An analysis of the additive or synergistic effect of RANKL and TNF-alpha cytokines on osteoclast activation in culture – A model for periodontal disease research.

Kristine Dye, Thomas Strobel, Seth Ririe (Mentor)

Periodontal disease (PD) is characterized by inflammation of the ligaments and bones that support the tooth. The correlation between the hyperimmune responses of the innate and adaptive immune system with periodontal associated bacteria has been widely accepted as a cause of bone resorption in PD. However, the mechanism behind the differentiation of progenitor cells to osteoclasts, in response to periodontal bacteria, is not well understood. Cytokines such as TNF-alpha and RANKL have been shown to independently promote osteoclastogenesis. Our objective is to determine whether TNF-alpha and RANKL have a synergistic or additive relationship in osteoclastogenesis. In order to accomplish this, we will culture RAW cells, a cancer-like macrophage cell line, in the presence of RANKL, TNF-alpha, or both. The number of osteoclasts in each of the experiments will then be determined by performing a TRAP assay. Tartrate-resistant acid phosphatase is an enzyme that is highly expressed by osteoclasts. Through the TRAP assay, we will identify cells that contain acid phosphatase, which in turn will allow us to measure the degree of osteoclastogenesis within our controls. Analysis of the data will determine whether the relationship between TNF-alpha and RANKL is synergistic or additive; thereby, broadening our understanding of the host-pathogen interactions involved in periodontal disease.

One Patch Giveth, the Predator Taketh Away: The Effect of Prey Dispersal on a Two-Patch Predator-Prey System

Brennan Bean, Paul Cox (Mentor)

Mathematical biology has a long history of studying the dynamics of predator prey models. In this project, we consider the effect of prey dispersal in a two-patch predator-prey model in which the two patches are qualitatively different. In particular, we assume patch two has a significantly smaller carrying capacity and a correspondingly higher predation rate. Scaling the model under these assumptions introduces a parameter of arbitrarily small order, allowing for an asymptotic analysis. In other words, we consider only terms of leading order when analyzing the stability criterion of various equilibria. In the case that we allow it to approach 0, we show that the predator and prey will always coexist for biologically reasonable parameter values. Furthermore, we prove the existence and uniqueness of a coexistence equilibrium and determine the stability regions in the parameter space. Using numerical simulations, we confirm our theoretical results, illustrate the varying effects of prey dispersal on the stability of the coexistence equilibrium, and find parameter values for which a Hopf bifurcation occurs.
Comparison of Two Vertical Hydroponic Systems

Angela Leung, Gene Weller (Mentor)

In commercial hydroponic lettuce systems, plant spacing and horizontal bench space become limiting factors to plant production. This study is designed to test two different systems which attempt to increase production space by growing lettuce (Lactuca sativa L. var Butter Leaf) plants in a three dimensional arrangement rather than a two dimensional arrangement. Thereby increasing plants produced per square foot. The production of these two systems will be compared to a traditional two dimensional (horizontal) hydroponic system. One of the systems being tested is called the horizontal tower. In this system the plants are placed in horizontal tubes. Several tubes are arranged into a stepped-shelved rack. The second system is a square vertical tube with plants placed along the four vertical sides. There was no difference in head weight of plants grown from the top of the horizontal tower system to the bottom (ANOVA $\alpha=.01$ $F=63$, $F_{\text{crit}} = 3.05$, P-value 0.707). There was a difference in head weight of plants grown from the top of the vertical tower system to the bottom (ANOVA $\alpha=.01$ $F=38.64$, $F_{\text{crit}} = 4.25$, P-value 5.19E-09). Both vertical systems produced more lettuce heads per square meter than traditional horizontal hydroponic systems. There was no difference in head weight between the three systems (ANOVA $\alpha=.01$ $F=1.07$, $F_{\text{crit}} = 4.89$, P-value 0.346) Head composition was different between the three systems. Head composition is composed of leaf tissue and stem tissue. Higher stem tissue content is undesirable. There was a difference in stem weight between the three systems (ANOVA $\alpha=.01$ $F=102.68$, $F_{\text{crit}} = 4.91$, P-value 8.19E-22). Adhoc Z-Tests showed that the stem weight of plants grown in the vertical tower system were higher than the stem weight of plants grown in traditional horizontal (Z-Test $\alpha=.01$ $Z=-14.11$, $Z_{\text{crit}} = 2.57$, P-value .01). Even though both vertical hydroponic systems grow more plants per square meter than the traditional horizontal hydroponic system. The vertical tower system does not seem to be a viable option.

Implications of Relative Browsing Pressure and the Use of Individual Plant Exclosures on Winter Habitat Improvement Efforts

Ben Davis, Gene Weller (Mentor)

In the western United States, projects to improve winter habitat quality and quantity have been undertaken by federal and state agencies, as well as non-governmental organizations (NGO’s), to decrease winter kill of wild ungulates such as mule deer (Odocoileus hemionus), elk (Cervus canadensis), and moose (Alces alces). Planting seedlings are a common method for improving winter forage. This study sought to assess the effects of herbivore pressure and the use of individual plant exclosures on seedling planting success. The presence of herbivore was recorded over a four week period post-planting and often the following spring. High browsing pressure resulted in complete mortality of exposed seedlings whereas low browsing pressure only reduced seedling establishment. Large herbivore and large/small herbivore exclosures did not significantly alter seedling morality on the high browsing pressure site although taller seedlings tended to exhibit lesser levels of small mammal herbivore than shorter stature shrubs. The effectiveness of large/small herbivore exclosures were compromised by small herbivores burrowing beneath exclosure frames. Future seeding projects should consider burying plant exclosures deeper and using tall seedlings.
The Intervention on the Infant Mortality Rates in Mississippi Among Teenage Females
Kendra Aguilar, Mindy Barrick, Jim Hopla (Mentor), Malia Jones, Lacey Anderson

The Intervention on the Infant Mortality Rates in Mississippi Among Teenage Females is the culmination of a group project during the Fall 2014 semester. A group of four students in Brother Jim Hopla's class HS 390 (Program Planning) have put together a health promotion program outline. This outline involves a needs assessment, a detailed list of intervention strategies, a written grant, and many other pieces of a full program short of implementation. This project required us to research a target population, find a pressing health related need, and then discuss strategies to attempt to address the need we found. After finding our need and discussing strategies, we decided on a handful of solid ideas we had to lower the infant mortality rate in Mississippi. We have decided on Noxubee County, MS to be where we focus our energy. We are continuously researching the exact needs, attitudes, and what we can do in this area to achieve our goal of lowering the infant mortality rate in Noxubee County specifically. Our detailed program plan will include organized outlines of every step of research, and data. It will also include a detailed plan for a clinic, bus route, a budget, education opportunities, and a social media page, and how this will affect the infant mortality rate in Noxubee County, MS. Note: This project is not done, so some of what is written above might be subject to change.
2013 Colorado Flood River Contaminates

Tim Stronks, Mark Lovell (Mentor)

Many hazardous chemicals were incorporated into the rivers and small streams during the 2013 Colorado flood. This research analyzes different river reaches where sampling has occurred to determine the spatial distribution of contaminants that got into rivers along the Colorado flood basin due to the flooding. Sources of contaminants include sewage treatment plants, oil refineries and oil wells, and wells that were undergoing hydraulic fracturing at the time of the flood. This study will look at the level of contaminants in the rivers prior to the event, immediately after the flood and almost a year after the flood. The data used in this study was gathered from the Colorado Department of Public Health and Environment. Data from their monitoring stations will be placed into a GIS allowing construction of a map showing locations where samples had been taken and where contaminants are located and how concentrations have changed over time. Data layers showing the contaminate information will be overlaid on a base map of the flooded area. The location of the monitoring stations along the rivers along with flow directions of the flood waters will allow the areas of potential contamination to be identified and displayed in this poster. I hypothesize that there will be an increase in the level of contamination in the rivers due to the flooding. The anticipated outcome of this research will locate and identify the level of contaminates and the areas that may still be hazardous to the public, agriculture and industries.

California wildfire patterns, prediction, and prevention: A model

Timothy Melton, Matthew Strasser, Mark Lovell (Mentor)

Wildfires in California destroy an average of 170,000 acres each year. Studies of burn patterns suggest wildfires can be predicted and prevented. Remote sensing imagery obtained by satellite and fixed wing aircraft (LANDSAT and LIDAR) will be used to classify terrain, slope, vegetation type, and vegetation health of the mountainous region north of San Fernando Valley to determine areas susceptible to fire. Analyzation of day and night surface wind patterns should allow directions of wildfire burns to be determined. These data will help develop plans of action to help prevent wildfires; control burn locations which are hostile to the population; lower the risk to public, wildlife, national forests; and to prevent over-burn. Emergency response times will be assessed based on road distance from burn locations to emergency response team locations. By performing population analyses for susceptible areas of burn and combining these data with previous analyses of the area, risk factors and potential damages can be estimated.

Escaping the watching eye: Remoteness and Corruption

Logan Davidson, Mark Lovell (Mentor)

Remoteness and poor infrastructure likely make it easier for politicians in some areas to abuse public office. This project seeks to understand the relationship between distance from supervisory officials and corruption. Variables constructed in a GIS (Geographic Information System) will be used to explain variation in corruption as measured in audit reports from Philippine municipalities. Using GIS I will take a roads dataset of the Philippines and measure distances along those roads from barangay (equivalent to a village) to municipality (similar to a city), and from barangay to provincial capital (like a state capital). Then by attaching the data from the audit reports I will be able to see if there is a correlation between remoteness to supervisory officials and corruption. My hypothesis is that more remote areas will be more corrupt. Data has been obtained from public sources on the internet with the exception of the data from the audit reports. This data will be acquired through the UCSD (University California San Diego) political science department.
Identifying landslide Potential

Emma Chapman, Mark Lovell (Mentor)

On March 22, 2014, forth-nine homes were destroyed and forty-three people were killed due to a landslide 4 miles east of Oso, Washington. Could the 2014 slide be predicted? What geologic and geomorphic clues were there prior to the slide? Are there other areas communities nearby where the people are also at risk? This project will first analyze Landsat imagery collected before the landslide in order to identify any information that might have served to warn the population of the hazard. Landsat remote sensing data obtained by our government (NASA & USGS agencies) is free to the public and provides a great resource for regional studies but is limited in resolution due to the 30-meter pixels of the data. After the landslide, LiDAR data was collected to provide a better understanding of the stability of the hillside and to aid the workers search through the debris. The more expensive LiDAR remote sensing data is an innovative product that can allow investigating scientists to “strip away the vegetation” and reveal the more subtle details of the earth’s topography. The Landsat imagery will hopefully be sufficient to identify and classify previous landslide occurrences. The LiDAR data will be used to create a detailed DEM (Digital Elevation Model). The data will be loaded into a GIS (Graphical Information System) workstation to identify and document the likelihood of future landslides. With this study we will use and refine procedures introduced in Ann Johnson’s tutorial Introduction to ArcGIS 10 and her work in looking at landslides. The purpose of this study is to note the limitations of Landsat data and the greater value of LiDAR data in evaluating the potential failure of hillsides near populated areas.

Spectral Analysis of Ore Deposits using Remote Sensing Data

Michael Hill, Mark Lovell (Mentor)

Mineral deposits have a specific quantity of material that is economically attainable. The costs borne by mining companies paying geologists to search the land for precious metals is very significant but more importantly, there are limits to the amount of surface area geologists can cover, limiting their exploration efforts. My research is in the hope that I can create a preliminary model to use for ore deposit exploration and identification. The methodology to build said model will be to analyze LANDSAT 8 data and High Spectral data for specific minerals using their respective spectral properties. Minerals such as calcite can be used to identify limestones which are one of the more susceptible rocks to experience mineralization. Application of the process take place comparing LANDSAT 8 data in the area of Carlin-type gold trend in Nevada and another gold trend to compare and contrast results. Observations of a known ore producing region will be compared to other exploration areas to see if similar spectral responses can be identified.
The changes in hadrosaur distribution over the Cretaceous period

Michael Hawkins, Mark Lovell (Mentor)

Hadrosaurs are ornithopod dinosaurs that evolved in the early Cretaceous and diversified up until the extinction event at the end of the Mesozoic. With their various head ornamentation and mouth shapes, it seems likely that different types of hadrosaurs made their living in different environments. To test this hypothesis, I plan to map the distribution of the different tribes of hadrosaurs over what would become western North America during the Cretaceous period. I will make multiple maps showing GPS points where hadrosaurs were found. Each point will represent a member of a tribe, and will be color coded for that tribe. I will calculate the area where each family lived, using the GIS methods in Landman et al, 2014 and Miller and Foote, 2013. I will place all these points on a paleogeographical map, to allow the actual continental range to be known. I will then animate the movement of continents and groups to show the changing distributions over time. The results will show how different tribes of hadrosaurs spread across the continent over time, indicating specialization for different niches, changing climates, or competition. More work will be necessary to specify which if any of these interpretations best explain the data.

Using Remote Sensing to create a hazard assessment of Seaside, Oregon

Sara Ramos, Mark Lovell (Mentor)

Coastal regions are affected by flooding and other natural hazards as a result of coastal storms. Beach erosion is a well-known impact and the rate of erosion is of great concern due to potential human impacts. It is important to calculate effects of these storms on coastal communities because of their ability to accelerate erosion rates. Creating a hazard assessment showing spatial relationships over time for the coast and the developments will help to produce an effective emergency action plan and support development of preventative measures. LIDAR and Landsat data will be used to create a high resolution DEM (Digital Elevation Model) of the area. Information on barometric pressure, water level, types of storms, and frequency will be combined to produce accurate storm data. From this data storm models will be generated that will show storm effects on the coastal community. The data will not include all possible storms that could affect the area, but will give examples of different storms and the resulting hazards. Resulting maps will be summarized in poster form showing storm models and the resulting hazards. From this data, a possible emergency action plan and preventative measures can be produced for Seaside, Oregon.
Caffeine Consumption at BYU!
Daniel Cook, Chelsea Oates, Merle (Mentor), Laurel Cooley (Mentor), Merle Benedict (Mentor), Jordon Hayward, Da Ji

We are conducting a research project in order to find the prevalence of caffeine consumption at BYU-Idaho. We are wanting to find out if it is a problem here on campus, and if it is, what factors contribute to the high consumption. Through our current limited research we have found that caffeine use continues to be on the rise nation wide. Current research also shows there is a potentially high health risk associated with excessive caffeine consumption. Due to this growing problem, we are eager to research this topic and inform BYU-I students on the risk. We plan to use an online questionnaire through qualtrics to gather our results. The questionnaire will ask participants on their use of caffeine, gender, age, school year, and preferred type of caffeine intake. We will then be analyzing the gathered information through descriptive statistics and comparing it with other colleges and the national averages. We predict that our research will show a lower average caffeine consumption compared with other universities and averages.

Childhood Obesity As Linked to Physical Activity
Grant Collins, Michael Metcalf, Kyla Mayberry, Merle Benedict (Mentor), Benjamin Neilson

Our research goal is to find if childhood obesity is related to the time spent engaging in physical activity. Around 17% of children are classified as obese and childhood obesity often leads to obesity later on in life. Obesity is linked to other health issues such as diabetes, heart disease, and stroke. Physical activity in early stages of life improves cardiovascular health later on. We will determine childhood obesity by using children's body mass index (BMI). A questionnaire will be given to a local elementary school for students in first through fifth grade and will be taken home to their parents. Parents will be asked how much time their child spends doing different levels of physical activity each week. Then we will compare the physical levels to their BMI and determine if there is a relationship between the two variables. With the results we hope to find if time spent doing physical activity really does have an impact on childhood obesity. With more awareness of the importance of preventing childhood obesity then health issues can be prevented in adults.

Effects of Diet on Cholesterol Levels
Diane Ochs, Merle Benedict (Mentor), Kyra Grow, Sarah Riley, Nicole Allen

Cholesterol levels in the blood are an indicator of a person’s risk for heart disease and stroke. The higher the cholesterol, the higher the risk. Cholesterol levels can be measured through a simple blood test. Some variables that have been found to influence Cholesterol levels are genetics, age, gender, diet, weight, physical activity, and smoking. Research has shown that there is a correlation between diet and cholesterol levels in older adults over age 40. We want to know if there is a correlation between cholesterol levels and diet in a younger population, ages 18-26, where high cholesterol and its associated health problems are not as prevalent. We sampled 176 students and surveyed them to ask what their cholesterol levels are, their average diet, their age, gender, weight and height, exercise habits, and family history of cardiovascular disease. The students surveyed were all required to have their cholesterol tested at the Wellness Center. If our research shows a correlation between what a person eats and their total cholesterol, it will reiterate the importance of eating a healthy, balanced diet throughout a person’s entire life.
Exercise and Academic Performance

Ashley Dayley, McKay Winzenried, Merle Benedict (Mentor), Jared Vance, Brian Sturm

The American College of Sports Medicine and the American Health Association has recommended that adults should engage in strength exercise that involves all major muscle groups for at least three days each week. We are conducting a study to see if there is a correlation between exercising habits and maintaining a high GPA (grade point average) among BYU-Idaho students. We will survey a random group of BYU-Idaho students (n=300) and ask how many hours they spend in physical activity and their GPA, then use a regression line to compare the two variables for each college year, such as Freshman, Sophomore, Junior, Senior. We will then use a two-way ANOVA test to compare the college years. Based on previous studies, we hypothesize that those with better exercising habits will maintain a higher GPA. We hope that our results will encourage students to create good exercise habits in order to improve their academic standing.

Strength Training: What's Your Max

Valerie Nielson, Charlene Logan, Danielle Harrison, Merle Benedict (Mentor), Anthony Robbins

Research Question: When resistance training, would an experienced participant have greater muscle hypertrophy as opposed to an inexperienced participant? Hypothesis: We hypothesize that the participants who qualify as experienced will have a higher average maximum rep weight, but that the participants who qualify as inexperienced will have higher average maximum rep weight increases. Methodology: We received maximum rep weight data of male and female BYU-Idaho students between the ages of 18 and 26-years-old from a campus instructor that was collected over the course of three semesters. The data shows measurements of the maximum rep weight of experienced and inexperienced students in squat, bench press, bicep curl, leg extension, leg curl, lat pulls, and tricep extension exercises. Data was collected pre-regimen, six weeks into the regimen, and 12 weeks into the regimen. We will take the data and complete a t-test to compare the improvement rates of the experienced participants versus the inexperienced participants.
The Effect of Eating the Recommended Amount of Fruit, Vegetable, and Grain Servings on College Level Academic Performance

Michael Plunkett, Shaylee Terry, Shaylee Bartlett, Jessica Dewsnup, Merle Benedict (Mentor)

We are trying to see if there is a correlation between eating the recommended amount of fruit, vegetable, and grain servings and academic performance. We expect to find a positive correlation between the two. The study will be conducted through an email containing a survey. This survey will be sent out to three hundred different college students across Brigham Young University-Idaho campus. The survey will ask questions such as "What is your GPA?", "How many servings do you have of Fruits, Vegetables, Grains a week?", etc. Using these and other questions we will hopefully collect enough data to draw a strong conclusion. Upon receiving the completed surveys, we will compile the data and use both a Pearson Correlation and an ANOVA test to interpret the data. As before stated, we expect this balanced diet to have a positive affect on a student's academic performance. Similar studies have been done with grade school students, and the findings have all been conclusive that there is a positive correlation. The studies regularly state that the recommended amount of fruits, vegetables, and grains help promote cognitive development at such a young and crucial age. Our study will be focused on college age students. We believe that while there will be a positive correlation, it will not be as strong as the findings of studies done with younger students. We feel this is still important because; schools should be aware of the affects of the food they provide to students, students should know how to easily improve both their health and academic standing as well as, and as future parents and members of society we will be able to start children off on the right foot.

The Effects of Exercise on Academic Performance

Marcia Hart, Aaron Rutt, Merle Benedict (Mentor), Brie Bolster, Danielle Lindstrom

The purpose of our study is to discover the effects of exercise on the academic performance of college students. We will collect our data for our study by way of survey. A simple questionnaire will be sent to 300 randomly selected BYU-Idaho students asking about their exercise habits, cumulative GPA, what college they are involved in, and how they feel exercise has impacted their academic performance. Through our data collection, we expect to see a positive correlation between regular exercise and academic performance.
Awareness of Hypothyroidism and Its Influence on Pregnancy

Cathan Riding, Merle Benedict (Mentor), Christa Kent, Sarah Bridges, Ryan Roche

Research shows if hypothyroidism goes untreated it can result in pregnancy complications. The complications are as follows: placental abruption, miscarriages, pre-mature birth, depression, infertility, hemorrhages, they are at risk for getting an abortion, getting gestational hypertension, anemia, etc. Our method is to send a randomly selected survey to 300 BYU-Idaho students. This survey will assess their knowledge level of hypothyroidism and its relation to pregnancy. We plan to analyze our primary data with a t-test to compare the difference of knowledge between males and females. We expect that women will be more aware of hypothyroidism and pregnancy than men but we also expect that people in general will not be aware of this. In the end, we hope to be able to inform people about the influence of hypothyroidism on pregnancy so people will be able to get treated if they feel they have hypothyroidism. This project will be crucial because it will educate the general public on being more aware of the implications of hypothyroidism if it goes untreated.

Correlation Between Stress Levels and Pain Reliever Use at BYU-Idaho

Kirsten Moffat, Kathryn Davis, Rachel Detlor, Mikele Fletcher, Merle Benedict (Mentor)

Studies have proven that frequent or long-term use of pain relievers may lead to physical harm as well as potential for addiction and in some cases even death. Other studies have proven that pain reliever use is higher in individuals that are stressed as well as in college students. The purpose of our study is to determine if there is a correlation between stress levels and pain reliever use of students at BYU-Idaho. We hypothesize that there will be a positive correlation between the two. Using the results from 200 questionnaires given to students in the Manwaring Center, we will analyze the data using a Pearson correlation to draw conclusions about stress levels and pain reliever use. The questionnaire also includes several demographic factors to be analyzed using ANOVA and t-tests so that we can conclude if there are other patterns that lead to high or frequent pain reliever use. We hope to bring attention to the risks and factors, such as stress, associated with frequent or long-term pain reliever use in order to protect the health of college students.

Does Gender Have an Effect on Patient Satisfaction?

