**DATA**

This research compare the CO2 metric ton per person and the CO2 emissions attributed to manufacturing industries and construction as well as CO2 emissions attributed to transportation as a percentage of total fuel combustion of high income members of the OECD compared with high income countries that are not members of the OECD. CO2 emissions were the focus of this research because of the impact that the CO2 emissions have on a global scale and the overall effects of CO2 output on other countries. CO2 emissions are one of the leading causes of long-run climate change on a global scale. CO2 accounts for around 77% of all major greenhouse gases globally (Field, 422). There has been an increase in CO2 in the atmosphere by about 40% (Field, 422). Climate change affects industries that are more prevalent in poorer, developing countries than in richer more developed countries. Climate change heavily impacts the agricultural, forestry, and fishing industries due to the reliance on weather. Therefore CO2 emissions impact industries that focus on renewable resources. As this shows, CO2 is an appropriate measure of the OECD’s impact on other countries.

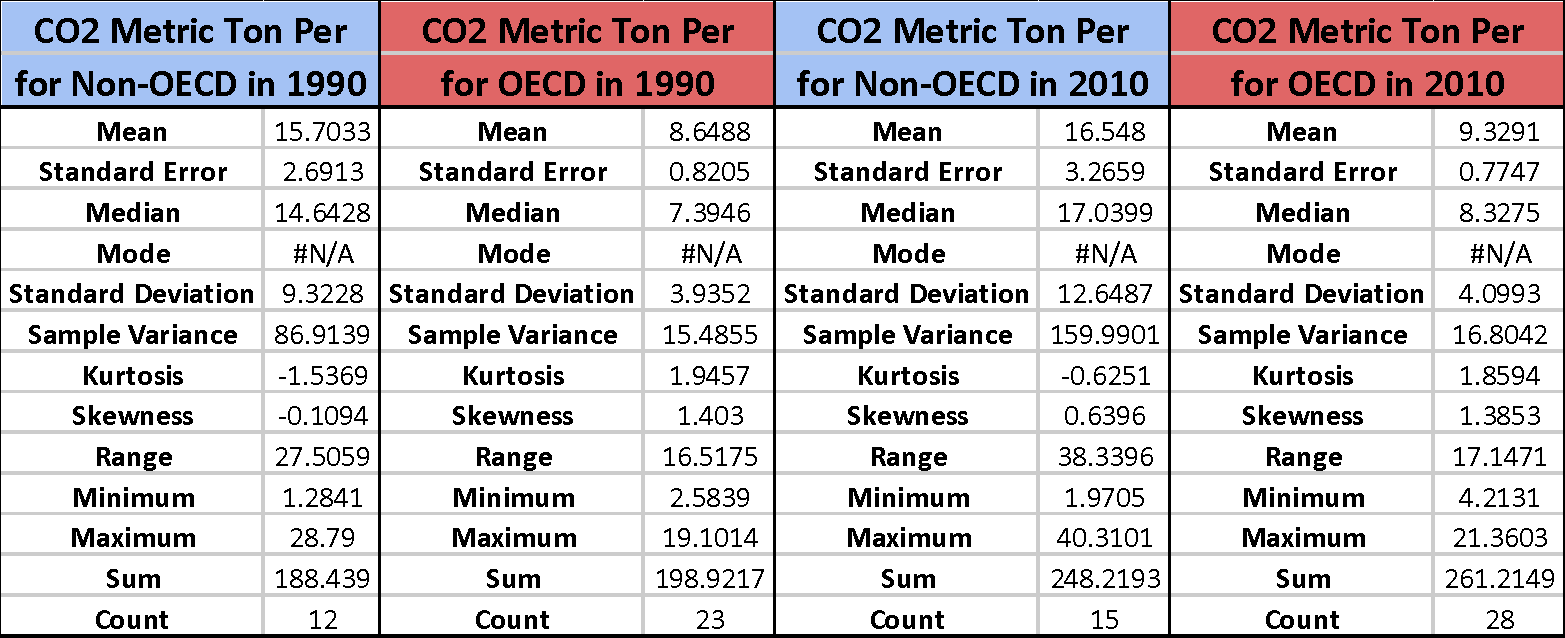
High income in the case of this research is defined as 2013 GNI per capita that was $12,746 or more. The high income groups were used because they are the most influential of the OECD countries and have the most resources available for usage in policy and impact of others. The members that are included in the OCED group are Portugal, Sweden, Germany, Switzerland, Norway, Italy, Ireland, France, Austria, United States, Czech Republic, Israel, Slovenia, Belgium, Luxembourg, Spain, United Kingdom, Australia, New Zealand, Poland, Chile, Finland, Japan, Republic of Korea, Iceland, Canada, Denmark, and Greece. The non-members of the OECD that were used for comparison were United Arab Emirates, Croatia, Russian Federation, Trinidad, Tobago, Singapore, Oman, Saudi Arabia, Brunei Darussalam, Uruguay, Bahrain, Qatar, Cyprus, Kuwait, Lithuania, and Malta. Countries that are members of the OECD but not included because of lack of sufficient data for the time period used (1990 to 2010). All data was gathered from http://data.worldbank.org.

**Analysis**

For the first part of the study, the CO2 metric ton per person data was taken for each country that fit into the criteria of high income OECD or high income non-OECD. This was taken for a time period of 21 years between 1990 and 2010. The average CO2 metric ton per person for the OECD high income countries and the average CO2 metric ton per person for non-OECD countries compose the data that is used for this research. This same process is used to find the CO2 emissions attributed to transportation as a percentage of total fuel combustion for the OECD countries and the non-OECD countries as well as the CO2 emissions attributed to manufacturing industries and construction as a percentage of total fuel combustion for the two groups of high income countries. As shown by descriptive box #1, the world CO2 metric ton per person has risen from 5.58 metric tons to 6.66 metric tons per person since 1990. The sample variance and the range of the data have increased in that same 21 time period by a significant amount. As shown by descriptive box #2, the OECD is consistently lower than non-OECD for both the start year and the end year. The OECD has a mean that is approximately seven metric tons per person less than non-OECD in the year 1990. As time went on, OECD stayed lower per person and in 2010 is still approximately seven metric tons per person less than non-OECD high income members. Standard error and variance for OECD countries are significantly lower than those of their high income counterparts. This is the same story for the range of the data for each research group. This shows that the OECD countries are more consistent than the non-OECD high income countries.



Descriptive Box #1 (The descriptive statistics for CO2 metric ton per person world data for 1990 and 2010)



Descriptive Box #2 (The descriptive statistics for OECD and Non-OECD Countries for 1990 and 2010)

When looking at the CO2 metric ton per person in standardized values, there appears only to be two outliers. The z values for outliers in this case are more than 2 or less than -2. The outliers are a part of the OECD high income group and are the United States and Australia in 1990 and the United States and Luxembourg in 2010. The United States is considered a very industrialized nation and with a high GDP, is expected to produce high levels of CO2 per person. Even with that, the United States has a large population compared to the other countries and therefore is a heavy producer of CO2 emissions. Policies in the United States can help reduce CO2 levels because of the high number of CO2 emissions from the one country. Australia is not a high outlier, with a z score of only 2.08, and is no longer an outlier as of 2010. Luxembourg was not an original member on the OECD which might explain the high CO2 metric ton per person shown in 2010. There are many policy implications that the OECD can achieve through this and can focus resources on reducing CO2 emissions in Luxembourg and the United States. There are no extreme outliers in this data set.

When using the world data as a whole in standardized values there appears three outliers that are above a 2 for their z score. In 1990, the three countries that would be considered outliers were the United Arab Emirates, Brunei Darussalam, and Qatar. In 2010, however, the three countries are Qatar, Kuwait, and Trinidad and Tobago. The similarity for the outliers is that Qatar shows up both times as an outlier on the high side and that the countries are high income countries two of which are from the Middle East and North Africa region. This shows that the highest producers of CO2 metric ton per person emissions are from non-members. Moving forward, something that the OECD might be able to focus on in a world context is working with Qatar, Kuwait, and Trinidad and Tobago to help find better alternatives to industries that produce high levels of CO2, but maintain similar or higher production output yields. This is one way that the OECD can focus on helping out against a global problem.



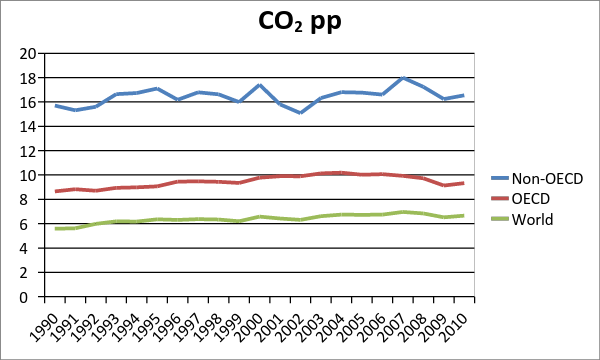
Z-Score Table #1 (Z-Score to determine outliers of the data using to two standard deviations for OECD and non-OECD Countries)



Z-Score Table #2 (Z-Score to determine outliers of the data using to two standard deviations for top ten and lowest ten countries in world data in 1990)