Patrick Lundquist, Chris Wood, Jared Manning, Logan Black, Merle Benedict (Mentor)

Patient satisfaction is the outcome of clinical care in healthcare facilities and is a vital factor of health status. A patient’s definition of satisfaction or dissatisfaction is a predictor of healthcare quality in all of its aspects. With its strengths and limitations, patient satisfaction is a benchmark that should be an essential assessment in defining quality of care in a healthcare system. Although it is impossible to satisfy each patient there are many practices that can be improved to increase satisfaction rates. Hospital administrators are continually trying to find new ways to satisfy and increase the quality of care for their patients. This study analyzes how patient gender influences overall satisfaction within a healthcare facility. Through published works and our own studies we expect to find that each gender will have different views and expectations about patient satisfaction within a healthcare facility. We will conduct a statistical analysis of the results found through student surveys. The end results will allow us to understand the methods to maximize patient satisfaction and train staff in the most efficient way.
Headache Alleviations at BYU-Idaho

Brittany Albertson, Stephen Carlson, Bradley Webster, Chelsey Young, Spencer Thomas, Merle Benedict (Mentor)

On college campuses around the country there are multiple studies that have been done stating that college age students have a high prevalence of headaches. Here at Brigham Young University-Idaho it is no different. Our study is to find what the most common alleviation techniques are used by BYU-I students. To get our data we plan to send out 300 emails in questionnaire format asking students various questions about why they get headaches, how often and what they turn to for alleviation. Our hypothesis states that after we collect our data the results will conclude that student here at BYU-Idaho most commonly use over the counter drugs (i.e. ibuprofen, Advil, etc.) to alleviate their headaches or we hypothesis that caffeinated beverages are also a very common alleviation technique. To evaluate our data we plan to use simple descriptive statistics as well as a chi-squared test. With these two tests we will be able to have a clear idea of what students use for alleviation.

Relationship of Pre-sleep Activities and Quality of Sleep

Rand Rasmussen, Miles Monson, Merle Benedict (Mentor), Ryan Parkinson, Kia Xiong, Holly Fife

The purpose of this study is to investigate the relationship between pre-sleep activities an hour before bed and the overall quality of sleep. Poor quality of sleep has been linked to the overall health, learning, and performance of individuals on a day to day basis. In this study, poor quality of sleep is defined as frequent waking, difficulty falling asleep, frequent tossing/turning during the night, morning tiredness, and day time fatigue. Pre-sleep activities have been shown to impact sleep quality; for this reason we have categorized pre-sleep activities to compare the varying impacts on sleep quality. We have conducted a survey, via email, of a simple random sample of BYU-Idaho students to assess the relationship of pre-sleep activities and their overall quality of sleep. We hypothesize there will be a significant difference in sleep quality between the categories of pre-sleep activities. If results show that some activities significantly impact sleep quality more than others, then this study could lead to other research to investigate if sleep quality could be improved by changing pre-sleep activities.

Testing Glycemic Index

Justin Kesler, Ashley Werner, Emilee Prigmore, Teerah Lopez, Merle Benedict (Mentor)

We are testing the glycemic index for two protein products from a nutrition company against the control, white bread. We believe that if there is more protein in a product, the glycemic index won’t be as affected as if the product contained high carbohydrates. We are using fifteen people with a BMI between 18 and 25 that do not have diabetes and are not pregnant. We are meeting on three non-consecutive days (Monday, Wednesday and Friday) in a week for two hours in the morning. Participants come fasting for twelve hours. We will take their blood glucose at fasting (time 0). They immediately eat one of the three products (bread, protein shake, protein bar) and we take their blood glucose again at 15, 30, 45, 60, 90 and 120 minutes. This is repeated on Wednesday and Friday. Products are rotated between five-person groups. We are collecting the data and the two products are compared to the white bread through a sample T-test. In previous studies, it was found that eating foods with high glycemic index for a long period of time is directly related to diabetes and other preventable diseases.
The Link Between Bedtime and Academic Performance

Andrew Bigler, Brittany Barton, Josh Loveless, Tyler Pincock, Merle Benedict (Mentor)

Most university students say they wish they could get more sleep every night during the semesters. According to D&C 88:124, it reads, "cease to sleep longer than is needful; retire to thy bed early, that ye may not be weary; arise early, that your bodies and your minds may be invigorated." Our research project is focused on examining the relationship between earlier bedtimes and a higher GPA among college students; however, we are also interested in seeing if there is a link between wake times and GPA as well. Many studies have been conducted to research the correlation between sleep duration and academic performance, but not many have focused on specifically bedtimes, wake times, and GPA. We have decided to conduct our research on the BYU-Idaho campus by surveying the students \( n=192 \). We are surveying a diverse population of BYU-Idaho students by conducting our research in 8 different buildings on campus by using a random sampling method. We hypothesize that students who go to bed earlier and wake up earlier will have a higher accumulative GPA.

Urinary Incontinence Prevalence and Treatments at BYU-Idaho

Bethany Johnson, Carlee Clayson, Cassy Barg, Sam Childers, Megan Cruz, Merle Benedict (Mentor)

For our research project we are trying to find out the prevalence and treatment options that have been shown to improve urinary incontinence in women associated with BYU-Idaho. We plan to do this by utilizing email and the Qualtrics program to send out a survey to women attending BYU-Idaho. They will answer questions related to whether they have experienced or are experiencing urinary incontinence and what treatments they have sought after and have been successful for them. We expect to see a positive correlation between the women who have had more children and those who also have cases of urinary incontinence. Our hypothesis is based on literature reviews that suggest that a woman who has given birth to more children will have less control over their urinary functions due to the pressure the baby in-utero puts on the bladder. We also expect that Kegel exercises will be the most widely beneficial treatment option on the BYU-Idaho campus. We believe that Kegel exercises will be the most widely beneficial because they are strength training exercises that will benefit them with their present symptoms and will help eliminate future occurrences.
Constraints in Women’s Participation in Sports offered at BYU-Idaho
Cheyenne Washburn, Kari Archibald (Mentor)
The purpose of this study is to identify the constraints involved with female BYU-Idaho students’ participation in competitive and recreational sports offered at BYU-Idaho. Studies have shown that participation in recreational sports provides multiple benefits to physical and mental health positively affecting an individual’s overall well being (Brown, D. R., & Blanton, C. J. (2002). Data will be collected through an electronic survey (via email) using a simple random sample among both male and female students who have participated or are participating in recreational and/or competitive sports offered at BYU-Idaho. The design of the survey is of mixed methods using both qualitative and quantitative design in the survey. The survey will include 20 questions and should take less than five minutes to complete. The study will be a non-experimental design or in other words respondents will be studied as they are. The results of this study will support better understanding of the constraints involved in the participation of female BYU-Idaho students in sports offered at BYU-Idaho. Conclusion/results for research have not yet been determined.

Disc Golf and Its Impact
Adam Sweetland, Kari Archibald (Mentor)
This is a study to discover the impact that disc golf has on an individual. If an individual has a better understanding of what disc golf is, then they will engage in the sport more often. The methods that are used are surveys of Brigham Young University-Idaho students and recreational disc golfers to discover what the gaps in knowledge are between players and non players. There will also be interviews of professional disc golfers to see how playing disc golf has had an impact in their individual lives. The information from the surveys and interviews will be analyzed and graphed to show gaps in knowledge between non players and players, as well as to analyze the positive effects that disc golf has on an individual. The information will be included in a formal report as well as in a visual poster form. It is believed that a community will be positively impacted by more individuals understanding and playing the sport of disc golf by the community engaging in this form of physical and outdoor recreation.

In-depth exploration of the Physician Assistant profession
Daniel Squire, Greg Klingler (Mentor)
This project will explain the origins of the physician profession, its current role in the US healthcare system, and the outlook for the profession. I will seek insight from reliable sources to provide this information, including actual physician assistants currently practicing. I will also spend significant time shadowing as many areas of practice as I can. My report will include my firsthand experience observing physician assistants in these varying areas of practice.
The Effect of Leisure on Social, Mental, and Physical Well-Being of Students from Recreation, Business, Health Sciences & Communication Majors at Brigham Young University-Idaho

Cadie Brodhead, Chad Petersen, Roni Walker, Kari Archibald (Mentor)

The purpose of this research is to measure the mental, social and physical well-being of Brigham Young University Idaho students in different majors, and the research will look at the Business, Recreation, Health Sciences and Communications majors and evaluate if their particular major has a correlation with their sense of well-being, and the amount of leisure time that individual has. Studies have found that leisure lessens body mass index (BMI), waist circumference, and the effects of stress while increasing physical functioning (Pressman, Matthews, Cohen, Martire, Scheier, Baum, & Schulz, 2009). To find this correlation the survey will ask students specific questions regarding their leisure time and choices. This study will also look for any correlations in their age, grade in school and marital status to see if these also play a role in their personal well-being. An example of a program that will be used to measure the survey data will be SPSS. The method that will be used to conduct the research will be through an online survey. This research study is non-experimental and the questions in the survey will provide quantitative data. The survey will take around seven minutes to complete and only contains close-ended questions. The results of this study are expected to show that an increase in leisure will enhance an individual’s sense of well-being, depending on their major.

The relationship between wellbeing and recreation

Levi Smith, Kari Archibald (Mentor)

The purpose of this study is to examine the recreational habits, as well as the social, emotional, and physical wellbeing of students at Brigham Young University-Idaho and determine if their recreational habits correlates with their wellbeing. Distributing electronic surveys via email will be the medium by which the data will be collected. It will be a simple random sample of students that are on track and physically attending the University Fall semester 2014. The survey will consist of 32 questions, collecting both quantitative and qualitative data. Based on the timing of 4 pilot tests, the survey should take no more than 5 minutes to complete. In exploring the relationship between recreation habits and wellbeing, the research will follow the Ex post facto design. My assumption is that positive correlations will be found between physical leisure and physical wellbeing, social leisure and social wellbeing, and that emotional wellbeing will be tied in with a variety of recreation activities.

Video Games & BYU-I students

Stanley Petersen, Kari Archibald (Mentor)

The purpose of this study is to discover what specific populations of Brigham Young University-Idaho students are participating in playing video games and the extent of their play. Studies have shown that video gaming can be beneficial if used in moderation and can be destructive if not (2013es). The data will be collected through an Internet survey that will be sent out to 300 BYU-I students. The design of the survey is quantitative and is comprised of 15 questions that will take 3 minutes to complete. The results of this study aim to uncover which demographics of the BYU-Idaho student body is affected by video games socially, physically, and financially, or if they are affected at all. The final results of the study have not yet been determined.
BYU-Idaho International Students and their Changes in Leisure and Lifestyle

Natalie Mortensen, Kari Archibald (Mentor)

The purpose of this study is to explore the changes of lifestyle and its effects on leisure in the lives of international students. Because one’s choice of leisure is determined by a person’s background, lifestyle, and environment, it is necessary to come to an understanding of the person as a whole in order to recognize their reasons behind choices in leisure activities. Through studying these changes the university will be able to know whether or not adjustments need to be made to help these students have a more enjoyable experience. The United States holds the world’s largest population of international students. The number of international students in the United States is increasing year after year (Marklein, 2012). Studying the lifestyle and leisure changes in the lives of these students allow schools to be able to know how to accommodate international students and guide them toward having any even more rewarding experience during their time at school. International students have unique insights from which other students can learn from to better understand the world in which they live. International students also contribute approximately $24 billion to the U.S. economy (USA, 2014). The population of this study are international students at BYU-Idaho enrolled in the fall 2014 semester. A random sample of international students will be taken for surveying via email. The survey will include questions about current leisure behavior versus leisure behavior in their native country, demographics, leisure constraints, and other lifestyle changes. Along with the survey, a convenient sample of approximately 10 additional international students will be given a more in-depth, open-ended interview regarding their personal experience in moving to the United States and changes in leisure behavior. Results for this study have not yet been completed.

Constraints to Bicycle Commuting for Students on the BYU-Idaho Campus

Shelley Thomas, Courtney Fernelius, Kari Archibald (Mentor)

The purpose of this study is to examine the motivations and barriers for students in regards to bicycle commuting on the campus of Brigham Young University-Idaho. This study will explore individual and environmental influences pertaining to commuting patterns. The individual variables are: age, gender, academic major, year in school, environmental concerns, perceived health benefits, and time constraints. The environmental variables are: availability of sidewalks or biking lanes, traveling companions, terrain, crime rates in regards to bicycle theft, parking cost and availability, and perception of commuting distance. These variables will be analyzed to determine the factors affecting bicycling on campus. The results of this study will determine whether BYU-Idaho students are actively engaging in cycling as a mode of transportation, and will identify which areas can be improved to promote more active commuting behaviors. Data will be collected using an online electronic survey throughout the month of November 2014. The study will use a computerized simple random sample of 150 students from BYU-Idaho. The conclusions and results of the study have yet to be determined.
Potential Impacts of the Level of Participation of Single Junior and Senior Brigham Young University-Idaho

Anna Boster, Kari Archibald (Mentor), Alyssa Larson, Hannah Christiansen

The purpose of this study is to examine the potential impacts of the level of participation of single junior and senior Brigham Young University Idaho students who participate in outdoor activities in Rexburg, Idaho and the surrounding areas. The participation will be examined by surveying constraints such as cost, proximity, accessibility to equipment, prior experience, and the popularity of the activities among the students. Those involved in the study will include 200 students ranging from 17 to 30 years old who are currently enrolled in the Fall 2014 semester. Data will be collected using a simple random sample and will provide qualitative results. The survey will include 20 questions and should take approximately five minutes to complete. Each individual in the sample will be sent a link through his or her university email and will be told the purpose of this study and the use of the results. The results will determine how participation in outdoor activities can be influenced by various constraints. The conclusion/results for the research has not yet been determined.

The Relationship Between Eating Habits of College Students and Their Major

Jenna Dyckman, Amanda Christensen (Mentor)

The decision of what foods to consume is one that must be made every day, even multiple times a day. For most civilizations throughout time that decision was simple. To eat, you must grow, kill, or raise your food. With the advancement of the agriculture industry and food production, food choices have become complex, resulting in confusion and susceptibility among Americans. Not knowing what to eat can lead to making poor food choices. Poor food choices lead to poor diets, which if maintained over long periods of time can result in the development of one or more chronic diseases. There are countless numbers of studies done on the links between food choices and chronic diseases, but Hiza and Gerrior had a desire to assess the overall diets of a population. Hiza and Gerrior published a study in 2002 in the Family Economics Nutrition review, in which they analyzed college student’s diets with the “Healthy Eating Index.” They explained that, “Today’s college students take basic nutrition courses in record numbers...” and benefit in growing up with the dietary recommendations to limit saturated fat and cholesterol intake and increase intake of complex carbohydrates and fiber. Even with this knowledge, college students still tend to develop poor eating habits. Consequently, there is a need to examine the diets of the students enrolled at Brigham Young University Idaho, to see if the student population is affected. A specific question relating to food choices and the purpose of this study is to figure out if there is a relationship between eating habits of a college student and their major. A food frequency questionnaire will be distributed among Brigham Young University Idaho students for them to fill out as accurately as possible. A food frequency questionnaire is a necessary tool in order to quantify and analyze the eating patterns of the students. The students will be recruited on a volunteer basis. The results and conclusion will be based off of the evidence found through analyzing the completed food frequency questionnaires. Adjustments will be made for any confounders that might skew results.
Collabor8

Cordon Davies, Shane Thompson (Mentor)

Have a large project or an event to plan with a team that is spread all over the place and don’t know how to get everyone on the same page? This is the problem I plan to resolve using the Collabor8 app. This online web-app allows users to enter a shared environment online where they can each write down ideas to share, and organize them as needed in order to get a project set up. They can then make assignments as necessary so that each step of the plan is being accounted for. There are plenty of examples of sites that use this similar technology such as Google Docs and they also allow for live team collaboration on a single document through the web, but none seem to really be geared towards project planning. There are also plenty of Agile sites that are built to support an Agile work environment, but are often focused on project management, rather than the initial planning stage. The goal of this project is to make project and event planning quick and easy to do. Efficiency is the highest priority, which is why there is emphasis on keeping it a one-page application that everyone can view and edit simultaneously. This is accomplished through the use of web sockets within the app which are constantly listening and updating everyone’s screens to match. The use of sockets within a MEAN environment is becoming a more and more popular way to accomplish this type of collaborative application. Applying this concept to an app focused on project planning should increase the ability for online based teams to come together and get a full experience of interaction as if they really were in the same room!

E-commerce Website with UX Emphasis

Quinn Walker, Brian Memmott (Mentor)

For my project, I will be doing a lot of preparation for building an e-commerce website for SuperTrees Inc. using the Magento Content Management System. I will focus most of my efforts on user experience and user testing. This future website will allow SuperTrees Inc. to consolidate all data (inventory, sales, customers, shipments) into one convenient platform. It will also give different functionality based on customer type. For example, there will be pricing differences if the user logs in as a wholesale customer as opposed to the default retail customer. I chose to focus on user experience and user testing, because being a web development major, I feel that is my weak point. By focusing on the user experience and user testing prior to development, I hope to prevent future problems and prevent loss of development time.
iHousing

Nathan Guenther, Jeffrey Dunster (Mentor), Sean Mitchell

We all long to have services suited to our needs. There are many with a Bachelor's of Science degree, but no two degrees are alike; rather, they are tailored to our needs and interests. So why should housing be different? BYU-Idaho has provided a way for single students to find approved housing; through it, students have been able to find housing that fits within their budget, or that is in an ideal location. However, the experience should be more meaningful by taking into account our ideal number of roommates, the internet access, or even helping us decide what apartment has the most value. Since web technologies have improved to provide better user experiences, this project proposes to improve upon this existing experience and make it more widely available for students. iHousing offers a meaningful method of searching by providing its users with filtering options that include: - Budget, - Number of Roommates, - Quality of Internet Access, and - Laundry Options. These filters were chosen based on various surveys that took place in students' apartments and on campus buildings. Some students were asked for every amenity or feature for apartments. The list was then presented to other students who were asked to organize the list into highest-to-lowest priority of amenities they cared about on an apartment, and remove the amenities that they didn't care about. While the results varied to some degree, budget, roommates, internet, and laundry were consistently among the top priorities for students. iHousing lets the user choose the filters they care about and displays how closely the apartments come to the user's desired results. This differs from a traditional search (where results must be precise matches) so that the user is not forced to refine their filters to have results. Following the development of this project for the popular media devices (phone, tablet, desktop), extensive user testing will be performed to compare the existing Approved Housing Search to iHousing. The results of these tests will be provided for the Housing Department's use to determine the efficacy and worth for implementing this service for BYU-Idaho's single students.

Neilson Tax & Financial Group Website

Skylar Neilson, Eric Lybbert (Mentor)

My name is Skylar Neilson and I will be redesigning a website for the small business, Neilson Tax & Financial Group, owner James Neilson from Mission Viejo, California. In this project I will be looking at the content and elements of his current website and redesigning it to make it more modern and user friendly. I will start with researching various layouts and creating templates and designs in Adobe Photoshop and then work with the owner and my mentor, Brother Eric Lybbert, in deciding which design to use for the website. I will either take over his current hosting site or create another host and I will then continue on in the project with coding the final template chosen to create the website and add elements to multiple webpages that I will try to attract clients new and old to use his site and share it with others. I will be adding social media elements such as a Facebook page, Instagram account, and Twitter feed and instruct the owner how to use them. I also will make forms for the website to hopefully attract more clients and expand his business. I have decided to research and create a Google Analytics account where James will be able to track how his site will be used by potential clients. I will also instruct the owner how to use his Analytics account and show him what things he should look for in analyzing his account. My mentor for this project is Eric Lybbert, Instructor of the courses Comm 310, Creating Online Media, and Comm 462, Advanced Visual Media. This type of project will be a functional website that anyone can use for the sake of contacting the business owner and using his services. I plan to display my presentation at the conference on a TV placed on a table paired with my computer to show my work.
Salt City Soap Company - Branding and Website

Carly Ekins, Shane Thompson (Mentor)

This project includes the branding and website that I have created for a startup company: Salt City Soap Company. The website will be built using Adobe Muse and will serve as an online store and information platform for the company. As part of the branding I would include a logo, style-guide, packaging design plans, product imagery, and other supporting designs. I would also like to display parts of my design process, which would include visual research, brainstorming strategies, sketches, and the different drafts leading up to the final products. My display will include printed media to show the logo, product photography, and other graphical elements. I would also like table space to display the physical product(s) I was designing for. I will also be needing access to power and a television screen in order to display the website.

The Dealio App

Alexandria Harvey, Lee Barney (Mentor)

This project consists of using multiple programming languages such as JSON, AJAX, Objective C, and Swift to develop an App for The Dealio here in Rexburg. This project will be developed using a developer’s tool on the MAC called XCode. I have found ways to modify business’s already made back-end databases to work with their current technology needs, but to also incorporate new technologies such as an App. I have discovered many ways in which the programming languages mentioned above will work together to talk back and forth between the back-end side of the App and the Front-end side of the App, which the client would interact with. I also realized the time needed for me to develop certain aspects of this App and how to teach myself the skills necessary to be successful in this field. I have learned to work with teams inside companies for optimal performance and clarity. The teams would consist of a graphic designer, a web-master and the company’s CEO, so as to communicate the business’s desires appropriately.

The Genesis Chamber

Matthew Poulson, Rex Barzee (Mentor)

The Genesis Chamber is demo of a role playing game developed in the unity game engine. The full game is being developed by a team of friends and is currently in the early stages of the development. The purpose of the Genesis Chamber is to be a prototype/sandbox environment that will be a framework for a more complete and polished game. It will help demo many features the final game could have so that the best features can be identified and the lesser features can be improved or removed. It will be functionally what the end game will be but without most if not all of the content of the game. This means that all of the basic actions that a player could make in the game will be available but none of the story will be implemented. This will be a RPG(Role Playing Game) so the player will control one character which will interact with the rest of the game. It will have a basic world exploration, a real time combat system, and a simple but unique leveling system.
**Video Game Marketing Campaign**

Braden Beer, Lee Barney (Mentor)

Collider (Working Title) is a video game designed and developed by Braden Beer and Joseph Brower for Binary Cocoa. The game challenges players to play alone or with friends, cooperatively or competitively, in a number of game modes designed to be played within a circular arena, where they actively or passively attempt to clear waves of enemy shapes from their section of the circle. The game requires controllers and will be available on PC, Mac and Linux. With the game expecting a digital commercial release at the end of 2014, a website and marketing campaign were necessary to increase awareness, market the product, build a brand, and offer digital sales. There are several digital distribution options available for video games, ranging from online storefronts like Steam, to independent console exclusivity with Ouya, to selling and distributing the game ourselves. All of these options have effects on market reach, revenue models, and the target audience. The website, marketing campaign, audiovisual material, graphics, and content were all created and designed by Braden Beer and Joseph Brower to advertise and promote the sale of their game. Americans alone spent over $20 billion on video games in 2013. A majority of those sales were made digitally.
An analysis on the expanding almond industry of California and a plan for success

Nestor Garcia, Stephen McGary (Mentor)

The almond industry in California has been booming for the last 20 years. Evidence suggests that increasing foreign demand, fertile soils, and high quality crops have made California the center of attention for buyers around the globe. An increasing challenge for producers is to time their planting and expansion schedules to synchronize high yield with high prices. This study has found evidence that small producers face bigger challenges as they do not have the solvency to support their operations during years when low prices are experienced. This factor increases the urgency to develop specific production schedules to minimize capital expenditures during low years and increase production during years with high prices. This study will research the foundations of the almond industry and will attempt to discover the factors that influence demand and supply the most. It will also determine the cyclical patterns of the almonds market and will attempt to create a marketing schedule for almond producers in California. In order to create such a plan, this study will address the seasonality of the almond market, its price fluctuations over time and the factors that have affected its evolution. This study will use trend analyses and linear regressions to understand and organize the aforementioned topics and will be used to create market and price forecasts, which will help producers plan more effectively and thus become more profitable.

Analysis of Domestic wide film releases for sexuality, violence, and profanity

Eli Udy, David Barrus (Mentor)

The purpose of this study is to identify content trends and relationships in the film industry, namely in regards to sexuality, violence, and profanity (which will be referred to as negative content). The popular perception is that film makers have been adding more negative content to films over time. This hypothesis is tested by analyzing the current and past film data for incentives (both financial as well as in terms of critic awards) that present themselves to film makers that may cause a bias over time towards certain types of negative content inclusion. Data on negative content is gathered from the website www.kids-in-mind.com, where each movie is given a numerical score for violence, profanity, and sexuality. Data on awards and nominations were found on the website www.awardsdatabase.oscars.org, and data on critical as well as popular review were gathered on the website www.rottentomatoes.com. Preliminary results show that there is likely a bias towards including a moderate amount of violence, profanity, or sexuality in US wide releases, but not so much that it would give push the movie towards the MPAA R-rating.
Partial Effects on Crime Reporting 2007-2011

Kegan O'Connor, David Barrus (Mentor)

My research is based upon the National Crime Victimization Survey and seeks to take the data found through the survey, along with appropriate weights to form a representative population estimate, to find statistically significant factors which have an effect on the likelihood of an individual to report a crime to which they were a victim. This will be done across five years from 2007-2011 and will also look at if any changes in the partial effects which can be seen due to the financial crisis in late 2007-2008. The methodology which I will use is linear regression, based on the data collected by the US Census Bureau, and creating an appropriate dummy variable for if a crime was reported, and using that variable as the response variable. Then taking that response variable I will run a regression with factors such as marital status, age, relations to offender, Income levels and other variables as dictated by theoretical bases by previous and similar studies. I hypothesize to find that certain economic and social pressures have a significant bearing on the likelihood of a crime being reported and that the effects of the financial crisis will distort some of these likelihoods.

Price Analysis Of U.S Wheat

Tyrell Porter, Stephen McGary (Mentor)

In this presentation I will explore the historical price data of Hard Red Winter Wheat in the United States. Wheat is one of the most commonly grown grain crops in the United States. By understanding what drives the prices of the wheat market we must perform a historical analysis that will explore what causes the prices of wheat to increase or decrease. Throughout this research project I will explore the trends, cycles, the supply and demand forces that have driven the prices of wheat over the last 33 years, and the seasonality of the hard red winter wheat market. It is my goal to discover what causes the price cycles in the wheat market, as well as the effect of other substitute products. By understanding these basic concepts we will be able to analyze what drives the prices of the wheat market as well as the simple trends that occur. By better understanding these principles producers will better be able to manage their price risks and receive maximum profits for their product.
Price and Cost-Benefit Analysis of Soybeans Compared to its Main Alternatives, Corn and Wheat

Tyson Nicoll, Steven McGary (Mentor)

Soybeans is one of the most important crops in the world. The US is the world’s largest grower of soybeans. In the past eight to ten years, the export market demand for soybeans has greatly increased. This demand for soybeans has driven prices higher and the number of acres planted higher. The amount of bushels of soybeans produced in the US has doubled in the last 30 years. However, the price of farming has also increased over the last 30 years which means that soybeans may not be as profitable as other crops. Hypothesis: The price of soybeans has decreased, on a per capita bases over the past 30 years, compared to corn and wheat, which makes farming soybeans less profitable than both corn and wheat. Objective: There are three objectives for this research project. First, is to compare the change in prices of soybeans to corn and wheat which are the biggest substitutes for soybeans. Second is to analyze whether or not soybeans are as profitable to farm as corn or wheat over a 30 year time. The last objective is to conduct a seasonality analysis to determine the best time of year for a producer to market soybeans. Significance: This research will be beneficial to farmers who currently grow soybeans and want to know how its production compares to corn and wheat in profits. Since the US is the largest grower of soybeans, this analysis will help determine the supply and demand for soybeans in the future using statistical analysis, policy analysis, and forecast analysis.

Structural Analysis of the Potential Demand Shifts and Price Seasonality of the Idaho Alfalfa Hay Industry

Wilson Carter, Stephen McGary (Mentor)

Alfalfa hay ranks as Idaho’s third-most-valuable crop, behind potatoes and wheat. Total revenues from hay sales were projected in 2013 to be around $539 million, up 6% from 2012, putting Idaho second in the nation in alfalfa hay production and value. The target markets of alfalfa hay (compared to other “hay”) have been prominently the dairy industry. The State growing dairy industry has pushed Idaho to third place in the National rankings of dairy sales at $2.57 billion in 2013. The growth in the dairy industry, along with expansion in alfalfa hay exports to the Pacific Rim, has increased the demand for hay in Idaho. By reviewing time series data from the years 1980 to 2013 the annual nominal and real prices showed on average an upward trend each year. A graphical illustration of the demand/supply relationship between alfalfa hay prices and production showed a possible increase (shift) in the annual demand curve. With the potential shift in demand for alfalfa hay the variation in the monthly prices (seasonality) may become more volatile. The purpose of this analysis is to first verify the positive shift in the demand curve, and second, identify possible monthly variations in market price within a production season. To achieve this purpose, two simple econometric models will be used. The first model will verify that alfalfa demand has increased and will be represented by economic model: \[ \text{Prod} = \sum_{i=1}^{n} \text{Hay}_{i} \times \text{Price}_{i} + \epsilon \] \[ \text{Price}_{i} = \alpha + \beta \times \text{Prod} + \delta \times \text{Hay}_{i} + \epsilon_i \] where: \( \text{Prod} \) = average annual Idaho alfalfa prices \( \text{Prod} \) = annual production of Idaho alfalfa \( \text{Hay}_{i} \) = number of Idaho dairy cows Hypothesis of estimated coefficient and statistical test: \( H_{0}: \beta = 0 \quad H_{1}: \beta > 0 \) The second model will use the coefficient of variation to identify instabilities in the nominal prices and will be represented by the function: \( \text{var} = \frac{s}{\text{mean}} \) where: \( s = \text{standard deviation of the sample} \) \( \text{mean} = \text{average} \) of the sample By achieving these two purposes an end objective could be reached in creating and identifying a potential market plans for producers of Idaho alfalfa hay.
Structural Analysis, Policy Analysis and Forecasting: An Almond Price Inquiry

Jeffery Hendrix, Stephen McGary (Mentor)

The almond (Prunus dulcis) is a tree which originated from the Middle East and South Asia. It produces an edible nut, also known which is also called an almond. Per capita almond consumption increased 326 percent from 1980 to 2012 in the U.S. California produces 80 percent of the global supply of almonds, and nearly 100 percent of the U.S. almond supply. Almonds are California’s highest valued export at over $2.8 billion. Total planted acres in California grew 260,000 from 2002 to 2012. Through regression analysis this study examines the forces that cause shifts and changes in the price of almonds, the behavior of almond producers and the Almond Board of California (the organization responsible for carrying out the Federal Marketing Order for Almonds), and forecast future almond prices. Through statistical and econometric analysis we anticipate our findings to be as follows: The marked increase in almond production is a result of increased global demand, but price variation has much more to do with the supply. Almond trees have a 4-6 year biological lag, thus prices tend to be cyclically based on the available supply. The Almond Board of California’s work has and will enhance the profitability of almond growers, improve the safety of almond consumption, and stabilize the price of almonds. The almond market is strong and should continue to improve. We anticipate prices to increase due to rising costs of production that California almond growers will face, and a faster growth in demand over supply.
C3: Creating Constructive Conflict

Tiana Atualia, Cassidy Oldham, Whitney Majors, Devin Pincock, Robyn Bergstrom (Mentor), Rebekah Pitts-Cockrell

The following project addresses the inevitable encounters with conflict. How can a leader create an environment where conflict can be used constructively? Through our research we have discovered three actions a leader can take in order to optimize conflict for the organization’s advantage. Through strategically picking your battles, then dealing with the conflict head on, a leader will be able to assess the situation and apply changes in order to better the organization. When conflict arises naturally individuals want to sweep it under the rug or bulldoze through things. As a leader you need to assess the situation and decide whether or not you will get involved. It is unrealistic to think that it is possible to win every battle, therefore you must evaluate which battle will lead your organization further down the path of efficiency. Once a leader has decided to go to battle, you have to be fully engaged and hit the conflict head on. Lastly once you’ve been immersed within the conflict you will be able to efficiently come to a solution as well as devise a plan to handle future conflicts.

Change Management

Cameron Boehning, Jesse Kaupert, Taylor McBride, Robyn Bergstrom (Mentor), Tyson Clark, Bianca McDown

Change Management is the process in which an individual or an organization chooses to change their own behavior in order to have a greater impact on one’s organization. How can we as individuals, as well as organizations, prepare ourselves for a more successful future? We are capable of creating our own future by making appropriate changes in our own lives that will create a ripple effect leading to the change we desire in our lives and our organizational culture. Companies need to be innovative by collectively creating and integrating solutions to the difficult situations they find themselves in. Without change a company cannot expect to grow to their full potential and compete with other companies. Failure is imminent. A leader must consider alternatives and options that will benefit the organization and its employees. This paper describes the step process to complete change management and how to make it most effective whether its with an individual or corporation.

Conflict: Is It Worth It?

Carissa Simons, Scott Smith, Nicole Rios, Josie Potter, Robyn Bergstrom (Mentor)

Conflict is often viewed through a negative lens. Although many people have a negative perception of conflict, it is a crucial part of success within a team. When team members do not think critically, they descend into groupthink. According to Harvard Manage Mentor, “Groupthink is an undesirable condition in which the members of a group think alike to the point where members become unwilling to raise objections or concerns about a project.” Teams become stagnant and unproductive when their members do not actively question the group’s ideas. Constructive conflict safeguards the team from groupthink. As team members challenge each other and their own opinions, they refine ideas to execute the best processes. Team leaders need to create a safe environment that balances acceptance and opposition through generation of creative ideas, filtering through options, and convergence on one goal. This project explains how working with a team can be one of the best ways to be more competitive and innovative, especially when conflict is employed constructively within the group.
Diversity and Roles For Effective Group Work. How's BYU-I doing?

Jimmy Bridges, Jonathan De Leon, Robyn Bergstrom (Mentor)

The current article focuses on research-based principles of collaborative learning. The main model of group work that the paper addresses includes the principles in the acronym C.H.A.I.R., which stands for the following: C - continuity, H - heterogeneity, A - appropriate tasks, I - individual and group accountability, and R - roles. The authors have chosen to focus on Heterogeneity (diversity) and Roles in group work. By focusing on these two principles we will demonstrate the effectiveness of groupwork. The paper also includes an assessment of students’ perception of group work at BYU-Idaho. The article concludes with recommendations for BYU-Idaho to prepare students for effective group work in the workforce.

Effective Leadership Through Exercising Attributes of Christ

Rachel Smith, Cristel Carlini, James Bullough, Kori Withers, Robyn Bergstrom (Mentor), Makenna Doty

Throughout this paper, “Effective Leadership through exercising attributes of Christ,” the characteristics and qualities of successful leaders are described and explained to gain a better understanding of how to lead efficiently. Exploring the attributes of fixed principles, understanding others, selfless leadership, responsibility, accountability, wise use of time and secular leadership, leadership becomes clear. Leadership keeps things organized and can assist groups, companies, or organizations in being more effective and efficient. Becoming a good leader is a fantastic idea that everyone should aim for, but becoming a Christ-like leader is something that everyone must aim for. When being Christ-like is a habit and not a goal, work will be easier and a lot of good can come from accomplishing this goal. If all leaders were Christ-like, the world would be a better place. The goal of a Christ-like leader is not to be the best leader possible, but to help the most people possible. When as a leader, the clients and fellow employees are helped first which means success will surely be close behind.

Everyday Leadership.

Hailey Farr, Abigail Feller, Robyn Bergstrom (Mentor), Douglas Knuth, Macey Dally, Kate Paulson

A great leader achieves group success by recognizing and highlighting individual skills and abilities, focusing on common goals rather than personal goals, and accrediting accomplishments to the team as a unit. An effective leader encourages and utilizes the strengths and skills of individuals within the team. He or she uses interpersonal linkage to get to know team members, assess where their skills can be applied, and allow individuals the freedom to use their strengths. Additionally, establishing understanding of the common goal at the onset of the project is necessary for team members to be equally able to act toward that goal. Finally, when all team members have been empowered to use their strengths toward a common goal, a leader understands that crediting the team for group accomplishments is more important than showcasing his or her own abilities. Although the importance of these qualities has been proven many times in business settings, they can be valuable to any situation or organization lacking leadership. Viewing leadership as a role, not a position, and applying these leadership qualities regardless of position will strengthen the dynamic and increase effectiveness of any group.
Interpersonal Damage Control

Jeff Lang, Nikki Usery, Maureen Mickey, Haley Reese, Meg Shaver, Robyn Bergstrom (Mentor)

The purpose of this study is to explore interpersonal conflict and identify ways to diffuse interpersonal damage within conflict. This paper explores where conflict comes from, why a conflict can either be negative or positive, and explores how to successfully negotiate through a conflict. While it is important to realize that conflict can be detrimental to an organization, it is also a crucial aspect of success. Effective communication and constructive conflict leads to elevated standards of efficiency and productivity. Once a negative conflict has formed, the danger for destructive behavior is present and can have disastrous results. In some cases, damage control is necessary to repair effective relationships and reestablish effective communication within the two parties. In a recent keynote address, Spencer Taggart declared that “everything communicates.” When conflict arises, employees tend to separate, instead employees should use the conflict to become a stronger team. While a conflict can be used to destroy if used inappropriately, it can also be seen as a fire in which companies can be transformed through different experiences and expertise among its employees. Companies can bring employees together in heated situations through conflict.

Success: Cultivating it in Your Team

Brianna Zeiner, William Strong, Rachel Withers, Mike Stebbings, Robyn Bergstrom (Mentor)

This project is a summary of how leaders can help their teams to be more successful. An analysis of what organizations have done in the past to make individuals successful within their teams shows what can be done in other organizations. This is also a study of theoretical and idealistic principles that can be applied to make improvements within any type of team and leader relationship. Many leaders find it difficult to help their team members reach their potential within the team. The principles that are presented, if applied and implemented can aid organizations, teams, and companies in their future goals. This research specifically analyses the organizational tactics used in the Taj Mahal Palace Hotel in Mumbai, India as a case study, the Four Disciplines of Execution by Chris McChesney and Jim Huling, Leadership and Self-Deception by the Arbinger Institute, and Harvard’s Manage Mentor Leadership and Team workshops. As leaders and team members use the principles that are taught from these sources, teams will be able to improve their effectiveness within the organization.

Turning Team Failure into Success

Daniel Cushman, Kenton Brower, Megan Baker, Heather Crossley, Robyn Bergstrom (Mentor), Alex Brower

From elementary school through grad school and then into our careers we always hear about teamwork. Teamwork, teamwork, teamwork! Our society drills into us that teams are the most effective way to accomplish goals and bring about success—then why is it that teams so often fail to function to reap rewards? We have explored the causes of group failure by looking through the eyes of group members in a team. We share these discoveries by breaking each of our points into a defined area of focus through a main problem, an example and a solution to that problem. We look at the relationship between groups and their leaders and why mutual respect is critical in their success. We observe why teams need to set specific goals to provide the team direction to move toward and to keep team members on the same page. We explore the importance of communicating each team member’s responsibility and role in the team. We assess why the team needs to be accountable to each other for progress. By analyzing these areas of focus we have established effective ideas for improving teamwork and ensuring successful outcomes.
BYU-Idaho Student Satisfaction with the Course Waitlisting System
Johnna McGarrah, Jessica Montgomery, Margaret Kruszynski, Kaili Huber, Lane Williams (Mentor), Kodee O'Neill

The “meta-question” we are researching is: How satisfied are BYU-Idaho students with the current wait-listing system? One of our group members works for the Student Records and Registration Office and her supervisor has expressed interest in this project. The wait-listing system is fairly new, as it was just implemented during the Fall 2012 semester. She wants us to find out what students like and dislike about the current BYU-Idaho wait-listing system in order to improve it to better support students’ needs. Our group has created a survey that we will be sending out to a large random group of BYU-I student’s through the Qualtrics system. We have decided to send it out a couple of times after registration for the Winter 2015 semester begins in early November so that student’s will have the waitlisting system fresh on their minds. We also plan to study examples of other waitlisting systems as well as student media use to determine the most effective way to contact student’s about a waitlist notification. We will be conducting this portion of our research using articles found on the EBSCO Host system available through the David O. McKay Library.

Effectiveness of Internships for Communications Majors
Kori Withers, Maren Hatcher, Chris Pinedo, Lauren Robinson, Dee Lindsay, Lane Williams (Mentor)

For our research paper, we will be looking at the effectiveness of internships. Specifically, we will be looking at the effectiveness of internships for communication majors in discerning which major or emphasis they want to choose. Communication majors will find this research information valuable in deciding how effective an internship will be for them, how most internships are found, and how an internship will influence their decision in their major and emphasis. Through a randomly sampled focus group of communication majors, we will ask questions about the internships they have completed. Our questions will cover how the students found the internships, whether they completed it for experience or credit, and the number of internships they’ve completed. We will also ask about whether the internship was connected to their major and if it encouraged the student to keep or change their major or emphasis and what students would change about their experience. We hope to gain an understanding of how internships affect communication major’s process in deciding on a major and emphasis and how the communication department could make them more effective.

How Food Affects the Beginning Stages of Relationships for BYU-Idaho Students
Courtney Matiaco, Steve Butler, Lane Williams (Mentor), Becky Lyle, Chris Carroll, Cynthia Leal, Hannah Grooms

Our group is looking into how food affects the early stages of relationships for BYU-Idaho students. Using a focus group to gather information and evidences supporting our underlying assumption that food does, in fact, affect relationships, our hope is to find out what about food is more helpful in aiding to build those relationships. Our focus group will consist of a random sample of approximately 10 single students, and will last 30-40 minutes. We have not concluded our work, but hypothesize that it is a culmination of how the food is prepared and shared more than the cost or type of food that is consumed. If this were the case, then the evidence would suggest that students should be less concerned with how much they are going to spend on their date, and put more effort into how to make eating an enjoyable and comfortable experience. However, we would not be surprised to see that a type of food is preferred over another, (for example, homemade preferred over fast food) but do not know what that might be at this point.
Positive Effects of Cell Phone Use in Education and Dating

Loryn Paul, Marisa Yde, Jessica Frye, Lane Williams (Mentor), Charlie Cottrell, Denver Nay, Loryn Paul

The view of cell phone use in social interaction often has a negative connotation among society. Through focus groups we want to determine what the perceived positive uses of cell phones are for BYU-I students. We want to see how this technology can be more effective in dating and church settings. We are curious to see where cellular technology is headed and how it is driving our society, and if it is beneficial to our social interaction. Our meta question will be answered by focusing on the qualitative research. We would like to do a focus groups to better understand how students see cell phones as positive influences in their lives. We will also research previous studies performed on social cell phone interaction. The basic research questions provide examples in how we communicate. In this day and age, our communication strongly relies on the use of cellphones.

Snapchat usage at BYU-I

Kyle Olson, Baylee Colton, MollyJo Nemeck, Kelsey Coles, Lane Williams (Mentor)

The main question we are trying to answer is: How does Snapchat use vary among BYU-Idaho students? We decided to research this topic because Snapchat is a relatively new social media platform and there are many potential uses. We want to find out why our peers are using Snapchat and to what purpose. We are conducting a survey using Qualtrics and we hypothesize that younger, single students will be the most common users. More specifically females about the age of 18 will have the highest Snapchat Score. We also think that people who are single will have a higher Snapchat Score as well. We also believe that people will be open to receiving snaps from businesses and other entities for promotional purposes. If this is true, we can then find innovative ways to apply Snapchat through commercially viable techniques. Exploring the serviceability of Snapchat could be beneficial for various entities. This could include different departments at BYU-Idaho. The research could reveal more effective ways to reach out to its users.

The BYU-Idaho Store and Student Satisfaction of the Products Sold

Jenna Reeder, Taylor Sylvester, Bridget Portillo, Shane Wiederholt, Lane Williams (Mentor)

The BYU-Idaho Store would like to draw in more students to shop at their conveniently located store on campus. This is possible by making students aware of the products the BYU-Idaho Store has to offer. Through our research we will help the BYU-Idaho Store keep students aware that their store is not just a university bookstore; rather that they offer a variety of products from technology to gifts. Our process includes the use of a survey emailed to a random sample of BYU-Idaho students. Two emails will be sent with the hyperlink to the survey, one week apart. Those who have already taken it will not be required to take it again. Emails were obtained from the university and sent through a student email via blind carbon copy. Data is still being collected and the research has not been concluded, but will be by the end of the second week of November 2014.
The Effect of Technology on Modern Dating

Rubenss Rivera, Alex Jensen, Nicole Boyer, Lane Williams (Mentor), Lauren Burns

Our study will include a focus group of BYU-I students about how they use social media in their dating lives. This will include questions about whether or not they use social media to look up potential dates or, after they have found someone, do they look them up on social media to find out more about them. Along with all of that we will try to better understand how they use social media after they have been on a date with someone. Questions will also include inquiries about traditional blind dates and if the participants do still go on traditional blind dates. This focus group session will be recorded and a transcript typed up. Results are expected to show how dating has changed over the past few years due to the inclusion of technology (social media).
How does Facebook affect getting into a relationship?