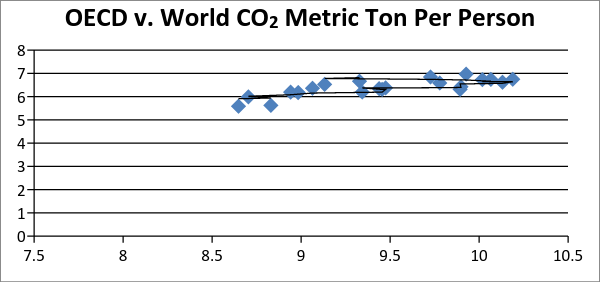


Z-Score Table #3 (Z-Score to determine outliers of the data using to two standard deviations for top ten and lowest ten countries in world data in 2010)

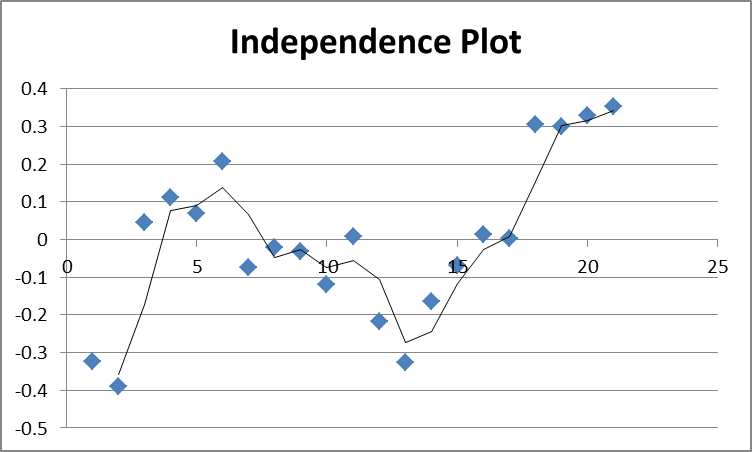


Line Graph #1 (CO2 metric ton per person of OECD, non-OECD, and world of data set)

Line Graph #1 shows the trend of CO2 emissions per person in metric tons over time. The OECD has been consistently lower in the amount of carbon dioxide per person by about six to seven metric tons per person since the beginning of the time period studied. The OECD had an incline of metric tons per person from 1990 until about 2006, when the carbon dioxide emissions per person started to decrease slightly. However, this is not the story represented by the data for the Non-OECD countries. The non-OECD countries in high income have been on a general trend upward, decreasing quickly, but then following the upward trend. This data shows that overall there are less carbon dioxide emissions from OECD countries per person than non-OECD members. When looking at the CO2 metric ton per person data, since the year 1990, there has been an increase of 1 metric ton per person. When looking at the OECD high income and non-OECD high income countries, there is an increase of less than 1 metric ton per person for both the members and non-members over the same period. Based off this data, the next step was to run a regression to determine the correlation between the OECD and Non-OECD high income countries and the world.

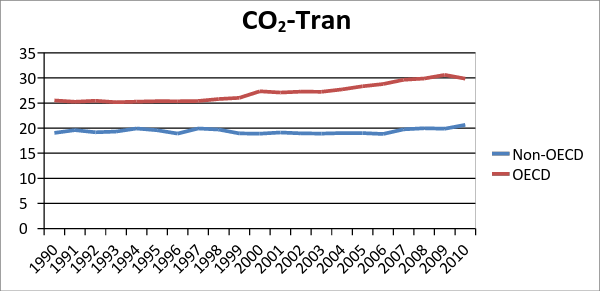


Scatterplot #1 (CO2 metric ton per person of the world based off OECD per person data and trend line)



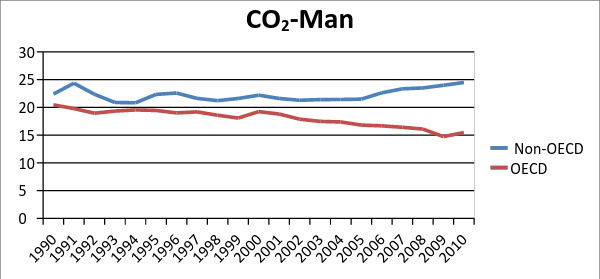
Independence Plot #1 (Scatterplot of Residuals and Observations)

For the CO2 pp data, there was use of a regression to attempt to figure out the correlational relationship between the OECD and the world data for metric tons per person. The data was taken for the average per year OECD and World from the data set. Scatterplot #1 shows the relationship and strength of the relationship of the variables. According to these variables, approximately 64.05 percent variation of world CO2 metric ton per person can be explained by the CO2 metric ton per person of OECD high income countries. This is a significant amount considering that it is only one subset of data. Unfortunately when testing the data, there was an autocorrelation problem between the two variables. There was a pattern in the independence plot as shown by independence plot #1. This provides a problem in the use of a regression. Upon retesting the variables, they failed the Durbin Watson test showing autocorrelation between the variables. The Durbin Watson coefficient of 0.554956 is lower than the allowed limit for the test (0.975 > 0.554956). In an attempt to find correlation, the difference between the two variables was taken and a new regression was done. With this data, 27.78 percent variation of the difference between the world and OECD data can be correlated. This shows that future research will have to use first differences and other techniques to be able to test the correlation between the variables.