Kay Anderson, Lee Williams (Mentor)

Our group has decided that Facebook has a bigger impact on getting into relationships than most people realize. We want to find out how much of an impact it truly has. We believe that social media can hinder chances of relationships forming. We wish to study this because it’s impact for not only our peers throughout the U.S., but also on the campus of Brigham Young University-Idaho. Our Meta question needs to be researched because of the effect Facebook has already had on relationships. We need to further understand how individuals come to date on campus and the correlation there is to Facebook. Appearance alone has shown to have a big impact on whether or not someone has interest in getting into a relationship. In the research we have conducted so far, contrary to what we believed would be a significantly high with the answer being “strongly agree” subjects have answered “strongly disagree” to the question “I have manipulated or exaggerated the truth on social media to make myself seem more appealing to the opposite sex.” Overall, we find that Facebook does indeed affect how people date and the process of getting into relationships.

How popular and effective is Tinder amongst students at Brigham Young University-Idaho?

Kelsee Gates, Tamsyn Turner, Josiah Stewart, Katelynn Hoyt, Lane Williams (Mentor) , Sarah Wakefield

This study was conducted to measure the popularity and effectiveness of the dating app Tinder amongst students currently attending Brigham Young University-Idaho. A survey created on Qualtrics was e-mailed to 400 BYU-Idaho students, and according to the results of the 89 responses, the majority of BYU-Idaho students do not use Tinder. The findings suggest that most students do not use tinder because they have a negative perception of it, prefer traditional dating, or are married. Of the students that do use Tinder, the perception of the app is also generally negative. Our results reveal that most are not satisfied with the app and would not recommend it to a friend. But although the majority of participants do not feel satisfied with Tinder, many of these users spend time on the app multiple times a day. Responses indicated that most of the participants that use Tinder have been on first and second dates as direct result of the app. However many of them never began a relationship from these dates. The results of this survey are analyzed in this article to understand what students think about Tinder.

How to Effectively Share the Gospel via Social Media

Weston Giles, James Richards, Jenney Premont, Lane Williams (Mentor) , Ryan Brennan, Zoe Gibson, Alex Engstrom

There are hundreds of millions of messages sent each and every day via social media. The Church of Jesus Christ of Latter-day Saints strives to reach individuals through this medium of social media in an attempt to touch their lives. The purpose of our study is to discover the most effective and least effective ways to share the Gospel via social media. We have decided to conduct a focus group through snowball sampling comprised of ten to fifteen individuals. Of these individuals, a majority of them have had success sharing gospel related messages online. We will be inquiring how often these individuals “share” gospel messages and the impact they have through a series of quantitative and qualitative questions (testimony, scriptures, photos, quotes, videos, etc.). Our focus group will be conducted on Saturday, November 22, 2014 in the MC third floor. This research is intended to better help each individual communicate gospel messages more effectively.
Measuring Social Activity

Steven Jackson, Kara Laney, Zach Curtis, Lane Williams (Mentor), Jacob Justice, Chase Burke

Our hypothesis: Being socially active outside of school through interpersonal communication positively affects a student’s academic performance. We are looking for the academic impact of interpersonal communication. Through various forms of surveying we hope to find that this is true, or negative. Our pool for the study will consist of 300 randomly selected students given to us by the school, and those who we are able to talk to in person by having them fill out a survey on paper. The study is anonymous. It will examine the correlation between grade point average and interpersonal communication through human interaction whether it be through a sport, a job, or a hobby. We are looking for human interaction, face-to-face communication. Many students are different and have take into account how many hours people work or do such activities. Facebook, Twitter, Instagram, and other such media do not make the cut. This study will help current and future students know whether or not doing extra-curricular activities, having a job, sports, or other similar activities are going to help them academically.

Naruto Shipping Wars

Sara Ainscough, Beth Hendricks (Mentor)

Naruto is a Japanese manga/comic and anime/cartoon that began in 1999 in Japan. Naruto grew in popularity over the years and across the seas to obtaining a worldwide fan base. In 2014 after 15 years of the ongoing story of Naruto the story of the beloved manga is set to end in November of 2014. Fans have paired many characters together romantically in the story hoping to see them result in an actual relationship in the real manga. The practice of pairing characters together into romantic partnerships is known as “shipping” by the fan base. With no couple pairings made official yet the fan base continues to fight their case for their desired couples on social media. Out of all the fans what couples are longed for the most? This research will conclude this 15 year long “shipping war” between the fans to reveal the couples that are most supported by the fans and by the events in the story. By evaluating the story’s events in relation to couples as well as the fan promotions on social media. This will include sources and convenient samples from all across the Internet. The ultimate hypothesis is that the fans and show will support the character pairing of Naruto and Hinata as the actual story couple result and the strongest fan based couple following in all of Naruto.

Hayden Coombs, Lane Williams (Mentor)

The goal of this study was to identify how the most populous Christian denominations in the US present themselves to the world in an online setting. By identifying specific characteristics of the most populous Christian denominations, we hoped to offer some insight to the purposes and objectives of the specific websites. To accomplish this, we created a list of 17 criteria which we would compare the homepage of the 23 most populous Christian denominations in the US. We also utilized Alexa.com analytics software to determine how often each site is frequented. Results of the study included:

- The studied homepages were limited in their use of Jesus Christ,
- Most of the studied homepages displayed images of personal or congregational worship,
- Individual church leaders and church leadership of the studied homepages were prominently displayed by the majority of the respective Christian denomination homepages,
- The studied homepages wanted to make their respective philanthropic efforts known, all but three of the studied Christian denomination homepages featured advertisements and/or a church store and/or asked for donations to generate revenue,
- Most denominations are working hard to present themselves in a way they will be understood,
- Two denominations had a vastly superior web traffic ranking (JW.org, LDS.org) than the rest of the studied websites.

The results of these findings lead us believe that:

- Almost three quarters of studied Christian denominations prioritized displaying images of church leaders and members instead of displaying images of Christ on their homepage. This sample illustrates that the majority of Christian denominations today are removing Christ as the focus of Christianity;
- The majority of Christian denominations are engaged in philanthropic works and encourage their respective online audiences to do the same;
- Nearly nine of every ten Christian church websites are run like businesses, and thus are focused more on worldly matters than eternal salvation;
- The majority of Christian denominations prioritize educating the public about their respective beliefs and practices. By prominently displaying a doctrinal exposition for anyone to see, most churches seem to be hoping that they will dispel any rumors or confusions about their church that exist amongst the public;
- Christian denominations that wish to follow a pattern of success when organizing their website can follow the pattern created by JW.org and LDS.org.

Future work that may come from this study includes a deeper study of what sets JW.org and LDS.org apart from the rest of the Christian denomination websites. In the specific case of the Church of Jesus Christ of Latter-day Saints, which has two official websites in LDS.org and Mormon.org, we would also like to compare the purposes and methods used in both of the different homepages.
Social Media and Academic Success

Emily Conrad, Makenna Doty, Lane Williams (Mentor) , Hyrum Webb, Curtis Lowe, Jonathan Horab, Sarah Bell

Social media has become a dominant form of communication and a way we spend most of our time these days. Some could say the world has developed a new language within social media. We will be taking a look into the academic world of students and teachers. Specifically, can a teacher’s use of social media to teach a class or communicate students help or hinder the performance of a student? Do students prefer or feel more comfortable with sending private facebook message or tweets to their professors? Or would they rather send a formal e-mail or set an appointment for the teacher’s office hours. We also dug into the effect gender or age has on this subject.

The Effects of Social Media on the Happiness of BYU-Idaho Students

Devin Collins, Mauricio Mora Ditzel, Grant Stoker, Richard Tripp, Derek Evans, Lane Williams (Mentor) , Jacob McCann

Communication students virtually live and breathe Social Media. For almost every class, there is a segment which is tied directly into Social Media. This can be a good thing, a bad thing, or both. What are the effects of Social Media at large? But more specifically, how does it affect students at Brigham Young University – Idaho? The intention of the Group is to discover if there is a connection between the use of Social Media and happiness of students at Brigham Young University – Idaho, and what that connection is. Does Social Media cause an increase in happiness? Does it cause a decrease in happiness? Is happiness affected at all by Social Media? The Group hypothesizes that there will be a negative effect as a result of Social Media. However, it is invested in discovering what the truth is. To research the topic, the Group will be conducting a focus group. Ten students will be randomly selected and given the opportunity to participate. These students will be asked questions by a facilitator in a comfortable, safe environment where they feel that they can share their thoughts and ideas. The Group would like to find people with varying viewpoints in order to more fully research the issue. The results will be displayed in a word cloud, and an explanation given to expound what was learned during the focus group. In the end, the results will be presented in the Research and Creative Works Conference.
25 things that will get you into PA school.

Randol Jimenez, Greg Klingler (Mentor)

I will be doing a two part project in which I will research the 25 things students need to know to get into Physician Assistant’s school, and I will be accomplishing these things myself. I have found it very interesting that there has not been a lot of specific guidance to getting into PA school from other students perspectives. I would like to be better prepared as a student trying to enter PA school and I would like for others to have the same opportunities. I will make a list after researching of the things everyone should know, including the requirements needed before applying to Pa schools in general. This project is of value as a guidance to help students be better prepared for the PA school process. It is the hope of this project to deliver a quality product that will be invaluable on the path to PA school.

Deseret Digital Media Side Bars

Hayden Coombs, Hayden Coombs (Mentor)

A series of articles written in AP style for Desert Digital Media. These short articles include a satirical column about steroids and baseball, the benefits of continuing one’s education through free MOOC courses, and the importance of reading to children. These articles display my wide-range of writing styles and how they can be utilized in the multiple facets of journalism.

Hate the Sin, and the Sinner

Sefa Palu, Melissa Bair (Mentor)

The popular version of Sir Isaac Newton’s story depicts him underneath a tree, when an apple fell and hit his head. And that's how gravity was born – one of the biggest scientific discoveries in history. For Stan Hardy [name has been changed], 19, the biggest self-discovery was less Newton and more Hardy, in the sense that there wasn’t a moment when it just clicked ‘I’m gay’. It was something he always knew.

Hardy, sophomore at Brigham Young University – Idaho, has deferred for two years to serve a mission for the Church of Jesus Christ of Latter-day Saints. He has joined thousands of young people worldwide who have left their homes in the act of service. The journey of a gay LDS member who decided to pursue a mission is not easy, nor is it frequently told. When considering the culture of the church fifteen years ago, a gay member willing to talk was almost unheard of, let alone serving a mission.

However, the growth in the church has allowed more voices like Hardy’s to share their experiences no matter how different they are.

“I think that has a lot to do with people coming out and being courageous, stating that they believe in this church. They want to live by the Gospel. They are this way and that it doesn’t matter,” said Hardy.

Although the church is known for their stance against gay marriage, it has recently made headlines in a new light as three LDS government officials assisted to pass the Employment Non-Discrimination Act 2013 in November.
The Price of Competing: What Walk-ons Sacrifice in order to continue their athletic careers.

Hayden Coombs, Lane Williams (Mentor)

Written in AP style, this feature article follows a student-athlete through trials as a walk-on football player in the NCAA. This article brings to light much of the hypocrisy that exists among the NCAA and college sports programs. “You’ve done great. Your film looks good. You have the tools to succeed... But I don’t play walk-ons.”

Understanding Three Possible PA Specialties

Kevin Forsell, Greg Klingler (Mentor)

The PA Profession has many different Specialties available to those who choose this exciting career. However, choosing a specialty may be hard as there are so many to choose from. Because my career goal is to become a PA, I have chosen my Capstone Project to be an in-depth experience at three specialties that are possible to me as a future PA; General Surgery, Urgent Care and Orthopedics. These are three specialties that I have not yet researched on my own. My faculty mentor is Brother Greg Klingler, who is a PA himself. He has directed me to research 3 different specialties and to spend a minimum of 20 hours in each specialty to fully understand the scope of the profession. Twenty hours respectively will be spend in each of the following areas of Samaritan Clinic, Moses Lake, Washington; General Surgery, Urgent Care and Orthopedics. I will also research the career statistics for each specialty including but not limited to average salary, average starting salary, job outlook (whether number of jobs are increasing or decreasing), working hours and any important information necessary for each specialty (i.e.- special certifications needed or extra education).
High Monetary Incentives Cause Detriments in Performance Based Tasks

Christopher Mosqueda, Brady Wiggins (Mentor)

Past research has shown how high monetary incentives prove to cause detriments in performance when presented with even the most basic of tasks (Mobbs et al., 2009). These incentives can take many forms from promotions at work to social acceptance among a group of peers. The development of the human condition has created a sense where life is seen as a game of win and losses (Zedelius, Veling, Bijleveld, & Aarts, 2012). Each decision that we make leads to another decision and a whole new array of rewards based on those choices that we make. Several problems arise when people are asked to perform simple to difficult tasks. Anxiety has been identified as the underlying cause to these performance detriments (Vickers & Williams, 2007). The purpose of this study is to explore how extrinsic incentives affect task performance in a group setting when the reward is presented prior to the task and awarded immediately following the task. I hypothesize that when individuals are working together in a group setting and presented with a high extrinsic reward that performance detriments will increase and that in the presence of a low incentive, or absence of one, that groups will perform faster and make less errors (measured in time allotted) than the high incentive group. I further hypothesize that when individuals are presented with a low extrinsic reward that they will perform faster and make less errors than individuals presented with a high reward.

Understanding how positive leisure can affect depressive symptoms in a population of BYU-Idaho students in the fall term 2014

Brittany Larson, Karen Jensen, Jessica Pfeiffer, Kari Archiblad (Mentor) , Megan Scrogum

The purpose of this study is to understand how positive leisure can affect depressive symptoms in the population of BYU-Idaho students in the fall semester 2014. Depression is an emotional disorder that affects many people around the world. Symptoms of depression include feeling sad, hopelessness, guilt, fatigue, and thoughts of suicide (National Institute of Mental Health 2012). The use of drugs or therapy have proven to help the treatment of depression. Leisure involvement also contributes to the positive treatment of depression. The impact of social interactions, academic involvement and extracurricular activities on perceived happiness will be explored. The study will reveal the significant relationships between happiness and routine leisure pursuits for average college students. The results from this study could help students find more avenues for overcoming or avoiding depression in the future. Our research consists of a survey of 150 students on the BYU-Idaho campus during the fall 2014 semester. We will create a simple random sample along with charts and tables from the online survey which will include both quantitative and qualitative information. The survey will be sent through an email sent from Scott Bergstrom, Director of Institutional Research at BYU-Idaho. The survey will reflect a correlation between a modified Zung self-rating depression scale and regular leisure participation.
Which is More Effective at Improving Learning: Extra Study or Positive Affect?

Sean Nuttall, Brady Wiggins (Mentor)

My research experiment is entitled, “Which is More Effective at Improving Learning: Extra Study or Positive Affect?” A body of research has suggested that those in a positive mood learn quicker and are better at problem solving. I hope to show that taking time out of your study to improve your mood will increase the effectiveness of your study enough to be worth the time investment. My research participants will be divided into two groups, one of whom will be given a full 10 minutes to study a passage, and the other who will first watch a video intended to improve mood, and then study for the remaining 8 and a half minutes. I expect to find that those who watched the video will perform better on a test than those who only used their time studying. If my findings are in line with what is expected, this could help reduce stress associated with studying, and help students to study more effectively.
Authoritarian parenting style and its effects upon the decision-making process in children raised under its influence

Blaine Ladd, Brady Wiggins (Mentor)

Abstract This study will seek to establish a correlation between the Authoritarian parenting style and a lack of understanding and ability to execute an effective decision making process within children raised under the authoritarian influence. Children whose decisions are most often made for them with no explanation as to the reasoning behind the decision may not be able to form an effective decision making process of their own, leaving them at a disadvantage as they grow and major decisions are required of them in their late teens, early adult years, and beyond. This research will be done via questionnaire sent out through e-mail to BYU-I students. The questionnaire will use the PAQ (parental authority questionnaire), which contains questions designed to discover the most prevalent of the three parenting styles (produced by Diana Baumrind) that they were raised under. These involve Authoritative, Authoritarian, and Permissive. There will also be questions to gauge their decision making process, as well as a few questions from the Marlowe and Crowne questionnaire, in order to account for a social desirability confounding variable. I plan to use the Pearson Correlation Coefficient to measure the strength of parenting style and decision-making processing. In the results, I hypothesize that there should be a large correlation between Authoritarian parenting and an immature or under developed decision-making process. Some conclusions that we could draw from this correlation are that in order to maximize ones decision making and to generate effective choices and decisions, one must learn (preferably at a young age) the process of making decisions. Having the opportunity to make decisions can develop this process, and when the choice is not optional, having the reasons behind those decisions explained to them will help them understand the process of the decision.
Contextual Cues in the Interpretation of Moral Relevancy

Samantha Anderson, Brady Wiggins (Mentor)

The study of identity as a self-concept is a budding theory in the disciplines of psychology and sociology. It offers innovative ways to understand the self (Burke & Donald, 1980). According to Stets and Carter (2011), “an identity is the set of meanings an individual attributes to him – or herself as a person, role holder, or group member.” Role meanings help a person establish their identity, and therefore, a person’s identity is often constructed from more than one role-meaning (Burke & Donald). Identity is seen as an important area of research because of the implications it has for behavior. One area of identity research concerns itself with morality; termed a person’s Moral Identity. There is currently a need for more research of moral identity (Hardy & Carlo, 2005). Generally scientists agree that the best way to approach the study of moral identity is holistically, using “cognitive, social, affective, motivational, and behavioral forces” (Derryberry & Thoma, 2005). Situations of moral dilemma are always steeped in complexity (Hardy & Carlo). Stets and Carter (2012) have shown that contextual cues help the individual feel more or less responsible for acting morally appropriate. For the current research study, I would like to conduct an experiment which addresses the influence of contextual cues on an individual’s perception of a moral dilemma. I want to know whether or not the image of a famous moral figure will cause students to see a semi-neutral situation as a morally relevant one. My hypothesis is: If a person is presented with a contextual cue in the form of a moral figure, it is more likely that they will view the situation as morally relevant. While I believe that the study of morality is interesting for scientific reasons, there is also a need for an understanding of morality in our society. If we have an understanding of our moral processes, we may be able to make more informed decisions. Researchers Stets and Carter (2012) said it best, “While morality helps maintain the social order, we must be careful not to reify the impact of social institutions on moral behavior and discount the self as an agent of moral action.”

Does Money Inequality Affect Empathy and Compassion?

W. Jordan Charles, Eric Gee (Mentor)

Money is used for many things. It helps to buy and sell goods and services. Using money can cause the depreciation of empathy, which would decrease pro-social behavior and could lead to problems in society. The purpose of this study is to answer the question: "Does Money Inequality Affect Empathy and Compassion?" In Paul Piff’s research, it has been suggested that money does have an effect in changing pro-social behaviors (Piff, 2014). This study follows one of Piff’s rigged monopoly game designs that was in the New York Magazine article The Money-Emptathy Gap (Miller, 2012). However several key changes were made, namely: Objective questionnaire was used, gameplay is increased to 30 minutes and a script will be followed. It is hoped for that we will not be able to see a change on the questionnaires and that money doesn’t have an impact within our target population. Then we can be able to test other populations to discover if there is a difference within other populations. If it is found that other populations suffer from a lack of empathy when handling money and the population at Brigham Young University – Idaho doesn’t then the implications can be, that the population at Brigham Young University – Idaho has a greater capacity to handle money without losing empathy and thus not decreasing pro-social behaviors.
Family Size and Stress Coping Mechanism: Does Family Size Affect Whether a Person Deals with Stress Using Shame or Guilt?

Morgan Beatse, Bradford Wiggins (Mentor)

Family size can have a huge effect on many aspects of a person’s life— it can determine what kind of house they grow up in, which religion they practice, whether or not they are involved in extra-curricular activities, or how much financial aid they receive when going to college. One aspect of family size that is not typically examined is how it can affect a person’s ability to cope with stress— specifically, whether they use shame or guilt to deal with their daily stressors. If an individual uses shame as a coping mechanism, they internalize the problems in their lives and blame themselves and their nature for how events unfold. A person who uses guilt, by contrast, takes responsibility for the mistakes that they make but do not hold themselves accountable for the unforeseen after-effects of their behavior. To determine whether a person deals with stress using shame or guilt, this study will employ the GASP (guilt and shame proneness scale)— an objective scale of shame versus guilt developed by Cohen, Wolf, Panter and Insko. The results found by the scale will then be compared to the number of children in each person’s family of origin. Statistical significance will be determined using a one-way ANOVA test with SPSS. Participants will be found at Brigham Young University-Idaho, which will help to control for some outside factors, such as religious differences or emphasis placed on family. The hope is that by using participants from a university which has a population made up almost entirely of Latter-Day Saints (Mormons), there will be a larger number of participants who come from families which fit into the ‘large’ category because of the church’s emphasis placed on family.