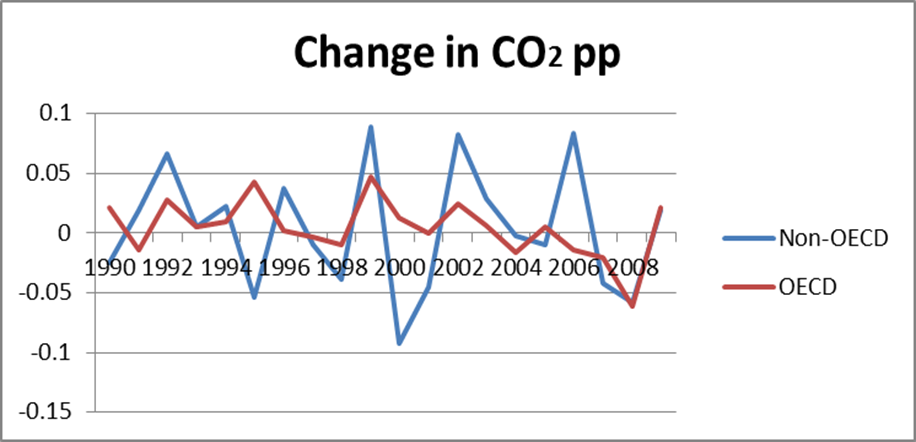
Line Graph #2 (CO2 Transportation Emissions as a percentage of Fuel Combustion)

Line Graph #2 shows the trend of CO2 emissions attributed to CO2 from transportation as a percent of total fuel combustion. This graph shows that the percentage of carbon dioxide emitted from different types of transportation is higher in the countries that are a part of the OECD than non-members. The percentage of carbon dioxide emissions from transportation for OECD high income countries has been on the incline while, non-OECD high income countries have stayed relatively constant at around 20 percent. This has some policy implementations. If the Organisation for Economic Co-operation and Development wants to reduce the amount of carbon dioxide emissions, they should focus on policy that focus on public transportation or clean fuel initiatives because of the rising fuel combustion percentage that is attributed to CO2 from transportation.



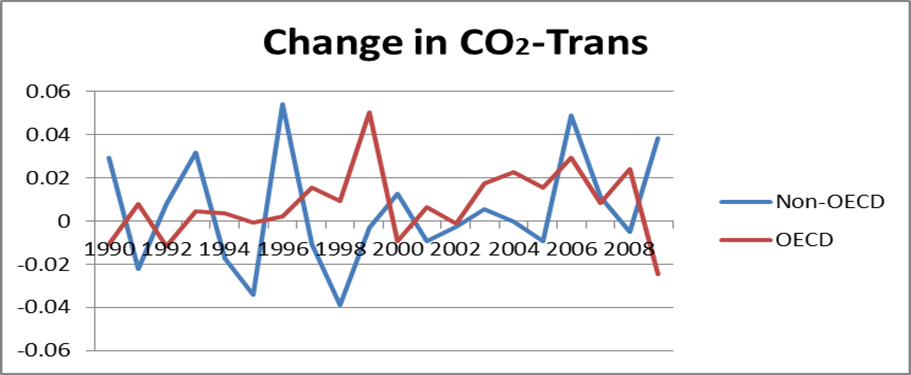
Line Graph #3 (CO2 Manufacturing Emissions as a percentage of Fuel Combustion)