How Breakfast Effects Memory

Jaclyn LeBlond, Brady Wiggins (Mentor)

George A. Miller, a since deceased renowned Psychologist and past professor at Harvard Law School, helped to open up the idea of cognitive psychology by exploring the extensive amounts of functions in the brain. The brain has been an ongoing mysterious from pervious idea that only 10% of the human brain was being used to the recent findings that scientific evidence proves, “we use virtually every part of the brain”. (Boyd 2008) The brain today is still being tested and explored as to how it can be improved upon all its vast capabilities. One section in the brain in particular is the pre-frontal cortex that is primarily responsible for long and short-term memory. Miller created an idea best known as the, “magical number seven, plus or minus two” (Miller 1994) that explains how the brain can roughly absorb seven new things at one time. By using the theory Miller created on short-term memory this study is able to test how eating breakfast affects the brain and specifically, Brigham Young University-Idaho (BYU-I) students, academic ability by comparing individuals who eat breakfast versus those who do not. A series of surveys and questionnaires will be conducted on college students who are currently attending BYU-I. What this research is trying to conclude is a positive correlation of the relationship between students eating breakfast and their cognitive performance.
How Individualism and Collectivism Relate to Problematic and Helpful Marital Behaviors

Sean Kiewra, Brady Wiggins (Mentor)

For many, marriage is viewed differently than it was in the past. The needs and wants of the individual seem to be more important than those of the collective family. There are many things that lead to an unsuccessful marriage. Gottman found four behaviors in particular that lead to unhappiness within marriage: criticism, contempt, defensiveness, and stonewalling. There are also many good behaviors that lead to a more fulfilling and happy marriage. Some of these behaviors are admiration, romance, accepting influence, and shared meaning. For my study, I will specifically look at the relationship between a person’s level of individualism/collectivism and their levels of criticism, defensiveness, and accepting influence. I plan to recruit married students in the age range of 18 to 30 years. The desired sample size would be 50 participants. In order to recruit participants, I will send out an email to 300 random married students on the BYU-Idaho campus. The email will invite each individual to participate in the study, which will take place on campus. I will use questionnaires that measure each of the variables. I will distribute the questionnaires to the participants. Filling out the questionnaires should take roughly 20-25 minutes. I will run a correlation coefficient analysis to determine the relationship between the variables. I hypothesize that someone with a high level of individualism will have high levels of criticism and defensiveness in their marriage and a low level of accepting influence. I also hypothesize that someone with a high level of collectivism will have a high level of accepting influence and low levels of criticism and defensiveness.

The Measure Ye Mete: Social Identity Priming and Moral Judgment

Jordan Moon, Rob Wright, Cody Broadbent, Rob Wright (Mentor)

The social intuitionist hypothesis posits that moral judgment originates primarily out of affect rather than conscious reasoning. One study has shown that black-and-white symbolism can prime participants to make more polarized judgments. These results indicate that moral judgment is mitigated both by the meaning one assigns to a social stimulus as well as the affective reaction to the stimulus. It appears, then, that moral judgments are primarily affective phenomena, and that conscious thought is subsequently used to rationalize the existing judgment. Previous research indicates that moral and religious priming is not homogeneous (i.e., not all moral constructs evoke the same response). The current study seeks to explore the implications of priming BYU-Idaho students with their identity as a BYU-Idaho student. Participants were randomly selected out of the student population to complete an online questionnaire. Those in the first experimental group were asked to read a paragraph of scrambled words regarding the transition from Ricks College to BYU-Idaho. They were then asked how long it took them to read the paragraph and how well they understood it. Next, they were asked to rate a series of statements describing five morally ambiguous scenarios (i.e., jaywalking, speeding, facial hair, modesty, smoking) on a seven-point scale. The procedure was the same in the other groups, except the initial scrambled paragraph was a short fable (The Lion and the Mouse) for the second experimental group and a paragraph commenting on the mind’s ability to read scrambled words for the control group. We hypothesized that there would be substantial differences between the groups’ ratings of the stimuli due to priming effects, with those in the BYU-Idaho group being more sensitive to disobedience against social norms.
Gender differences on implicit contextual learning

Benjamin McAravey, Brady Wiggins (Mentor)

Global contexts have been shown to be implicitly and incidentally learned (Chun, Jiang, 1998). Furthermore, gender differences dealing with explicit spatial awareness have also been identified. The purpose of this study will be to identify a potential link between gender and implicit contextual learning. The study will consist of two approximately even groups which will be matched according to gender. Each participant will be shown a series of displays and asked to identify a target amongst distractor. The layout of half the displays will be repeated across the experiment with both the target and distractors maintaining consistent locations and orientations within each of their respective arrays. The other half will consist of randomized configurations with the target and distractor locations and orientations being inconsistent within their respective arrays. Speed of search will then be assessed and compared across genders. It is hypothesized that there will be a difference between gender with both the speed and accuracy of visual search.

Hey, You Don’t Look Smart: The Effects of Dress on the Perception of Intelligence as Seen by Others.

Jordon Ostermiller, Brady Wiggins (Mentor)

Previous research has suggested that we perceive others in certain ways based off of their appearances alone, but there has been very little research that is concerned with the age at which these perceptions, based off of dress, begin to form. The purpose of this research study is to see if children as young as six to seven years old already begin to perceive people as intelligent according to their physical appearance and dress. First grade students from Sugar Salem Central Elementary will be used to test this hypothesis. They will have the opportunity to construct what they believe to be an “intelligent” student. The results will be analyzed in SPSS using frequencies. I hypothesize that children as young as six to seven years old already begin to perceive people as intelligent according to their physical appearance and dress. If this is proven to be true then this would suggest that children at a very young age are already forming their perceptions of others based on dress.

Is our relationship with technology impeding our ability to connect with nature?

Delaney Reilly, , Brady Wiggins (Mentor)

Physical and psychological health benefits including faster recovery times in hospitals, increased attention capabilities, decreased stress, and better moods have been associated with an interaction with nature. The effects can be felt from just walking in the park for 15 minutes. However, this time is more often spent with a phone, computer or TV. Replacing our interactions with nature for interactions with technology may have negative effects contributing to some of the problems we see in our society such as increased stress and depression. This study seeks to determine whether or not there is a relationship between short-term cell phone usage and individual connectedness to nature. Participants will be divided into groups of levels of cell phone usage ranging from none, intermediate and complete and then asked to complete a Connectedness to Nature scale (Mayer & Franz, 2004). This data will then be analyzed using a one-way ANOVA to determine whether or not a relationship may exist.
Meditation and Anxiety: Does Meditation Alleviate Test Anxiety?
Isaac Pfleger, Brady Wiggins (Mentor)

Anxiety to a certain level can help increase performance, however, at high levels of anxiety performance drops. This is because high levels of anxiety interfere with the central executive and working memory (Eyseneck, Derakshan, Santos, & Calvo 2007). In an academic setting, this could be the difference between passing and failing a test, and is for up to one fifth of students (Harlen, Deaken & Crick 2003). This study will investigate the potential of limited meditation training as a way to help the typical student cope with test anxiety, and thus increase test scores. Participants will be randomly assigned to either a meditation group or a control group that will practice deep breathing. After random assignment they will be administered a short test of reading comprehension and logic. In order to make things more stressful, participants will be told that in order to have their name in a drawing for a cash prize they will need to score above a 70% on the test. All participants will be allowed to enter the drawing. We hypothesize that individuals who engage in meditation immediately prior to a stressful test will score higher than those who engaged only in deep breathing.

The Effect of Goal Setting on Academic Achievement
Joseph White, Brady Wiggins (Mentor)

This study explores the relationship between academic goals and academic performance. Previous research identifies the relationship between specific goals and performance in a work setting. This study attempts to test the relationship in an academic environment. For the purposes of this study, academic achievement will be defined as the number of correctly completed math problems in two minutes. It is hypothesized that students who set a specific goal will complete more math problems than those who are instructed to do their best or who are not given any goal directives. Participants in this study are comprised of college students in introductory level Psychology or other courses. The analysis of results will be done using one way Anova and Post Hoc tests. The Potential areas for further study include the effects of self-efficacy on academic achievement and goal difficulty as it relates to academic achievement.

The Effects of Music on Food Consumption
Janessa Bradley, Brady Wiggins (Mentor), Karl Lovell

The purpose of this study is to view the effects of music on food consumption. Previous research has found that music does affect food intake, but it is not clear whether these effects hold when music varies during the consumption period. This research will investigate the effects of background music changing throughout an experiment. Eighty-four participants will be randomly assigned to two experimental groups and a control group. Both experimental groups will have music playing in the background, to see if it causes them to eat more M&M’s. Experimental group one’s music will change throughout the experiment and experimental group two’s music will remain a constant genre. The control group will have no music administered, but all other variables will be constant. The data will be analyzed with a one-way ANOVA. We predict that both experimental groups will consume more M&M’s than those in the control group. We also predict that the varying music genre in group one will increase the consumption of M&M’s more than the constant music genre in group two.
**Turnover Intentions in the Workplace**

Jacob Woodbrey, Devon Marrott, Rob Wright (Mentor)

This study will analyze turnover intentions. Turnover intentions are to be defined as the behaviors that precede the action of officially leaving an organization. A sampling of employees from a supermarket in Rexburg, Idaho and a franchise in Northern Idaho and Eastern Washington will be surveyed in early October and late November. The connection between the time one (116 participants with 47% male and 53% female) and time two data will be analyzed and used to establish predictions of the factors that strongly influence turnover intentions. The constructs that will be measured as possible factors include: job satisfaction, organizational justice, interpersonal conflict, job characteristics, perceived organizational support, and PANAS (positive and negative affect scale). These results will provide insight into organizational practices that should be continued, those that should be changed, and an insight into which practices have the greatest effect to both the positive and the negative. This knowledge will empower the organization to make changes to improve employee experience, cut costs associated with losing employees, and increase the overall work experience.
Absent Fathers & Sexual Promiscuity Among Teen Girls

Savannah Henao, Tiffany Jenson (Mentor)

This study explores the relationship between absent fathers and the increased likelihood of promiscuity among teen girls. Data for this study was gathered from the 1994 to 1995 wave of the National Longitudinal Study of Adolescent Health (AddHealth). With the relatively new idea of promoting sexual experimentation and self-satisfaction within society as a whole, there has been a similar trend found within the adolescent population—specifically girls. Furthermore, the idea of a family has also changed in recent years with more single-parent households than before. Despite the fields of research offering sound connections between family relationships and types of deviancy, it offers very little focus on what happens to teen girls when their fathers are absent from their lives entirely. The results for this study are pending. However, this study provides a less explored explanation for why teen girls act out in sexually uninhibited ways without placing sole blame on the single-mother and disregarding any influence from the vacant role of the father. It can lead society as a whole to better understanding why it is crucial for girls to have their fathers lead active roles in their lives and teach them acceptable ways to be treated by males later on in life.

Childhood Sexual Abuse and Homosexuality

Yareni Mendez, Tiffany Jenson (Mentor)

How does being sexually abused as a child impact homosexual tendencies in adulthood? It is my proposition that being sexually abused as a child increases the likelihood of having homosexual tendencies in adulthood. The dataset that will be used is the National Longitudinal Study of Adolescent Health. The unit of analysis for this study is adults. The population consisted of adults who were between the ages of 24 and 34 during the years of 2008 and 2009. These adults were picked out during Wave I (1994-1995) at which time they were in grades 7 through 12. More specifically we will be using Wave IV which was collected during 2008 and 2009. The research was directed by Kathleen Mullan Harris and it was designed by her as well as J. Richard Udry, and Peter S. Bearman over at the University of North Carolina at Chapel Hill. The independent variable in this study will be children who have been sexually abused. There are three questions that are used to measure sexual abuse. The dependent variable in this study is homosexual tendencies. Homosexual tendencies are measured with a question that states “Please choose the description that best fits how you think about yourself.” My hypothesis is that being sexually abused as a child increases the likelihood of having homosexual tendencies in adulthood. Results however are pending. The potential use of my findings can offer a better understanding of why there are homosexual people in our population and if one of the causes of homosexuality can be a consequence of being sexually abused as a child.
Educational Attainment and Sexual Satisfaction

Tiffany Jenson, Emily King (Mentor)

Pharmaceutical advances in the field of sexual intimacy have increased in recent years thus questions regarding sexual satisfaction have risen. As sexual satisfaction may be influenced by a wide range of potential factors, my research seeks to further identify and explain the topic with a more focused variable in mind, educational attainment. My research hypothesizes that individuals who have achieved high levels of educational attainment tend to experience greater sexual satisfaction. Sexual satisfaction can be arduous to study as limitations including potential participant bias as well as ethical challenges may arise. This study will seek to reduce such bias through the use of data analysis collected from the extensively studied National Longitudinal Study of Adolescent Health (Add Health). Moreover, my research will incorporate the analysis of additional variables impacting both educational attainment as well as sexual satisfaction in order to provide a more inclusive interpretation. Such analysis will provide clarification on the topic as it will seek to describe the interpersonal differences men and women report thus impacting male and female educational and occupational variances. Results are pending and will be provided at a later date.

Maternal Employment and Depression Among Teenagers

Amber Olsen, Clint Elison (Mentor)

This is a study that assesses the relationship between maternal employment and the impact it has on adolescent depression. The first wave of the National Longitudinal Study of Adolescent Health, collected in 1994-1995 is used for this study. Depression among adolescents is a serious concern for many because it can, in some cases, lead to death by suicide. Managing adolescent depression can be difficult and by understanding different factors that influence it, we can better help those suffering. Throughout time, gender roles within the family have changed creating dual-earner homes and single parenting homes. The lack of a mother’s influence in a home can have a greater impact than is understood. Results of this study are pending. This study can help parents understand the difficulties their teenagers go through if they are suffering from depression. By better understanding these difficulties, they will be able to help their children recover and lead a normal life.

Parental Divorce and Premarital Sex

Danielle Kemper, Tiff Jenson (Mentor)

This study examines the relationship between parental divorce and the affects it has on teens engaging in pre marital sex. The National Study of Youth and Religion (NSYR) Wave I collected from 2003 was used for this study. The principal investigators were Dr. Christian Smith and Dr. Lisa Pearce, both from the Department of Sociology that collected the data for the NSYR. The Lilly Endowment, Inc. funded the NSYR survey from The University of North Carolina at Chapel Hill. The study was conducted through telephone surveys from July 2002 through April 2003. The unit of analysis for this study is teenagers. The population consisted of all teens in households with telephones and the sample for the survey consisted of Random Digit Dial sampling method generated telephone numbers. The RDD was chosen over other alternative survey sampling methods because of the advantage it offers. The eligible households consisted of at least one teenager between the ages of 13-17 living in the household for six months. Results are pending. The potential findings of my study will help us know why individuals choose to have pre marital sex and if divorce has any affect on the child in their sexuality.
Single-Parent Home and Child Self-Esteem

Tia Cherry, Tiff Jenson (Mentor)

The purpose of this research is to discover the effects of children’s self-esteem when they live in a home with one parent after a divorce. This study shows that when a child lives in a single-parent home after a divorce their self-esteem is decreased. Using Add Health for our data we collected many factors that are collectively considered ones self-esteem. Through analytical findings we find that when a child does live in a single-parent after a home after a divorce their self-esteem does in fact decrease. Using data that shows the effects of children’s esteem in schools, with peers, in home, with self, and with parent-child relations we are able to conclude that our Hypothesis is true. This study will help because there is little recent research on the subject. It will also be helpful for parents who are considering a divorce to see the effects their children’s esteem could face.
Achieving Educational Aspiration through Volunteer Work

Jillian Murillo, Tiff Jenson (Mentor)

In today’s society, adolescents are encouraged to think about their education to achieve a better future. With such encouragement there should be high levels of enrollments in schools from elementary to high school, and even college. Prior research indicates that adolescence is a key period of time where the exploration of future life goals and aspirations start to develop but little is learned of the relationship between volunteer characteristics and aspirations for further education. By using wave 1 from the National Survey of Youth and Religion dataset, it is expected to find patterns that answer whether or not participating in volunteer work as an adolescent will create a positive impact in the decision for education later in life. This study maintains the direct relationship between volunteer work and educational aspirations but implies that there are other variables that can affect the outcome such as religiosity, SES, and parent educational level. Results are pending. As such, this research is intended to add further explanation and insight as to the effects of volunteer work on educational aspirations.

Ambiguity and Critical Thinking Among Freshman and Seniors

Nick Andre, Rex Butterfield, Abel Michael (Mentor), Tiff Jenson (Mentor)

This study examines the influence of being a freshman or senior on critical thinking. It is hypothesized that Seniors will have more advanced critical thinking skills and more acceptance of ambiguity than Freshman. This study offers to explain how there is a difference between seniors and freshman in accepting ambiguity and perform critical thinking. The data is collected using interviews from students at BYU-Idaho. The population from which the sample is taken is adults (Freshman and Seniors) aged 18 years and older, and the unit of analysis is Freshman and Seniors at BYU-Idaho. In this sample, there are 245 respondents with a response rate ranging from .08 to .20. The findings of this study will later be revealed. This study brings further understanding to the critical thinking levels of seniors and freshman. Future research can focus on other factors, which influence critical thinking such as major, academic courses taken, and personal factors.

How the strictness of states’ gun control laws affect their violent crime rates

Grant Egbert, Tiffany Jenson (Mentor)

This study, by Grant Egbert, looks into the relationship between the strictness of states’ gun control laws and their violent crime rates. The goal of the study was to see if stricter gun control laws had a negative affect on the violent crime rate. Does increased restriction to firearms lead to higher violent crime rates? Data illustrating the different degrees of gun control from state to state was used from the Brady Campaign to Prevent Gun Violence. This data was compared against the FBI’s Unified Crime Report on violent crime rates per 100,000 citizens. The research shows that there is little to no correlation between the strictness of a states gun laws and the violent crime rate. This helps conclude that while gun control may help in certain areas of crime, there is no real affect that those laws have in lowering the overall violent crime rate in a state. Considering the current debate over gun control in many states, this data helps show the overall affects of crime when certain laws are implemented.
Military Service and Marital Satisfaction

Joseph McIlrath, Tiff Jensen (Mentor)

This article focuses on the varied aspects of military service that often combine to damage marital satisfaction in the relationships of military personnel. These range from PTSD to prolonged separation to military culture conflict. The data set that will be used to test the hypothesis is the 2012 General Social Survey. The variables in this study are full time military service and marital satisfaction. This will be used to answer the question if, the longer an individual’s length of full time military service, the lower their marital satisfaction will be. At this time the results are still pending. My contribution to the subject will be to unite the many different contributing factors that lead to military marital dissatisfaction. This study adds to the literature by placing emphasis on the duality of strains and responsibility within a military relationship, to ascertain how both members of a military relationship affect marital satisfaction, rather than the military service member alone.

Religiosity and Juvenile Delinquency

Courtney Jolly, Tiffany Jenson (Mentor)

In the United States juvenile delinquency has always been a concerning issue but has more recently become on the rise and more of a public anxiety. Research has shown that religious youth are less likely to be involved in delinquent behaviors. Although some research is contrary, in other findings that were found in regards to how religion plays a part in youth using illegal substances, being involved in truancy, breaking curfew, cutting classes, violent behavior, etc. In Jang and Johnson’s (2005) research study, they suggested in regards to youth who use illegal substances and attend religious gatherings that more research must be conducted to better obtain a proper sample. A limitation to these studies would be that they could further examine, by taking into account the changes in social media, social conformities, while also considering family and peer pressure. Other than this study there is very little research available about how religiosity may influence delinquency. Previous research has presented a hypothesis that high levels religiosity link to lower levels of violent behavior. Research has shown that may forms of strain have been linked to delinquency. This article will explore why youth in America are committing acts of delinquency (such as substance abuse and violent behavior), by asking how does religiosity affect juvenile delinquency and why. In addition, it will explore how these deviant acts by juveniles will relate to stressful life events and how religiosity might mediate that stress in young adults. This research study is pending to be completed.

Religiosity and Self-Esteem

Logan Wynder, Tiff Jensen (Mentor)

This study examines the relationship between religiosity and the effect it has on an individual’s self-esteem. The 2004 wave of General Social Survey was the data set used for this study. Much research has been done on the subject, but the current results are conflicting. On one side, there is an argument that suggests religiosity plays no role on self-esteem. On the other hand, it is argued that religiosity helps improve self-esteem. This research will add on to the current research and help explore what is actually true and why. The research is currently in progress and the results are pending. However, it is hypothesized that religiosity helps define the identity of an individual, as the individual follows their religion, their self-esteem is improved. This is due to the fact that many beliefs, morals, and actions are derived from one’s religion; as an individual acts accordingly to their religion, they feel more accomplished and have more respect for themselves and their identity, therefore improving self-esteem.
How does exposure to media impact the likelihood of engaging in violent behaviors?

Aja Jorgensen, Tiffany Jenson (Mentor)

The purpose of this research is to study the connection between exposure to media and the likelihood of engaging in violent behaviors. This study uses Add Health Wave IV to find information about the independent and dependent variables. There were many questions about the media people were being exposed to and also different violent behaviors people were charged with. It is important to study different types of media along with how much time spent viewing it. It’s also important to understand different kinds of violent behaviors and this study shows those that were charged with a violent behavior such as assault and simple assault. The results from this study are still pending however, I hypothesize that there will be a strong, positive correlation between how much media they are exposed to and how violent they are. This information is important to study to help us further understand what influences violent behaviors and how we can better help those with violent tendencies.

How does parental divorce impact children’s marital satisfaction, and why?

Lauren Greenwood, Tiffany Jenson (Mentor)

This study examines the relationships of children’s marriages whose parents have previously been divorced. It studies the quality of the children’s marriage and the satisfactions therein. The data set used for this study was the General Social Survey. Results are pending. The relevance and implications of the reported findings will be discussed.

How does the quality of paternal relationships affect juvenile delinquency in females and why?

Staci Richardson, Tiffany Jenson (Mentor)

This study is being done about the quality of paternal relationships and how they influence juvenile delinquency in females. The data in the study is from ADD HEALTH Wave 1 and was taken from a nationally representative sample of students in grades 7-12 in the 1994-1995 school year. The study was followed up in 2008, when the respondents were 28-32 years of age. The specific questions used in this study were chosen based on how well they represented the study. The results are currently pending for the study. The results of this study will either reinforce the fact that fathers are or are not important in the lives of their daughters. This study seeks to determine whether a positive relationship with a father decreases the likelihood of juvenile delinquency in females. If this is found to be true, the impact that this study could have on society would help those seeking to strengthen a father/daughter relationship and those seeking to aid in decreasing the amount of cases of female juvenile delinquency.
Residential Relocation and Juvenile Delinquency

Korie Hansen, Tiiff Jenson (Mentor)

The purpose of this research is to explore whether or not residential relocation has an impact on juvenile delinquency. Some of the delinquent activities that this study considers is substance abuse, violence, school performance, sexual activity, truancy, and property crimes. This study examines any child or adolescent that has residually relocated, but it also takes into consideration less normal populations such as military families and foster children. This study utilizes the data from Add Health, which was collected by administering in-home questionnaires and interviews. Results for this study are pending. However, I hypothesize that there will be a positive relationship between residential relocation and juvenile delinquency. Because residential relocation is such a common occurrence, it is very important to understand the effects that people may experience from moving. This research will also contribute to the current knowledge on this topic by exploring which ages, genders, and family structures are at greater risk.