Line Graph #3 shows the trend of CO2 emissions attributed to manufacturing industries and construction as a percent of total fuel combustion. Since the year 2000, the percentage of carbon dioxide emissions from manufacturing in OECD countries has decreased. There is a steady decline from around 19 percent in 2000 to around 15 percent in 2010. This shows that either the countries are doing better in reducing emissions from manufacturing or they have increased the amount of emissions in another sector of the economy. About the same time that the OECD percentage emissions from the manufacturing sector of total fuel combustion decreased, non-OECD countries have been on a slight incline. The gap between the two groups has increased from about two or three percent to almost a 10 percent difference in 2010. This gap begins around the year 2003. Five countries that were taken to see how this gap came about include Finland, Iceland, Japan, Sweden, and the Republic of Korea. They were chosen because they were within the highest seven countries for the OECD in CO2 emissions attributed to manufacturing industries and construction as a percent of total fuel combustion. Table #4 shows the general trend from 1998 to 2003, a five year difference, until the end year of 2010. Iceland, Finland, the Republic of Korea, and Sweden are countries that have lower the percentage attributed to manufacturing industries and construction. Japan is an example of a country that has remained constant throughout the time frame. By observing these countries and policies that they have in place, the OECD can learn how to continue to decrease CO2 emissions attributed to manufacturing industries and construction as a percentage of total fuel combustion.



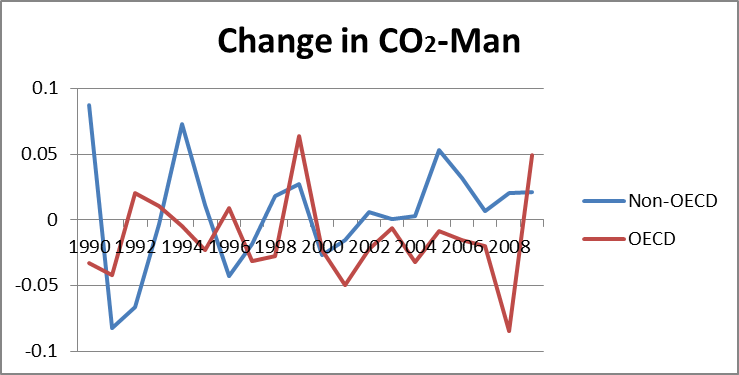
Line Graph #4 (Change in CO2 Emissions per person from previous year)

Line Graph #4 shows the change in CO2 per person in metric tons from the previous year. In looking at the change from the previous year to the current year, the non-OECD countries have more variation. It is constant growth then decline then back to growth well the OECD seems to have a general trend of growth in the beginning but then decline around 2003.



Line Graph #5 (Change in CO2 Transportation Emissions as a percentage of Fuel Combustion from previous year)

Line Graph #5 shows the change in the percentage of CO2 emissions attributed to CO2 from transportation as a percent of total fuel combustion from the previous year. Similar to the carbon dioxide emissions in metric tons per person, the non-OECD countries have more variation than the OECD countries. The OECD countries have more periods of growth in this aspect showing the increase of fuel combustion attributed to CO2 from transportation.



Line Graph #6 (Change in CO2 Manufacturing Emissions as a percentage of Fuel Combustion from previous year)

Line Graph #6 shows the change in the percentage of CO2 emissions attributed to manufacturing industries and construction as a percent of total fuel combustion from the previous year. This graph demonstrates how the OECD has been on a decline since around 2003 and also shows the 2003 rise in the percentage of CO2 emissions attributed to manufacturing industries and combustion as a percent of total fuel combustion.

**Implications**

Based on the data, the Organisation for Economic Co-operation and Development is sounder in its carbon dioxide emissions than their high income counterparts. If the OECD wants to focus on environmental sustainability, a focus on the transportation sector could have great potential. There is also need for the OECD to focus on the countries with high populations and with more industries that have high z-scores in terms of CO2 pp. There is also need to look at the policies of the countries doing well to see if there is anything applicable to the other countries.

**Future Research**

Future Research will include more variables to further study whether the OECD is doing environmentally better than the non-OECD countries. These variables will include fossil fuels usage, forest level, electricity from nonrenewable resources and renewable resources, and the economic rents of different resources. There will also be advanced statistical techniques (lags, autoregressive models, deseasonalizing, etc.) that allow for forecasting and finding a correlation between OECD levels and world levels. This would be to quantify the effect of the OECD on the global environment.

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**DATA**

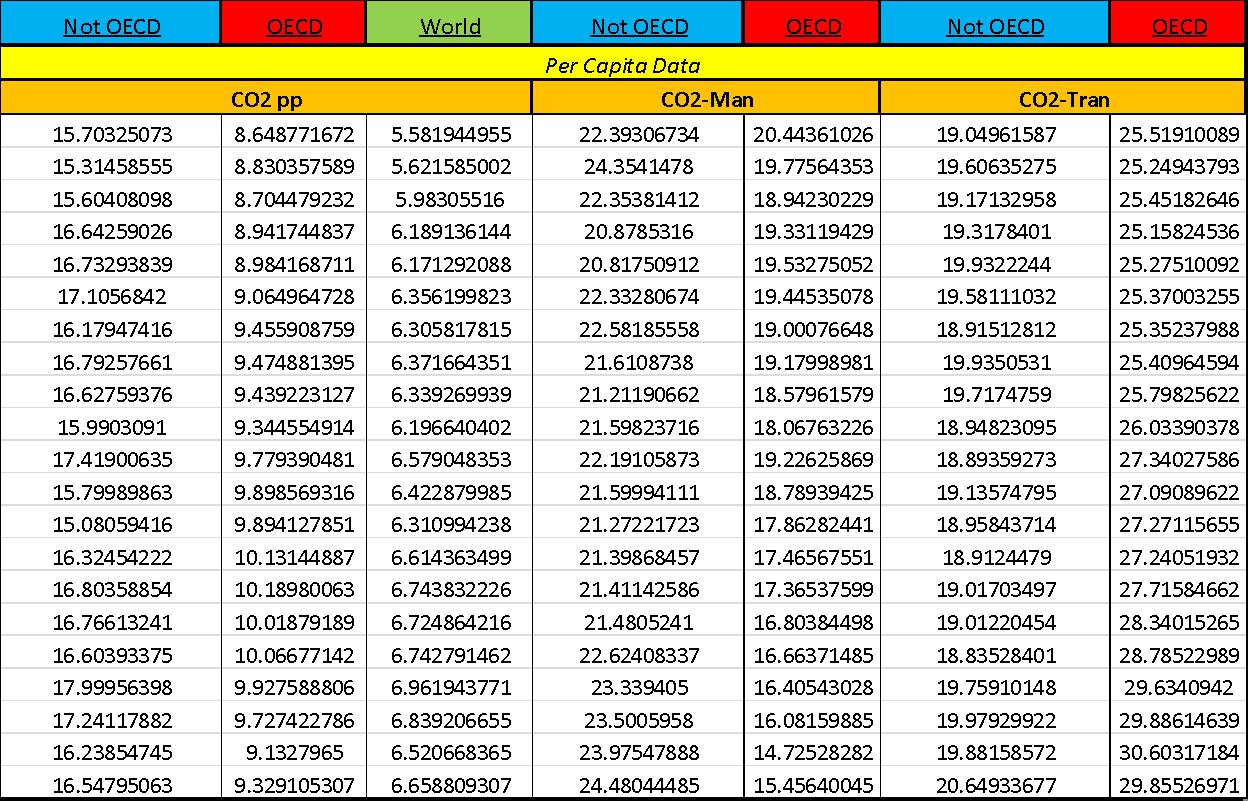


Table #1 (CO2 Average Data per Year for the two test groups and the world for CO2 pp only)