The Separation of Church and Mate: How Does Church Attendance Impact Marital Satisfaction and Why?

Michael Briscoe, Tiffany Jenson (Mentor)

This study searches to assay the relationship between church attendance and marital satisfaction. This study uses the 2012 wave of the General Social Survey. It was theorized by the author that more frequent church attendance would increase levels of marital satisfaction in respondents. However, the range of people who attend church, as well as the many different denominations to which these people belong make it difficult to draw any statistically significant conclusions about marital satisfaction. Different denominations teach varying things, and have different church services, so simply comparing frequency of church attendance and marital satisfaction proved insufficient. It was found in this study that there was no statistically significant relationship between church attendance and marital satisfaction. The results of this study show that further research may need to be conducted, particularly between different religions and religious denominations, and the effect that each of these individually may have on marital satisfaction.

Video games and your grade

Derrick Hope, Tiffany Jenson (Mentor)

In the research that I am conducting, I am looking to discover the relationship between a student spending time playing video games and their academic performance. What I am measuring is the amount of hours a student plays video games in a week and the grades they receive in school. When I say video games, I refer to the interaction with computer generated images that can be manipulated according to a set of rules and are displayed on a screen such as a television or other digital display. From the research that has previously been done it has shown there is negative correlation between behavior and video game usage. I will conduct this research by using the National study of youth and religion, wave 1 (2003). I am going to be using the survey and run a statistical analysis of it. I will do this to see if there is a strong relationship between the two variables and test for a number of control variables. The control variables I have started testing is popularity, gender, and parent’s method of discipline. I will be using SPSS to analyze the questions in the survey to find the answer, if heavy video game usage affects academic performance.
Attachment and Delinquency: Research into the Impact of Attachment on Youth Criminality

Petrina Daw, Tiffy Jenson (Mentor)

Sociologists have long recognized the relationship between families and crime. There have been many studies investigating how these two factors affect each other, some of which have been at the forefront of life changing reforms in the areas of law enforcement and social work. One question that has emerged over the course of studying this topic is “Do negative family attachments lead to a greater tendency to participate in juvenile delinquency?” This study focuses on answering this question and includes additional factors such as gender, religion, peer influence, and community structure. Analysis of data from the National Longitudinal Study of Adolescent Health and the results of this study are still pending and will be included at a later date. This study contributes greatly to the field of juvenile justice because it seeks to clarify some of the confusion that has been a result of previous conflicting studies. This study also seeks to include a wide range of factors in its measure of delinquency; such as criminal acts, status events, race, religion and gender among others. These factors are included in order to provide a more detailed and comprehensive view of delinquency as it relates to attachment. This study seeks to encourage further research of this relationship and advocates the importance of strong parental attachments in the prevention of juvenile delinquency.

Does Media Effect Delinquency and how?

Brady Bird, Tiff Jenson (Mentor)

In my research I plan to find out if media exposure can increase the likely hood of developing and addiction, which may lead to other delinquent behaviors. The aim if this study is to determine is media exposure can actually effect the likely hood of a teen becoming delinquent. I think that at the addiction to media increases the likely hood that the teen actually exhibits juvenile behaviors will decrease. There have been many studies done that found that media does indeed influence the behavior of the viewer according to the nature of the media being viewed. I also agree with these studies i am not interested if finding to what extent the addiction its self actually effects the child or teen and it it is in a negative way Does media exposure effect delinquency and why? I think that as the teen develops a stronger addiction the amount of delinquent behavior will lessen. The time a teen spends in the media is the most important aspect when determining the teen’s delinquent behaviors due to media. There will be less delinquent behaviors found in the teens that are using media to the extreme, compared to those who are only using media for a few hours a day. This is because the extremists have no time outside of their addiction to go and act out; they only care about satisfying their addictions. Past research has not addressed the amount of time teens spend in the media looking to find if those who are highly addicted are less delinquent or more than those who leisurely use the media. That will be the aim of this study. Research shows that the amount of time spent absorbed in the media can negatively affect social behaviors by lowering the empathy teens feel towards others (Funk et al. 2004; Jordan et al 2007). In past research studies media and gaming behaviors were compared to gambling. Teens in the U.K. were spending all their money including lunch money at arcades and were found begging on street corners so they could get more to spend at the arcades ( Klein 1984; Griffiths 1991; Lemmens, Valkenburg and Peter 2011). These teens were in a sense gambling because it was rewarding and they were willing to continue in the behavior because of the thought of reward. Media is the same way; it shows violent behavior, sex, drug use and auto theft as rewarding (Cranagey and Anderson 2005; Sonya, Stoolmiller and Sargent 2013). It also creates an addiction that is very real and powerful much like gambling. The research is not yet complete so the findings are still pending.
Economic potential and domestic abuse

Spencer Myers, Tiffany Jensen (Mentor)

This Study has been focused on finding out How economic potential affect the frequency of domestic abuse and why? As the economic potential of one partner in a relationship rise to meet or exceed that of the others does the risk or frequency of abuse increase? The data that was analyzed in this study was taken from the National Longitudinal Study for Adolescent to Adult Health (1994-2008) Wave IV. The study uses the combined variables of household income and personal income to determine the respondents’ economic potential in the relationship, and for the dependent variable we will be using variable indicating if their partner in the last year of the relationship has physically assaulted the respondent. The results of this study at this moment are pending until further analysis, though it is hypothesized that we will see that as the economic potential of one partner increase we will see increased cases of physical abuse in the relation ship. This would help us to better understand the socioeconomic causes of domestic violence as help identify potential risk factors for abuse in relationships.

Employed Mother and a Child’s Perception of Motherly Love

Jade Harrison, Tiff Jenson (Mentor)

This study is being used to see if a child having an employed/working mother will influence the child’s perception of motherly love. The data for this study was taken from Wave 1 of the National Study of Youth and Religion. In order to find data for an employed mother, the questions asking “Does your mom work full time?” and “Does your mom work part time?” were used. The two questions asking, “First, how close or not close do you feel to your mother?” and “How often, if at all, does your mother tell you that she loves you?” were both used to create the variable of a child’s perception of motherly love. The hypothesis for this study was that children, who have working mothers, wouldn’t feel a large amount of motherly love. The results are still pending. Because there are few studies asking the child directly about their feelings, this study will be beneficial to understanding the relationship between children and their working mothers.

Hurricane Katrina and Crime

Jeremy Whipple, Tiff Jenson (Mentor)

This research assess the impact on how the natural disaster-Hurricane Katrina-had on crime. The following data was collected and measures the impact of how violent and property crime increased and spread throughout Louisiana. Using the Uniform Crime Reports (UCR), I am able to compile my own data to find a correlation between these two variables. Due to the early entry submission of the abstract form, this project is still being worked on and future results will be provided. This particular disaster that hit southeast Louisiana on August 29, 2005 has shown a unique distinction between a city wide evacuation and the increase of crime near and far. This research will add to the literature by analyzing the impact that Katrina had on all of the parishes of Louisiana and the effect of crime rates. By knowing this I can give further knowledge about how crime rates change after natural disasters.
Suicide Terror Evolved

Ryan Christoffersen, Tiffany Jenson (Mentor)

Contemporary terrorism has always been violent and seemingly senseless destruction bent on causing fear and damage to a people. The very definition of terrorism itself has been the subject of debate for dozens of years. Over its course there has been an evolution to terrorism that reflects on the methods used, making it even harder to pin down. Data was collected from the Global Terrorism Database 1970-2012 (GTD). The GTD is an open-source database including information on terrorist events around the world from 1970 through 2012. Through study of targets and methods we can work towards minimizing the damage caused and while we cannot eradicate the idea, perhaps we can find a way to prevent future devastations from occurring across the globe. This study is a focus on what can be called a 9/11 effect, to see if there is an evolution of suicide terrorism from pre and post 9/11 events.

The Correctional System and its Effects on Socioeconomic Status

Keegan Palmer, Tiffany Jenson (Mentor)

For the average citizen, individuals who are or have been incarcerated for a long duration of time can be viewed by average law abiding citizens as the unwanted and can assume that the incarcerated individual has done something deemed "bad" by society and therefore may not be trusted. Many of those who have been incarcerated face a task that is even more traumatic then living one’s life behind bars; especially for those who have been secluded from society for years. Facing the world after incarceration leaves many convicts at an extreme disadvantage. Ironically, the correctional system is not really doing just that; correcting. Throughout this research, I have studied the effects that incarceration has on convicts, specifically the socioeconomic status or the lack thereof. For the research of how duration of incarceration affects socioeconomic status and why, the unit of analysis is adults. The dataset that I will be using is the National Longitudinal Study of Adolescent Health (Add Health), wave 4. The data collected originally started with 80 high schools and 52 middle schools in the US. Later in those student’s lives after the completion of waves 1-3, 15,701 (80.3% response rate) of those students, who were then adults, participated in In-Home Interviews making up wave 4. The findings of this research is pending. This research will help to assist in adding further knowledge and provide a stronger foundation for research topics linked to incarceration and assimilation issues faced by convicted persons. It may then help to better understand why and how specific groups can be affected by the social environment that incarceration creates and, therefore, lead us to reforming the correctional system.
Cohabitation and Marital Satisfaction
Ash Williams, Tiffany Jenson (Mentor)

In this study I will be researching to find whether ever having cohabited with anyone at any time effects current marital satisfaction. I have found so far that if you cohabit with someone you end up not marrying, you tend to experience less marital satisfaction later. However, research has not concluded and I have yet to see if that proves most likely. I have not yet done my methodology, but it is being drawn from Add Health. Unit of analysis was adults from the Study of Adolescent to Adult Health study (Add Health), Wave IV data of adults 24 to 32 years old. It was collected by RTI International under sub-contract to the University of North Carolina at Chapel Hill. They collected survey data using 90 minute CAPI/CASI (Computer Assisted Interviews) Instruments for more sensitive questions. Less sensitive survey questions were administered in person. The interviews were comprehensive personal in-home interviews in 2008 and 2009 with original Wave I respondents. This study was funded by Eunice Kennedy Shriver National Institute of Child Health and Human Development, National Cancer Institute, National Center for Health Statistics, and many others. The population from which a sample was drawn was all eligible students in high school at the time of the original sample determination in Wave I. Wave IV was a follow up of the nationally representative sample of adolescents first interviewed in 1994 and 1995. They were originally selected by a stratified, random sample of all U.S. high schools. The In-home sample of 27,000 adolescents consisted of core samples from each community plus selected over-samples (eligibility determined by the adolescents’ responses on the In-School Questionnaire). For the Wave IV data collection they located 92.5% of the original sample members and interviewed 80.3% of them. In total there were 15,701 adult in home interviews collected.

Ethnic Minorities and Interracial Marriage
Maya Trass, Tiffany Jenson (Mentor)

This paper examines the relationship between an individual’s membership and identification with an ethnic minority group and likelihood of interracial marriage. Data from the General Social Survey was used to conduct this research, focusing particularly on data collected from the years 2002 thru 2012. Being an identifiable member of an ethnic group imposes many social consequences, deliberate and unintentional. One of those social consequences is the failure minorities experience in finding a suitable spouse. Many minorities are stereotyped, stigmatized, underprivileged and undereducated. These social markers are imperative to one’s social standing and desirability; a lack, and even an overabundance of these markers makes it difficult for an already disenfranchised group of individuals to overcome prejudices and achieve socially accepted norms (i.e.: marriage). It is hypothesized that being a member of an ethnic minority decreases your likelihood of interracial marriage; however, results are pending. Suggestions and implications for future research will be discussed.
Finding Happiness in Religion

Colt Farmer, Tiffany Jenson (Mentor)

The key focus of this study is to determine if there is truly a relationship between religiosity and happiness, and if there is a relationship what is it. I analyzed multiple answers to questions from the United States 2012 General Social Survey (GSS) to determine what kind of relationship exists between religiosity and happiness if there was a correlation. I took into account church attendance, prayer, frequency of reading religious texts, and charitable donations to determine the level of religiosity of each respondent. For happiness I only needed to gather the data from one generic question from the GSS. The results of this study are pending, however, based on previous research, I expect that there is a positive correlation between the two. By knowing if there is empirical evidence of a positive relationship between religiosity and happiness then we can help provide an answer to the question “how do I become happy?”

Recreational activities and their impact of the gang culture in the United States

Christopher Jenks, Tiffany Jenson (Mentor)

This study is aimed towards understanding if youth participation in recreational activities decreases the likelihood of later juvenile participation in a gang or in gang related activities. Starting with a literature review of articles in the past that studied divers factors that could contribute to juvenile gang participation. The range of recreational activities used in this study goes from participation in clubs to sports and encompasses a wide variety of possible activities for youth to engage in. Data will be used from the National Longitudinal Study of Adolescent to Adult Health, a set of data collected from 1994 to 2008, and analyzed to determine if there is a statistical drop in gang related activities due to participation in recreational activities. Results are pending further analysis and interpretation of data. An expected outcome of this analysis is that participation in the recreational activities included in the data will decrease the participation in gang related actions. This study can provide a statistical presentation of how participation in recreational activities impacts juvenile gang participation or if there is an impact at all.

The BYU-Idaho Dating Scene

Chris Baccile, Tim Rarick, Cole Ratcliffe (Mentor)

BYU-Idaho is a fascinating place to study the dating scene. Too often there are more questions than answers. In order to gain more answers, data was collected from 333 individuals across campus regarding certain aspects of dating. A variety of topics were discussed in the survey so as to understand more deeply the dating scene at BYU-Idaho, such as mission status, boundaries pertaining to physical touch with romantic partners, how long couples have known each other, and commitment. This presentation will focus particularly on male and female perspectives on dating, particularly as it pertains to why some students at BYU-Idaho choose not to date. Implications of these findings will be discussed, including suggestions concerning how we might increase our knowledge of healthy dating habits. We hope this data will not only help facilitate a much needed discussion on dating beliefs, patterns, and behaviors, but will also serve as a catalyst in reshaping dating habits, expectations, and concerns.
The relationship between after-school programs and academic success

Kylee Haglund, Tiffany Jenson (Mentor)

The following study observes the relationship between after-school programs and academic success. The base year of the Educational Longitudinal Study is the data set used. The data was gathered by a questionnaire consisting of a sample size of 15,362 respondents. Classroom success could be achieved through participation in after-school programs. After-school programs improve students’ ability to read, write, verbally communicate, and self-confidence. This study provides support for past research articles pertaining to this topic. It also represents a new approach to the students’ academic success stemming from the perception of their peers and authoritative figures around them. Parents, teachers, and peers perceive students involved with after-school programs as more successful. Although the results are still pending, it is hypothesized greater involvement in after-school programs increases the perception of the student which in turn leads to greater academic success. Results and further exploration will be discussed upon final completion of the study.
**Autism Spectrum Disorder: The Diagnosis, Law, and Education of Exceptional Students**

Kaitlyn Briscoe, Dean Cloward (Mentor)

For my project, I am researching Autism, but specifically the Autism Spectrum side of the disorder. The first part of the paper is an extensive look at the history behind ASD and when the spectrum idea came into practice. Next, there will be information provided about the laws dealing with Special Education, with a specific look at the Individuals with Disabilities Education Act. There will be discourse on what the laws provide and how they are aiding in providing a working and equitable education to students living with ASD. An interview with a special education teacher, teaching in an Autism specific classroom will be included in the paper. Questions of special measures taken in the classroom as well as what the school provides will be asked to see what accommodates these classrooms and students. Finally, there will be personal writings on what can be done to make positive changes in the schools and possibly in the law to better accommodate and aid students with ASD to lead fulfilling lives.

**Changes in Right Wing Authoritarianism During Science Education**

Ashley Rowell, Ryan Sargeant (Mentor)

Authoritarianism is an ideological variable used in a variety of psychology studies. Authoritarianism strongly associates with conservative political ideology – the ideology that predominates in modern American LDS culture. We are interested in measuring the degree of Authoritarianism in students at BYU-Idaho and also exploring whether or not the Authoritarianism scores shift during the general foundations of science (FDSCI 101) course experience. The foundations of science course may challenge ideologically held beliefs and potentially cause degrees of change in student opinions. The survey responses and any opinion changes will be discussed.

**Communicating with Autism**

Lisa Page, Lee Barney (Mentor)

I propose to present my senior project, “Communicating with Autism” at the Research and Creative Works Conference. My project involves studying JavaScript, HTML5 and CSS to create a mobile application that helps children with Autism communicate at McDonalds. I have a three-year-old daughter with Autism and we have been working with a speech pathologist for over a year. During this time, I have learned a great deal about the frustration that these children have caused by an inability to convey their thoughts and desires. My mobile app would bridge that gap, helping kids to communicate with McDonald’s employees while ordering a meal. The app displays six icons of typical menu items children order. I have chosen the constraint of six because of the research into Autism that my daughter’s therapist shared indicating a need for interfaces to be very simple to avoid sensory overload. The app would come prepared with a recorded voice for each menu item stating, “I would like to order a cheeseburger, please”. For children who are verbal at home, but unable to use those skills in public, there would be an option to record their own voice at home. When a child went to the counter to order, he would simply tap on the icon of the item they want, and the audio recording would play. This would give children more autonomy and for those who do record their own voice, it will bridge a crucial gap in learning to communicate when they hear their own voice speaking to a stranger and they receive what they wanted. I will implement this idea by using the above programming languages, and once created, test the app with autistic children ordering at McDonalds. Low prototype user testing in a classroom setting showed that the children recognized the icons and tried to use the app to communicate that they wanted food from McDonalds. They did not see it as a “name the picture” app.
Dysgraphia: The Writing Dilemma
Emily Mills, Dana Johnson (Mentor)

Dysgraphia is a learning disability that has a direct effect on writing. Due to the fact that writing has a direct correlation with motor and information processing skills, dysgraphia can lead to trouble with spelling, letter identification, spacing, poor handwriting, and putting thoughts down on paper for students with this disability. Dysgraphia partly comes as a result of visual and spatial difficulties, which is trouble processing what the eyes see and language processing which is trouble making sense of what the ears hears (NCLD, 2014). I am currently working with an Elementary age student who has dysgraphia. She has trouble writing down her thoughts on paper, committing letter recognition in her spelling, and trouble with spatial awareness. In working with this bright and creative student I have recognized patterns of distress and discomfort in her writing. Thus, I have suggested she write in pen as she has been quoted saying that she likes the way the thicker pen felt in her hand and that it wrote more smoothly. I also suggest that she works on finding pressure points to relieve stress. This student writes by constantly turning her paper this way and that, and so I have suggested that engaging both parts of her brain by having her cross midline in various activities will help with this issue. I also believe that following simple exercises this student will benefit from strengthening essential muscles for writing. She seems to have no problem generating thoughts to write about and so I see no need for brainstorming activities at this stage. However I believe that if given permission, she would benefit from either listening to music while she writes or being able to record herself first. This will allow her to activate both sides of her brain and thus be able to process her writing better. In conclusion, by working with her once a week for five weeks as well as seeing her own personal occupational therapists and working on small tasks at home it is my hope that this student will be able make strides in her writing.

Special Education: Is the Focus on the Student or Laws?
Amanda Reddish, Dean Cloward (Mentor)

In the past few decades, special education has come a long way. Many laws and regulations have been made to protect the rights of the children with disabilities or impairments. Many families and teachers have devoted a lot of their time and money to make sure their children get the rights they deserve through due process. With all of these laws and regulations being made every year through due process or by the federal or state governments there are a lot of restraints put on the teachers. This documentary presentation will argue that there are too many laws and regulations within special education, taking the focus off of the student and more on legal issues. With a girl named Libby I will make my argument. Libby is a fourteen year old young woman with Down syndrome. Her mom has decided to home school her because she did not want to have to deal with all the laws and regulations that come with special education in public schools. By interviewing Libby’s mom on her experience with laws and regulations I will support my argument. An interview with a special education professor on campus, Brother Christopherson, will also support my argument. There are too many laws and regulations within special education taking the focus off the student and their needs.
A Complete 180

Sarah Tingey, Mike Christopherson (Mentor), Amanda Noorda, Charlotte Bishop

Some students’ reading levels are so low that it prevents them from participating in most activities in a normal inclusive classroom. We plan to research the Read 180 program, which is an intervention program that helps students from 4th grade through 12th grade who are at least two years behind on their reading level. Read 180 is a differentiated instruction program where students work either in groups or individually where they work on computer software, read independently, or work with their teacher. The program was created by the Scholastic Corporation and its newest version Read 180 Next Generation is fully equipped to meet the demands of the Common Core State Standard Initiative as of 2011.

Boardmaker Studio

Katie Shank, Stacey Mitchell, Cassie Lee, Mike Christopherson (Mentor)

The Boardmaker Studio program incorporates an electronic PECS system in the classroom. It allows students to communicate freely with their peers through pictures. This system works because it helps students participate in classroom learning and gets them more involved. Students with disabilities can benefit from Boardmaker Studio because it allows the them to associate pictures with learning content. Our goal is to assist those with language or literacy disabilities while providing learning they enjoy.

Flex those PECS

Kelley Andrews, Kezi Durrant, Rebecca Lunt, Mike Christopherson (Mentor)

The project that we have decided to research is the use of PECS in the classroom. PECS stands for Picture Exchange Communication System. For many non-verbal kids PECS is the main form of communication available to them. PECS is a form of augmentative, alternative communication. As technology is evolving so are the resources available to kids with special needs. Now kids can access PECS on the Ipad, where before they had to physically have the board in order to communicate. The question we are now facing is, is there a difference? Are kids learning the same on the Ipad as they were when they had to physically operate a PECS board? Do the pro’s outweigh the con’s? Or does it even matter? As long as we give the kids the attention, care, and resources they need will they still learn? The goal of our project is to be able to answer these questions in depth at the conference.
Got Smarts? Benefits of using a Smart Pen for those with Disabilities

Mariah Rhoades, Rachel Vanorman, Mike Christopherson (Mentor), Sky Little

Smart Pen Mariah Rhoades, Sky Little, and Rachel Vanorman Though the cause of learning disabilities is wide, the hardship of taking notes during class causes many students to fall behind academically. The focus of researching a smart pen is to demonstrate the benefits of using it inside and outside the classroom environment for students with disabilities. Within the research the following questions are addressed: What is a learning disability? Specifically, what are Attention Deficit Disorder, Attention Deficit Hyperactive Disorder, and Dyslexia? What is the smart pen? Specifically what is live scribe? How can it assist those with learning disabilities? How would it be beneficial in mathematics? How does the community use the smart pen in school programs and lending libraries? What are the cons of this device? The method for a smart pen is assisting students to keep up with a class lecture by playing back the audio later, organizing notes, and allowing the parents of the student to actively participate in their learning. The participants will be students within a learning environment, specifically those used in previous research journals like The Reading Teacher and the Live Scribe website http://store.livescribe.com/smartpen.html. In conclusion, the benefits of the smartpen will help students with learning disabilities succeed academically. Thus, it should be implemented as an option for assistive technology within schools.

Innovation for Students with Disabilities

Jordan Berry, Caitlin Wells, Mike Christopherson (Mentor)

When it comes to Special Education, there is an abundant amount of resources within Assistive Technology (AT) to help students with disabilities succeed in the classroom and in daily activity. Comprised in the AT resources, there are three categories that resources fall under: no-tech, light-tech, and high-tech. When categorizing the resources, they become more expensive and technical. For AT to efficiently help the student, a team must be formed comprised of parents, teachers (including special ed.) and an IEP team to best determine what AT device can best benefit the student. At times, a high-tech device is decided would be the best option for the student, BUT does not mean it will always be used. If someone is not trained to use specific equipment even AT that would fall under the category of no-tech, the AT equipment would sit in the corner of the room unused. To avoid this situation our goal is to show that simple object can be used as Assistive Technology and with proper disclosure, can better enable teachers, school faculty, and the general public that AT can come in many different forms to best benefit students with disabilities.

Oh Snap!

Rachel Weaver, Maryn Bement, McKenna Dean, Michael Christopherson (Mentor)

There are many students who have disabilities that prevent them from taking notes in class or doing extracurricular activities. These students are physically limited, and sadly this affects their ability to participate in daily life and succeed academically. We propose that we start using different kinds of switches to help students with disabilities be able to accomplish daily activities on their own. By adding a switch to a camera, students would be able to take pictures of notes in class, record lectures, and just take pictures for the fun of it. Enabling students to use cameras will provide them with a sense of independence.
**Power to Plan**

Hayley Kane, Mike Christopherson (Mentor), Scott Trammel, Madison Garlock

Sometimes, kids with disabilities such as: autism and downs syndrome, have certain preferences when it comes to scheduling and routines. Both autistic children, and children with downs syndrome like visual aids that send a message of what is to come next. Often times, people use the software program called Board Maker to help these kids with disabilities get on a schedule. A schedule they will not only approve of, but will enjoy. However, the purpose of schedule making is not to make them happy all the time by letting them have constant use of things such as I-pads, but to help them adapt to routines that will benefit them. For example, I (Hayley Kane), worked with kids with disabilities. One girl (Scarlet) with autism, had a preference of doing a puzzle or two, then story time, and then spent the rest of the time on the I-pad. No matter what I said or did, she wouldn’t get off of it. Because respite workers and supporters let her get away with it for so long, she thought it was okay and thought it was right. So, I was always the bad guy. I feel as though a program like Board Maker would help students like Scarlet adapt to a new schedule and a love it.

**ProLoQuo2Go - Helping Children Find Their Voice**

Karl Zachreson, Deanna Meng, Mike Christopherson (Mentor)

Some children struggle to communicate due to communication disorders. These children may not have a voice or way to show their teachers they know the information that is being taught. ProLoQuo2Go gives these bright children a way to access the general education curriculum and a way to communicate with their peers and teachers to create meaningful relationships. ProLoQuo2Go is a portable alternative augmentative communication system. The focus of ProLoQuo2Go is empower individuals with an opportunity to interact with their peers, family, teachers, and community. Proloquo2Go has been used successfully with individuals with the following diagnoses: autism, cerebral palsy, Down syndrome, developmental disabilities, apraxia, stroke, traumatic brain injury and others. ProLoQuo2Go can be individualized to meet the needs of each user. For children who are just beginning, ProLoQuo2Go can start with elementary language and move to more advanced vocabulary. ProLoQuo2Go can help students with spelling, math, and other academics subjects. 1. At what age is ProLoQuo2Go appropriate to start using? 2. How much training does ProLoQuo2Go take for the family and child? 3. How does ProLoQuo2Go help children access the general education curriculum? 4. How does ProLoQuo2Go help students prove they have learned the curriculum? 5. How does ProLoQuo2Go help children interact with their peers?

**Stick-to-it-iveness**

Claire Lewis, Kirsten Wheeler, Mike Christopherson (Mentor)

In a special needs student’s life the ability to have the confidence in order to pick and choose between what they want and what the might need is just as important to them as it is to our everyday lives. In order to do this, teachers, instructors, and family members must start with the small decision making in order for a child to not get overwhelmed by the huge decisions they will face in their lives. We are doing this by creating an activity for students to pick and choose what they want to eat for breakfast, lunch, and dinner. This activity involves pictures of the items they have the opportunity to eat for that meal, and then “sticking” the item to their “plate.” We plan on finding the most effective way to help students make this simple decision without stress or frustration. We believe that with practice and patience, students can become more confident in their decision making.
The Wonderful World of Clothespins

Courtney Barker, Elissa Medina, Jennifer Rood, Mike Christopherson (Mentor)

Many students struggle to develop their fine motor skills, or in other words, using their hands for small, precise movements, like gripping a pencil. There are plenty of resources to help students with this problem, but we’ve discovered a low tech and highly cost effective method. This problem needs to be investigated because it affects a large portion of students, especially in their early childhood years. We propose that using clothespins to help students develop their fine motor skills will be beneficial and very inexpensive. It assists them to develop their fine motor skills because they have to squeeze the clothespin to open it and attach it to a pencil, for example, to write, or a light switch, to turn a light on or off, or a zipper if they struggle clasping it between their fingers. Using clothespins for spelling, matching activities, and reading comprehension can also help students with reading or spelling challenges.
Advocating For Those Who Can’t Advocate For Themselves
Karl Zachreson, Dean Cloward (Mentor)

IEP is one of the most important documents for a child who has a disability. The IEP helps general education teachers, special education teachers, administrators, and parents document and understand the child’s present level of performance, what services are needed for the child to be successful in the classroom, and how the child will be assessed for the teachers to see their progress. The IEP also includes statements of measurable annual goals, a description of special education services, statement of participation in the regular education program, adaptations and modifications, statement of length and duration of services, and when the child is 16, a statement of transition; preparations for adult life and independence. The law enforces that teachers and administrators create an IEP that allows a free appropriate public education in the least restrictive environment. This includes the involvement of the parents and the right to confidentiality. A child with a disability cannot be rejected due to their disability. If a parent has a disagreement with the school district or the district fails to provide all of these parts of the IEP, the parent has the right to due process. This knowledge is important for all teachers, administrators, parents, and child who the IEP is for. This knowledge will help children with disabilities to get the services they need to gain access to the general education curriculum. This knowledge and application will also keep school districts from litigation. My goal is to see how prepared a general education teacher, special education teacher, parents, and if possible administrators are with IEPs and their personal knowledge of the IEP. This is important as previously stated because of the importance of children’s education and the possible litigation that would take place if the IEP was not followed. I will accomplish this by creating a questionnaire that will help me reach my goal.

Do you know how to behave?
Lindsey Bates, Dean Cloward (Mentor)

In the world of IDEA, there are laws that protect and assist students with disabilities. The issue of discipline is no exception, however there are many who do not know anything about it. There are students with disabilities that occasionally have violent outbursts or tantrums. These students may have procedures on their IEP and have behavioral assessment plans, but not many teachers may know about it. Through some interviews of teachers who have actually been in situations that have called for assistance and quick thinking, I have been able to find a common ideal that may change how general education teachers may think about students with disabilities. In this presentation, I will discuss the way that these special education teachers handle intense situations with students, and how it will help all teachers know how to assess a situation and not do anything which they may later regret or get into trouble for. I will discuss the laws regarding disciplinary actions and give an example of a court case that involves a situation with this kind of problem. I will also share the thoughts of general education teachers who may not know how to discipline a child or handle an escalating situation. I will give an example of some procedures that one might need to take if in a sticky moment with a student. If we train all teachers to know how to handle students with special needs, know the proper procedures and actions to take, and how we should discipline them, we can reduce the problems that can arise in public classrooms.
How we can change the laws to better help children who are abused?

Leah Barnard, Dean Cloward (Mentor)

I want to figure out how Child Protection Services works and the laws for child abuse and how they can be changed to better help the children. Too many children die each year because of abuse that goes undetected or that never gets investigated. In 2012, 1,640 children died, that breaks down to four children a day die from child abuse. This needs to stop. What do we need to do to help with child abuse and getting it to stop. To many cases go unreported each year in the United States alone. Statistics show that about 30% of children who were abused in anyway abuse their children. The cycle needs to stop and we need to stop it. One of the biggest problems through out the United States is that each state defines child abuse, neglect in different ways so therefore so many go unreported. If there could be a law passed through congress that would make each states definition of child abuse that would help tremendously. Just think if all states had the same definition, the same punishment they maybe just maybe it would save one child or many children.

Problem Behaviors In School? Positive Behavioral Intervention Supports Can Help!

Matt Sullivan, Dean Cloward (Mentor)

The Individuals with Disabilities Education Act of 2004 (IDEA) requires that students with disabilities be placed in the least restrictive environment (LRE). Because of the LRE mandate, students with behavioral disorders are taught in the general education setting. This poses a problem for some students and parents who worry that their child, whether disabled or not, will have sufficient instructional time if problem behaviors become common in the classroom. Problem behaviors can disrupt an entire classroom and if they are not resolved they can continue on through the student’s schooling and continue to be a problem for other students as well. A multi-tiered system of support has been developed called Positive Behavioral Intervention Supports (PBIS), which can be very effective in remediating problem behaviors. PBIS can be implemented at the school-wide level and be a support to all students. The purpose of this study is to see the effectiveness of PBIS in helping support students who struggle with problem behaviors in the general education setting and help more students to have a successful placement in the general education setting to meet the LRE mandate. Researching the IDEA has shown that support systems like PBIS are encouraged by the law. Preliminary interviews with administrators and teachers show PBIS as being successful in schools at resolving problem behavior.

Understanding Andy

Carrie Gladden, Dean Cloward (Mentor)

In this project I will be exploring the behavioral issues that come with mental disorders. Not only will I contend that behavioral issues come from mental disorders that may plague certain children but there are also legal issue that Special Education directors need to be aware of and capable of addressing. In the presentation of “Understanding Andy” I will address the specific mental disorder of Bipolar that haunted my Uncle for more than twenty years and eventually took his life. In the field of Special Education teachers are to specially design their instruction to aid their students in order to access all aspects of the general education environment. This project will look into how that will be possible with those students that are constantly in need of behavioral intervention and what programs/interventions are available to them through the law. There are different legal precautions that students need in order to reach their full potential. I want those who see this project to see that there are ways to help children with mental disorders way before it is too late. They do not need to fail before we come to their rescue.
A Breath: Visual Language
Paulina Pulley, Lorie Tobler (Mentor)

What comes from a breath, or a whisper? Gentle moments of invigoration where body, mind, and light penetrate the language barriers of our world allowing us to communicate the depths of our souls. A Breath focuses on the synthesis of doctrinal studies and creative works through visual communication. It is the voice of peace that inspires the creative processes. I have discovered that each piece whispers a dialogue that occurs within the observer. I utilize a teaching practice of wait time in order to understand the observer. This is where listening increases, learning increases, and communication is gained through the visual language. Due to my focus on education, there is an underlying goal of teaching and learning during this dialogue created between the image and personal research. By participating in this conference, the teaching and learning will also increase. It is important for the viewer to know how these works are art are created. There is no sketch; it is just flow of the pen on paper, the sound it makes, and the colors that evoke certain emotions that provide the structure of these communicative pieces. My hope in participation with this conference is to allow the participants to become immersed in the research. Questions such as, “What do you see? How do you feel? What are you learning?” will be asked of the participant. Their response may be processed orally or expressed in written form. This is an ongoing research project that influences both the artist and the viewer to expand their knowledge and understanding.

Developing Secure Attachments: Exploring Methods and Techniques to Help Young Children Develop Secure Attachments Within the Critical Period of Development.
Michelle Light, Jillisa Cranmer (Mentor)

In child development and psychology it is understood that forming secure attachment while a child is young is crucial to encourage the mental, emotional, and social development of the child. There is a critical period of time where the child learns to form secure attachments before it negatively affects the child’s cognitive, physical, and emotional development. We know that children sometimes have the ability to be resilient through the adversity that comes through not developing the ability to form secure attachments. On the other hand we also know that if this bonding is not accomplished in the critical years it can be detrimental and cause permanent developmental damage. Luckily there are many techniques and methods used in family and classroom settings to help children settings develop secure attachments. Although there are methods used in classrooms there is a very limited number of methods used in many third world institutions or orphanages. The research and literature explored in this project will examine several specialist techniques or methods that are used in home and school settings to encourage secure attachment. We will then discuss how some of these methods can be applied in child institutions or orphanages in order to help foster secure attachments while they are young. Through researching how to encourage attachment and bonding in young children we can learn what methods are simple and effective. When these techniques are taught to caregivers in orphanages and institutions we are able to encourage the formation of secure attachments and are better able to improve a child’s cognitive, physical, emotional, and social development as well.
Fall Into Fun with 4H – Teaching Family Consumer Science at 4H Day Camp

Brittany Hunting, Nicki Heiner, April Merkley, Cheryl Empey (Mentor)

When stating the name of our field, Family and Consumer Science, often we are met with puzzled looks as people strain to guess what we do. Sometimes their attempts to pinpoint our focus are close but we find most notions either off the mark or nonexistent in the minds of many Americans. Perhaps the most regrettable part of this general unawareness are the missed opportunities to benefit everyday life through the application of scientific principles to practical living which Family and Consumer Science is meant to provide. To help change this we will conduct a 4H day camp to raise awareness of our field and teach children skills within a few of the field’s content areas including textiles/sewing, foods and nutrition, family/community relationships, and leadership. Four teachers will operate workshops each has designed to demonstrate 2 skills supported with the principles such skills are built on. The 4H participants will then practice the skills on their own while the teacher provides supervision and any additional support necessary. This fulfills the “teach and train” philosophy largely guiding Family Consumer Science and one of its national organizations, Family, Career and Community Leaders of America, also known as FCCLA. Upon conclusion of the 4H day camp our aim is for participants to return to their families and communities having a general understanding of the existence of Family Consumer Science and practical skills to use in their everyday living.

Project Based Learning and Its Effect on Student Interest Level in a Sixth Grade Science Course

Jared Breakall, David Magleby (Mentor), Rick Robbins (Mentor)

Understanding how different instructional techniques affect student interest level in science has recently been an important topic for science educators. Student interest level is likely a determining factor in student achievement and in a student’s further pursuit of science education. The more understanding that is gained about how classroom practices affect student interest level, the more likely science education may be improved in our communities. Improved teaching practices may have long lasting, positive effects in our immediate, national and global societies. In this work, more traditional lecture based science courses will be compared to project based courses at the 6th grade level. Anonymous pre and post course surveys were administered to effectuated students which asked them to rate their interest level in science. Results from both types of courses will be analyzed and quantitatively compared to each other. We hypothesize that a project based course may have a greater positive impact on student interest level than a more traditional lecture based course.
The Leader in me Project

Lynnette Gittins (Richardson), Dana Johnson (Mentor)

“What is the cause of student achievement?” Effective teachers study this question with the hopes of increasing student progress and diminishing student failure in their classrooms. As a future teacher myself, I have studied this question in hopes of becoming an effective teacher. As a result, I have based my project on current research of this topic. As I have interviewed many individuals during intensive case-studies about their own student achievement, I have found the main difference between students who graduate from college and students who drop out, are the amount of values that these students have been taught throughout their lives. I have found that students who have had values instilled in them starting at a young age, do better in college courses than students who did not develop moral values at a young age. In the first grade classroom in which I currently teach, there are many students who have behavioral issues, developmental delays, and learning disabilities. Some students do not speak English and many of them are under the Title 1 program. As a result of my findings regarding moral values being the cause of student success, I have decided to implement value teaching in the classroom so as to help these particular students succeed regardless of what odds are against them. I have done research on a program called, “The Leader in Me.” It is a program based upon the book by Steven Covey entitled, “The Seven Habits of Happy Kids.” The program is made specifically for students of elementary schools to learn habits which will help them to become successful academic and democratic citizens. This semester, I plan to teach the students in my classroom the Seven Habits while implementing “Leader in Me,” resources. My hypothesis is that classroom misbehavior will diminish and student achievement will increase. I will keep anecdotal records of student progress as evidence to show that positive effects have taken place during the implementation of this program.
Disconnect

Avery Osburn, Eric Devegnee (Mentor)

A creative nonfiction piece. This memoir was written for Brother d’Evengee’s 318R Creative Writing: Creative Nonfiction class. The piece follows the experience of a college-age girl as she learns of an illness to her cousin’s unborn child. The piece tells of various moments throughout the pregnancy, birth, and death in which the girl feels connections and disconnections to those around her as well as to the baby. She is present for the ultrasound that indicates something is wrong. Though she has been included in something she originally considered intimate (the gender-discovery ultrasound) she finds herself quickly shut out of something serious (the discovery of the illness). She experiences and mourns the child’s death far from most of her family. She is ultimately disconnected from the proceedings of the infant’s funeral when she accidentally hangs up the phone as she listens in on prayers and speeches before and during the ceremony. While I am submitting this under the "Written Work" Format, I believe it can be read in under 10 minutes and give permission to be switched to an appropriate format if necessary. I just didn’t know if submitting it under "Oral Presentation" would get me into the group of critical analysis presentations, which is not what I want.

Super Simple

Kira Jacobsen, Josh Allen (Mentor)

"Super Simple" is a short play about two members of the League of European Supers. Dita is English and partners with the German Fritz. In the scene, she confronts him at his flat. He was arrested for a barfight at a hofbrahaus, which earned him automatic suspension from the League. Dita is upset. Their cover story for Supers Magazine has just come out, marking their one year together as the super hero duo, the Strong Arms. Dita demands to know why Fritz has acted so out of character. Fritz reluctantly reveals he is quitting the League: he no longer wants to be a super hero. Instead, he desires the simple life: a wife, children, and a farm with a cow.
Keep My Hand Above You: The Symbolism of Old Bones in Ryan J. Hayes and Garrett Sherwood’s Deep Love

Kira Jacobsen, Braden Hepner (Mentor)

Deep Love: A Ghostly Folk Opera, is a rock opera written by BYU-Idaho alumni Ryan J. Hayes and Garrett Sherwood. It was first performed in 2009 at the Rexburg Sammy’s. The show’s four characters are the ghost Old Bones, his widow Constance, her new love Friedrich, and Friedrich’s old lover Florence. At the beginning of the show, Old Bones promises to protect the mourning Constance as long as she stays faithful to him. However, she and Friedrich fall in love and become engaged. Old Bones threatens to harm him if Constance does not break it off. After she complies, Old Bones goads Friedrich on to commit suicide. Florence is stricken by his death. Old Bones incites her to blame Constance and seek revenge. When Florence comes for Constance, Old Bones offers to protect her if she renews her vows to him. Constance, by now driven mad, refuses him and kills Florence. My explication addresses the symbolism of Old Bones’s hand and cane, which is the character’s hallmark prop. His hand begins as a benevolent symbol of protection, as evidenced in the song “Keep My Hand Above You.” By the end it becomes a heavy hand of retribution. The cane, a symbol of power, embodies the influence he wields over the other characters.

LDS doctrine and the Black Swan

Joseph Bjork, Ross Baron (Mentor)

This project compares the philosophy of Nassim Taleb from his book, “The Black Swan,” with doctrines and practices of the Church of Jesus Christ of Latter-day Saints. The essential idea of the Black Swan is that life is filled with asymmetrical and often shocking surprises, surprises which can change the very essence of our beliefs. Mr. Taleb encourages preparation for all outcomes by limiting the adverse possibilities by, among other things, reducing debt and maintaining a food storage. Many of these concepts and ideas closely mirror and support the practices and doctrines of the Church, and an understanding of the Black Swan, together with the problem of induction, may add a greater understanding of the importance of these practices. Additionally, understanding the underlying concepts behind the Black Swan adds a level clarity to the concepts of prophecy, the omniscience of God, and stewardship. My methodology began with initial observations in a special topics in philosophy class of parallels between the class text and ideas found in the church. Research was furthered through close examination of the text, parallel reading in the book of Isaiah, and personal research.

The Next Generation of Literary Criticism

Jaron Judkins, Phil Murdock (Mentor)

As the evolving values of American culture have diverged from the traditional values maintained by American institutions, a disparity is growing between the way our society is inclined to view literature and the way we are taught to view it. This is putting the future of literary criticism in jeopardy. Rather than ignoring this growing division, a way must be found to use literary criticism to meet the needs of the next generation. By exploring the changes that criticism has undergone in the past and by understanding the forces that are driving literary theory now, we can begin to make out the shape of the next generation of criticism. While current forces threaten to drive literary theory to either of two bleak futures, the historical shifts between the Pre-modern, Modern, and Postmodern eras of literary theory reveal a pattern that indicates a possible alternative. Herein Narrativism, a new literary theory, is proposed which incorporates the values of both our institutions and our culture.
A Change of Heart and Mind: The Legacy of the King-Crane Commission

Crystal Redmond, Andrea Radke-Moss (Mentor)

The fall of the Ottoman Empire presented England, France, and The United States, with an interesting problem of what to do with the Middle East. Two ideas were presented: The first solution was self-determination, in which the inhabitants of the area are allowed to govern themselves. The second was the creation of a Jewish nation-state, which would force thousands of people off their homeland and put the new immigrant Jews in charge of the government. During the peace process debates in France, President Wilson suggested to send a commission of men to the Middle East to determine the desires of those living there. The idea was to take the commission’s findings and execute a plan of action that would best fit the culture of the region. The commission’s time in the Middle East would change the commissioner’s impression of the Middle East forever. This ideological change happened gradually and can be traced through their personal notes. After about two months of investigation the commission returned to France with their report. The report went against the desires of Britain and France, who both wanted that which was best for them. It suggested a unified Syrian state with the United States as the mandate holder. It also suggested the restriction of Zionist immigration, also in opposition to the goals of the Jewish Zionist in Europe for a political Jewish state. By the time the report was presented the world powers already decided. The report was ignored and rendered as futile. The decision to disregard the commission’s recommendations had a profound impact on the Middle East and on the world at large. Israelis and Palestinians have fought for over fifty years. Muslims around the world are hated and persecuted. Terrorist attacks abound inside the Middle East as well as outside. A nearly one hundred year conflict could have been avoided or at least curtailed.