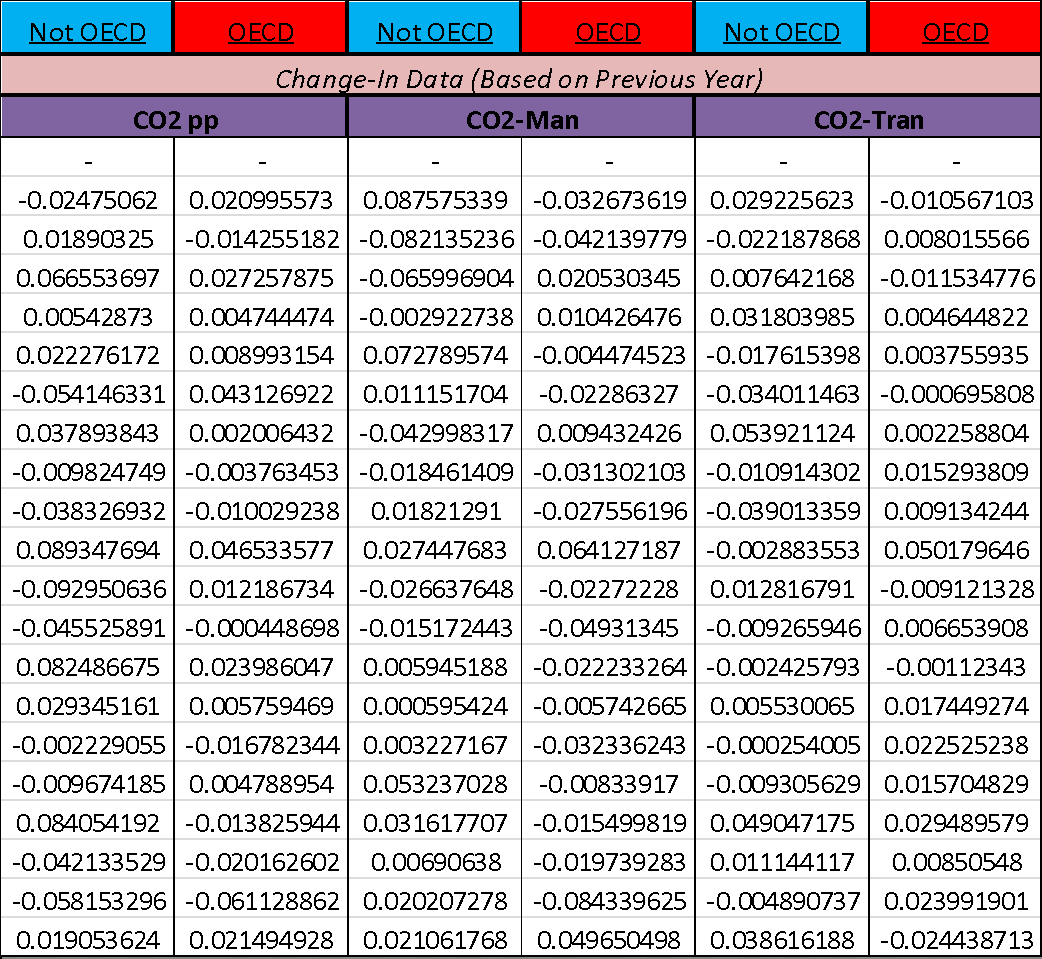


Table #2 (Change in CO2 Data from previous Year in the three variables)

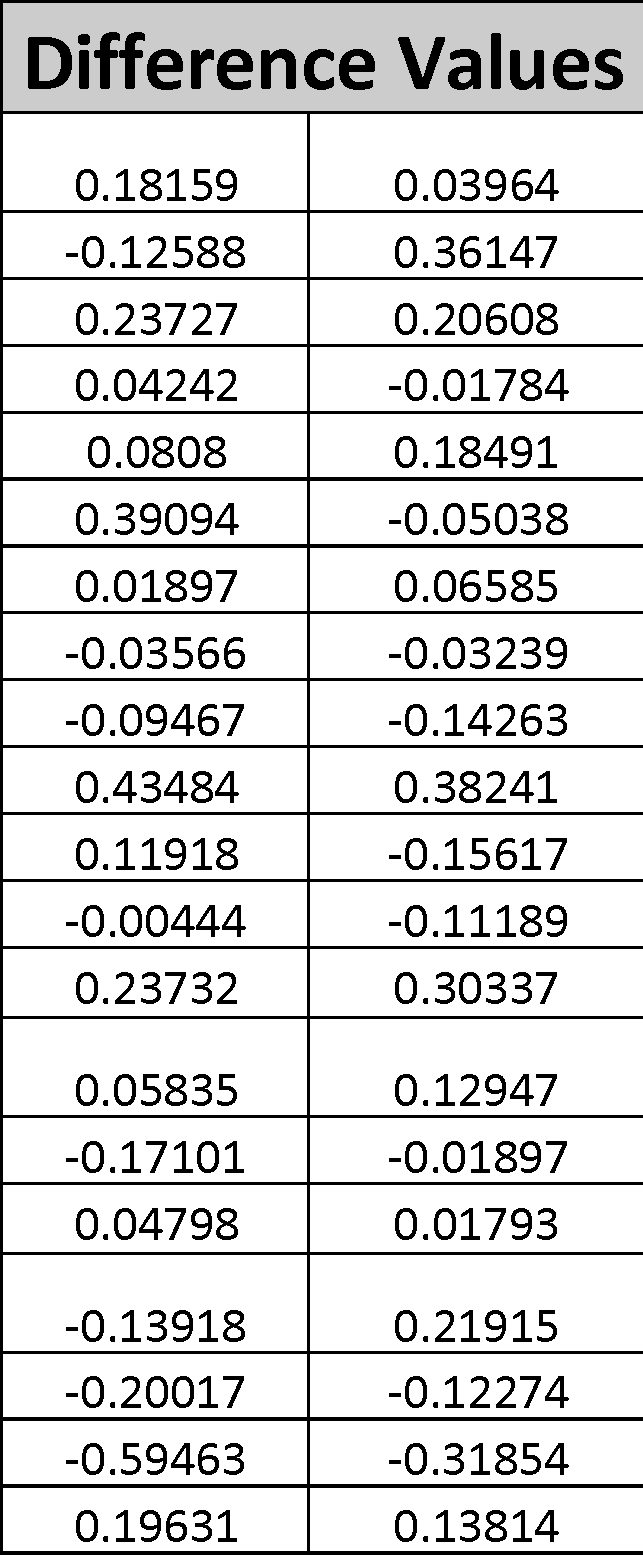


Table #3 (Difference in OECD and World Data for second regression)



Regression Statistics #1 (Regression for the difference between the OECD and world CO2 metric ton per person)

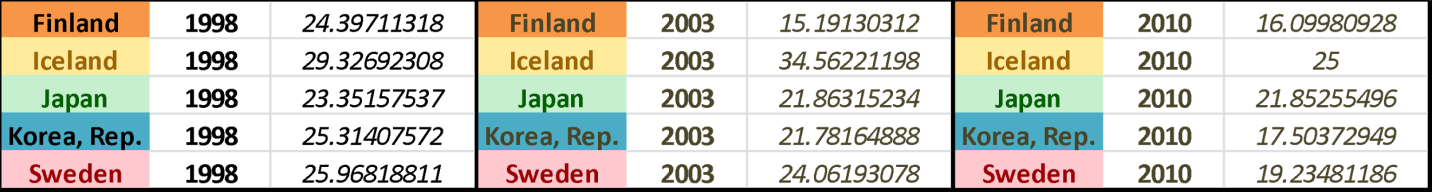


Table #4 (CO2 Man for five countries in 1998, 2003, and 2010)

1. All costs and spending amounts reported in 2010 dollars. [↑](#footnote-ref-1)
2. http://www.oxforddictionaries.com/us/definition/american\_english/bitcoin [↑](#footnote-ref-2)
3. https://bitcoin.org/bitcoin.pdf [↑](#footnote-ref-3)
4. http://blockexplorer.com/b/0 [↑](#footnote-ref-4)
5. https://bitcoin.org/en/version-history [↑](#footnote-ref-5)
6. https://en.bitcoin.it/wiki/Category:Clients [↑](#footnote-ref-6)
7. Average from 11/13/14 to 12/12/14. [↑](#footnote-ref-7)
8. 11/13/14 to 12/12/14 averaged 339Kb per *block*. [↑](#footnote-ref-8)
9. Average from October 2014 to February 2015 [↑](#footnote-ref-9)
10. http://www.investopedia.com/terms/s/sri.asp [↑](#footnote-ref-10)
11. http://www.obliviousinvestor.com/socially-responsible-investing-expect-lower-returns/ [↑](#footnote-ref-11)
12. http://money.usnews.com/money/blogs/the-smarter-mutual-fund-investor/2011/04/19/what-you-need-to-know-about-socially-responsible-investing [↑](#footnote-ref-12)
13. http://www.theamericancollege.edu/pdfs/why-do-mutual-fund-expenses-matter.pdf [↑](#footnote-ref-13)
14. http://www.strategy-business.com/article/15206?gko=435e2 [↑](#footnote-ref-14)
15. https://www.tradeking.com/education/mutual-funds/fees-and-expenses [↑](#footnote-ref-15)
16. http://www.fool.com/school/mutualfunds/costs/ratios.htm [↑](#footnote-ref-16)
17. http://www.ici.org/rule12b1fees [↑](#footnote-ref-17)
18. http://www.icifactbook.org/fb\_ch5.html [↑](#footnote-ref-18)
19. http://www2.owen.vanderbilt.edu/nick.bollen/themes/asx1.pdf [↑](#footnote-ref-19)
20. http://www.academia.edu/6727017/ZEUS\_ASSET\_MANAGEMENT\_INC [↑](#footnote-ref-20)
21. http://wiki.fool.com/Advantages\_and\_Disadvantages\_of\_a\_Diversified\_Portfolio [↑](#footnote-ref-21)
22. Keller, K.L. (2013). *Strategic Brand Management:* *Building, Measuring, and Managing Brand Equity*, 4e. (Upper Saddle River, NJ: Pearson), p. 2. [↑](#footnote-ref-22)
23. Ibid. [↑](#footnote-ref-23)
24. Lutz (1985) defined Aad as *a pre-disposition to respond in a favorable or unfavorable manner to a particular advertising stimulus during a particular exposure occasion*. Under this definition, Aad is considered an affective response to the stimulus, - distinctions between other traditional components are treated as antecedents to Aad. This definition also used by MacKenzie and Lutz (1989). [↑](#footnote-ref-24)
25. 3 These scales obtained from: Bruner, Gordon C., Paul J. Hensel, and Karen E. James. *Marketing Scales Handbook: A Compilation of Multi-Item Measures*. Vol. IV. Chicago, IL: American Marketing Association, 2005. Print. [↑](#footnote-ref-25)
26. These scales traced from: Bruner, Gordon C., Paul J. Hensel, and Karen E. James. *Marketing Scales Handbook: A Compilation of Multi-Item Measures*. Vol. IV. Chicago, IL: American Marketing Association, 2005. Print. [↑](#footnote-ref-26)