Congressional Partisanship

Amanda Funke, Natalie Jensen, David Wynder, Matt Miles (Mentor)

This paper will discuss the effects of State legislature term limits, the effect these term limits have on partisanship, and determine whether or not term limits would be beneficial to the American Congress. The findings for this paper will be done using quantitative methods and looking at the data from those states that have congressional term limits compared to those that do not. This paper desires to follow the council of U.S. Supreme Court Justice Louis Brandeis most famous quote; “state may, if its citizens choose, serve as a laboratory; and try novel social and economic experiments without risk to the rest of the country” (Boeckelman 1992, 365-375). The data was taken from a paper called the ideological mapping of American Legislatures (Shor and McCarty 2011, 530-551). From their data we took the scores of each states House and Senates party scores for the years of 1993-2011. After running a regression model in R it was determined that there was indeed significant evidence that term limits do indeed reduce partisanship.
The Effects of Corruption on Participation

Bronson Herrera, Matt Miles (Mentor)

We know a lot about why people participate in elections. The current literature emphasizes a variety of institutional, psychological and biological mechanisms that encourage voter turnout. It outlines the effects of political elites on the average citizen and outlines how they affect political participation. Of even more interest, the literature teaches us which methods of participation are trusted by the average citizen and which are not deemed to be effective. The problem is that most of this focuses on national elections in which an individual vote is unlikely to influence the outcome of an election. As such, the literature finds various effects of corruption on voter turnout. Most argue that corruption discourages electoral participation. This paper combines exit polls with surveys of a small community to show how political corruption increases voter participation. Those who think the local government is corrupt are more likely to vote, because their relative capacity for change is greater in a local election.

Violence: Political Capital

Seth Williams, Matt Miles (Mentor)

The crux of this paper is based around a cleavage in comparative politics, between the literature surrounding the formation of parties and literature investigating varying forms of protest politics. Very little has been said to acknowledge how violence plays a role in either. In either realm of comparative politics, there is no acknowledgement of how violent protests can actually have long-term effects on party formation. The formation of political parties is often viewed as somewhat natural, either growing from the ground up or, like ivy, growing on the social or political lattice that has been provided. Violence, however, can be used as a sort of “miracle grow,” speeding up the growth of a political party. There are numerous examples of political parties that have electoral overlap with paramilitary groups or terrorist organizations (Sinn Fein/IRA, Hamas/Al-Quassam Brigades, 1960s Democratic Party of Alabama/Klu Klux Klan, and Bhartatya Janata Party/RSS) that are able to produce violence and in turn rally support for their political party. The violence of an opposition party demonstrates to the citizenry that (a) the opposition is willing to take action against perceived injustice, (b) the monopoly of violence can shift hands (giving political hope), and (c) can create extreme fervor for the opposition. This paper will use India and the conservative Bhartatya Janata Party as a case study.
William E. Borah: Consistency in Foreign Policy

Samuel Bingham, Shawn Johansen (Mentor)

This essay examines the motives and ultimate actions of Senator William E. Borah of Idaho, in regards to American foreign policy and the isolationist movement of the early twentieth century. Borah, a prominent isolationist leader, exercised significant influence over American foreign policy during World War I and the interwar years. Isolationists wanted to preserve traditional foreign policy, set forth by Washington, Jefferson, and Monroe, who counseled against entangling alliances with Europe. As America grew more involved in Europe, the isolationist position became difficult to maintain. Senator Borah continued to maintain his position by adjusting his tactics in the fight against foreign involvement particularly the League of Nations conflict, the Kellogg-Briand Pact, the Washington Conference, and the beginning of World War II. Some scholars have interpreted Borah’s actions as contradictory to his expressed beliefs, or as a sign of a conversion from the isolationist stance. To determine if there was a contradiction in his actions or a conversion in his ideology, this essay analyzes speeches in Congress and articles given or written by Senator Borah, as well as historical analysis of his actions in scholarly articles and biographies. Through this research and analysis, it is concluded that Senator Borah remained a staunch isolationist throughout his career, while adjusting his methods, even as the position became increasingly unpopular as events in Europe led to World War II. World War II essentially ended the isolationist movement, and the United States thereafter engaged in a foreign policy directly opposed to Borah’s traditional foreign policy ideal.
Honduran Crime and Violence: A Failing Education System

Andrew Allred, Bryce Erickson, Oshin Salas, Lauren Malley, Duane Adamson (Mentor)

Growing rates of crime and violence involving Honduras’ school-age population is the product of a weak and ineffective national education system. A minimum requirement of a sixth grade level education and inefficient use of funds are major problems facing Honduras. The retention rate of students for secondary and higher education is extremely low. Current education requirements don’t provide sufficient opportunities to gain skills and knowledge to compete in the market place. The funds provided to schools are being used inefficiently and wasted. These inefficiencies are the direct result of teachers’ lack of attendance, the lack of student attendance, ineffective use of time in class, and frequent school closure. This causes children to feel that they don’t have any other option than to turn to crime to earn a living. Policy recommendations would be to change the current curriculum to ensure that more time is spent on task, require that students attend further than the present requirement, and the creation of after-school programs to provide students activities that will help keep them out of trouble.

Intellectual Property Paradigm Shift in China

Tom McCarlie, Amethyst Bullock, Mitch Thompson, Duane Adamson (Mentor)

A major deterrent of foreign direct investment is intellectual property rights (IPR). Protection of intellectual property is part of Chinese law but is rarely enforced. China implemented these laws because of the World Trade Organization’s (WTO) requirements for admission. These laws haven’t taken root for a number of reasons. • Laws became “superficial” as they were only to appease WTO • Chinese local governments are often not aligned with the federal government. • Individual purchasing habits are in direct opposition to IPR laws • Chinese culture is not conducive for “western-centric” laws. Disregard for IPR not only discourages foreign investors but also stymies domestic industries. Regard towards IPR would not only be a boon for China’s economy but the entire globe. It will be necessary for China to take a different approach. Instead of an outside-in approach where the other nations try to westernize China, changes must come from within. Respect for IPR must begin on a cultural level before legal enforcement will be effective. To promote IPR we will engage in a social media campaign targeting small businesses. Elements of this campaign will include seminars and networking with Chinese small businesses and individuals within key industrial Chinese regions. The economic benefits of IPR will be central to this campaign.
**Responsible Packaging Solutions**

Miles Beckstead, Vita Christensen, Kelsey Skinner, Duane Adamson (Mentor), James Reber

Responsible Packaging Solutions (RPS) provides eco-friendly packaging to help reduce the human footprint on planet Earth. We produce bamboo cardboard boxes and mushroom foam packaging products which are sold to technology and shipping companies throughout the world. The number one priority of RPS is sustainability for both the environment and the economy. RPS is the only eco-friendly packaging solution that is based in China which can be easily plugged into the client supply chain. RPS stands above the competition by providing a variety of packaging products including bamboo and mushrooms. These materials are biodegradable, and offer a competitive price compared with competitors. Bamboo grows faster than trees, taking only 4 years to mature compared to trees taking well over 20. Mushroom packaging is a responsible alternative to plastic, packing products, and can be composted after use. Our products access bamboo from Anji County, located in Zhejiang Province. This area is famous for it’s fertile soils and is called by some “Bamboo Town”. Our factory, based out of HuZhou, will create and ship the final product to multiple consumers. This area provides sufficient amounts of factories and skilled workers. RPS represents the rare combination of a profitable business and a passion for the betterment of our world.

**Restoring Unity to the Ukrainian Nation by Promoting Tolerance**

Sam Fife, Iuliia Levchenko, Duane Adamson (Mentor), Laura Tedford, Sarah Elwood

Ukraine’s linguistic and political divisions have led to the need for lasting change to prevent the breakdown of a sovereign Ukraine. Although the divisions have been present for decades, the crisis that followed the Maidan Revolution has necessitated urgent action. These military conflicts have strained negotiation efforts. Yet, peaceful negotiations are the first step to uniting the country’s government, economy, and national identity. Our aim is to get the general population of all regions of Ukraine to support a Ukrainian reform conference, and the results of those negotiations. We have divided Ukraine into four functional regions: East, West, South, and Crimea. This brief addresses the likely base requirements for each region, as well as concessions they may have to make to compromise for a united Ukraine. In regards to Crimea, we have assessed the possibility of that region participating in such a conference, and possible steps that internal actors may take to increase the viability of a reintegration of Crimea into Ukraine. We address our proposal to grassroots organizations in each of the respective regions. We believe that the best approach for this problem is to educate Ukrainian citizens through broadcasting and popular social networks, to help them realize the existing problem, and help them increase their tolerance to each other. Using research from successfully pluralistic countries’ approaches to similar situations, we will be able to come up with an effective action plan for Ukraine and its people and help them unify their country.
The Divinity of Women in Islam

Lauren Easley, Marianna Mendez, Duane Adamson (Mentor), Joseph Grigg, Emily Lawrence

The Divinity of Women in Islam In Egypt, many women face continuous prejudice and limitations, despite equality before the law. Honoring traditional and cultural norms has hindered opportunities for many women to receive quality education, proper health care, advances in familial relations, and other endeavors. The objective of Divinity of Women in Islam, is aimed to reconcile the roles of men and women within their religion, by minimizing cultural norms that are not sanctioned and replace them with strengthened maternal roles within Islam. The objective is to inspire women and motivate them to achieve successful roles in the home and in society consistent with Islam. A women's clinic will be established in Cairo aiming to increase women’s literacy rates, educate women on proper health care procedures, and warn women of the dangers of female genital mutilation. This will be implemented by offering free classes, informative materials on these subjects, and increased options. In establishing such a clinic, Egyptian women are more likely to seek health care for themselves and their families, teach children to read and write, and open greater opportunities for future generations. The results we are aiming for are higher rates of employment, for both genders, resulting in more professionals and higher standards of living. We want men to know women can coincide to contribute to the development in their country. In addition, introducing a women’s clinic into Egypt, we hope that the predominance of Egypt as an Islamic country can lead other Islamic countries to move forward in a similar fashion.
An Exploration of the Development of Identity in Lewis Carroll’s Alice in Wonderland Novels as a Reflection of the Personal Progression through Childhood to Adolescence

Amy Loynd, Lyle Wakefield (Mentor)

One of the main themes of Alice in Wonderland and it’s sequel Through the Looking Glass is the question posed to Alice several times: “Who are you?” This paper will strive to answer that question by investigating how Alice’s changing perspectives, her experiences with the power of names, and her sense of purpose all work together to solidify her culminating identity. The Alice novels have been criticized by many differing scholars; but identity, despite being a re-emerging idea throughout the novels, has largely been ignored. This paper will be significantly different to the other literary analysis by concisely focusing on identity, and more specifically, identity in relation to Alice. During the course of the research of this paper, many literary criticisms were read and their conclusions for basic knowledge. However this paper will focus on concepts from the original text and personal analysis. That analysis states the following conclusions: Alice’s monologues in which she berates herself show that opposing desires will create a dual persona. Alice’s comparison of herself against others such as Mabel will change her perception of her own persona. Alice’s experience with the Duchess and the baby shows that external influences will control identity with the power of names. The Cheshire-Cat’s acceptance of his characteristics and Alice’s will produce self mastery. Awareness of identity in opposing personalities, as shown in Alice’s relationship with the Fawn from Through the Looking Glass, will cause conflict. And lastly Alice’s lack of defining a purpose will define her persona. These conclusions directly coincide with the purpose of this paper in how perspectives, names, and purposes affect identity. The journey through this exploration to these conclusions were unexpected and limited by only being focused on the philosophical view. If this research were to continue, concepts from other perspectives should be evaluated also.

Explicit Content and LDS Authors

Toben Racicot, Karen Holt (Mentor)

The title of my paper is “Explicit Content and LDS Writers” and it illuminates why some LDS authors use explicit content, specifically profanity, in their writing and others do not. I looked at interviews with well-known LDS authors such as Orson Scott Card, Brandon Sanderson, and Gerald Lund. I first examine what the authors say about their decisions and how their faith influences writing. Second, I look at opposing viewpoints to what the LDS authors say and, finally, how readers feel about the content in the novels. This paper evaluates the weight that religion has for LDS authors and how that impacts their final work, whether explicit content is included or abandoned. My research discovered that the majority of LDS authors do not include explicit content because their religious convictions are so binding. However, I also learned that authors keen on writing truth include explicit content to add to the verisimilitude of their work.
Joe the Barbarian - A Graphic Novel to Interest Reluctant Readers
Toben Racicot, Jason Dietz (Mentor)

My paper is entitled “Joe the Barbarian – A Graphic Novel to Interest Reluctant Readers.” The objective of this paper is to demonstrate how graphic novels, specifically Joe the Barbarian, is an alternate medium to interest students in literature. I use four of the six aspects of the Hunsader Model, developed by Patricia Hunsader to assess the usefulness of a graphic novel in the classroom. In my work, I discuss how the main character, Joe, is a “relatable protagonist” and how he develops throughout the story. Examination of the writer’s “vivid and interesting style” reveals how it engages readers and moves at a manageable pace. I discuss the “ethical and cultural values” that the book includes and how they are applicable to the reader. Finally, I analyze the “artistic elements” of the book, the line work and colorist. These four elements show why Joe the Barbarian will help students who have not developed a love for reading take the initiative to read on their own. Ultimately, I argue that graphic novels are a medium that can help students who do not read on their own to become motivated.

Britney Larsen, Roy Turner (Mentor)

This essay explores how science-fiction/fantasy author, Neil Gaiman, is able to push beyond the boundaries of genre and create true and timeless art. He provides worlds and characters that bridge the gap between reality and fiction. A closer analysis of his novel Coraline reveals that Gaiman is comfortable with the exploration and crossing of genre boundaries. These boundaries do not confine him, but rather allow him to more fully create unique fiction. The resulting themes that spring forth are more human than those in typical stories that do not escape genre. Capturing audiences everywhere, Gaiman has proved that through his use of language and story telling he is able to provide escapism for his readers. His novel Neverwhere shows that ordinary people can be transported into a wild adventure and one they had never expected. Anybody looking for a temporary escape from the boredom of life can turn to any one of Gaiman’s works. Although he might be considered an artist of the weird and bizarre, Neil Gaiman has proven himself as a legend.
Prufrock’s Psyche: An Examination of Psychoanalytic Theory in Eliot’s “The Love Song of J. Alfred Prufrock.”

Sean Byers, Jason Williams (Mentor)

Through thorough analytic critiques, scholars have reached the conclusion that J. Alfred Prufrock has dichotomous selves coming to the forefront of the poem and taking place as narrator. Frances Dickey believes both these selves to be different social mentalities (125), and John Cooper believes most of Eliot’s work, including Prufrock, deals with the fugue between what society expects and “contradictory impulses in individual lives” (287-88). While these scholar’s opinions concerning social bifurcations have merit, I contend that greater light is shed on these dissociative narrators in the context of Freud’s psychoanalytic theory of the id and ego. This is, in fact, what Cooper is describing. Armed with a brief historical influence of psychoanalytics and what the id and ego are, I delve specifically into how Prufrock’s fragmented personalities are portrayed through Dante’s Inferno (epigraph) and the ambiguous adventure of “you and I” to cheap hotels and sickening oyster shells. My argument shows that, through the medium of psychoanalytic theory in the epigraph and beginning stanza, Eliot means to underscore the rift between what Elizabethan society expects and what man is. Through my analysis of “The Love Song of J. Alfred Prufrock,” I assert that Prufrock is sojourning through a prescribed psychological struggle both popular and proven in his time, thus illuminating the motive and mental mapping behind questions asked and not asked in his love song.

Transposing Time: A Comparison Between Michael Chabon’s Joe Kavalier and Denis Johnson’s

Robert Grainer

Sean Byers, Karen Holt (Mentor)

One enduring characteristic of reputable literary criticism is its desire to compare a current literary work to a classic. For example, Daniel B. Levine, a prolific critic from the University of Arkansas, has in recent years compared Michael Chabon’s The Amazing Adventures of Kavalier and Clay to The Odyssey, claiming that the foundation the Greek classic provides is one that underscores most recent Jewish work and is projected onto their characters, such as Josef Kavalier (527). However, the use of comparing age-old epics to 1930s time pieces seems archaic and minimal in value. Comparing Joe Kavalier and his story in Chabon’s novel to another character of the same time period, and having said character originate from a more recent work, would be of more worth and utility, which is the intention of this essay. In this fashion, common themes in literature today can be unfolded, and consequently greater understanding of both characters reached as well. With this in mind, I contest that Josef Kavalier’s most similar counterpart in today’s literature is Robert Grainer of Denis Johnson’s Train Dreams. If we compare both characters’ reactions to familial tragedy, affinities for escapism, and oppression as minorities, one can notice a common literary theme of truly remarkable and believable individuals living harsh, historically realistic, and fulfilling lives.
Womanish Sensibility: The Feminine Gentlemen in Wharton’s “The Other Two”

Hillary Muller, Jason Williams (Mentor)

The Mr. Waythorn and his wife, Alice, have long been a topic of literary discussion because of the blurry gender roles between them and Alice’s ex-husbands. Their interactions shed light both on individual’s characters and gender expectations. Mr. Waythorn feminizes himself and Alice’s previous husbands, Mr. Varick and Mr. Haskett. Mr. Waythorn says, “He hated the womanish sensibility which made him suffer so acutely from the grotesque chances of life” (506). Literary scholars debate these lines and what they tell us about Waythorn. Jeffrey Howard of Idaho State University comments on the feminine actions and behaviors of the men in “The Other Two” in his recent essay, “Trading Spaces in Domestic Places”; however, he did not discuss the purpose of this feminization. By delving deeper into the behaviors and actions of these men, I argue that Wharton is actually telling us more about the character of Alice instead of Waythorn. I illustrate that Waythorn, Varick, and Haskett are all feminized in “The Other Two” in order to show the double standard of the gender expectations applied to Alice.
Differences in Taboos in American and Latin Cultures

Nicole Márquez, Matt Alba (Mentor)

Taboo is the prohibition or avoidance in any society of behavior believed to be harmful to its members in that it would cause them anxiety, embarrassment, or shame” (Wardhaugh 249). It’s a strong politeness constraint. Certain things are not to be said altogether and others are referred to only under circumstantial situations. We believe that there is a difference in taboos in American and Latin Cultures. We will attempt to test this claim by polling randomly selected students at BYU-Idaho. Of course our population representing Latin Cultures is more limited due to our inability to travel to other countries, but we feel we will be able to find sufficient representation at this college. We want our selected students to feel as comfortable as possible and open about various taboos so we will have them submit their responses in writing on notecards which they will fold up and deposit into a large container. We will have one container for students representing American culture and one container for students representing Latin culture. Reasons for existing taboos can fit into the following three categories: personal, uncomfortable, and harmful. We believe that Latin cultures are more likely to foster taboos which fit into the category of being harmful, and American culture is more likely to foster taboos which fit into the category of being personal and uncomfortable.

Economic Variants in Discourse Marker Use

Brianna Harris, Matthew Sheets, Benjamin Brown, Nathan Skaggs, Matt Alba (Mentor), Edgar Mendez

The study of the use of discourse markers in females in relation to their economic standing as defined by their housing. This will be the presentation of our personal study over the course of the semester and the findings over the aforementioned topic. Findings will be elaborated and explained with their relationship to sociolinguistic factors, previous studies and theories, and outside influences that may have had an impact in the results as well. The study will consist of informally surveying a variety of females at different apartment complexes with ranging rent costs and observing the amount of discourse markers used. Most notably heard has been the discourse marker of “like”; however, the study is not limited to this one marker and others such as “um”, “well”, “so”, and the likes thereof. Our prediction as a whole is that as the costs of rent increase, so will the use of discourse markers.
Boltzmann-weighted global equilibrium constants for hydroxy-peroxy radical-water complexes derived from 8-pinene.

Michael Goytia, Timothy Rose, Fan Yang, Jaron Hansen, Ryan DaBell (Mentor), Ryan DaBell (Mentor)

Pinenes are a class of bicyclic molecules emitted by conifers and marine flora. These molecules constitute 6% of all biogenically derived volatile organic compound emissions in the atmosphere. Experimental research demonstrates that pinenes react with hydroxyl radicals via addition across the double bond. These, in turn, react with ambient oxygen to create pinene hydroxy-peroxy radical species that may be stabilized by complexation with a water molecule. These reactions play a fundamental role in atmospheric chemistry. The present work focuses on deducing Boltzmann-weighted average global equilibrium constants for the hydroxy-peroxy radical-water complexes based on the stereoisomer-specific results for 8-pinene derived radicals. Geometry optimizations for the radical and radical water complexes from 8-pinene stereoisomers were determined computationally at the B3LYP/6-311++G(2d,2p) method and basis set. Basis set superposition error was corrected using the counterpoise method. These calculation results were used to determine partition functions, stereoisomer-specific equilibrium constants, and global, Boltzmann-weighted average equilibrium constants. Natural bonding orbital calculations were also run to explore the nature of the hydrogen bonds between water and the radical. We compare our current findings in 8-pinene with that of earlier results found among the α-pinene stereoisomers.

Chemistry Behind Combustion

Ben Doss-Johnson, Troy Spratling (Mentor)

The purpose of this project is to map out the chemistry of combustion behind an internal combustion engine typically found in a vehicle. A main goal is to analyze what external and internal factors production of certain by-products of the ignition of the air fuel mixture. Factors included will be, compression ration, air-fuel ratio, and temperature. The main focus will be on 5 gases typically used in the diagnosis of vehicle operation. These gases include nitrous oxides, water, carbon monoxide, carbon dioxide, and hydrocarbons (NOx, H2O, CO, CO2, and HC, respectively). Hopefully this project will have two outcomes. One it will help automotive majors in the analysis of the 5 main gases tested at the tailpipe, and open the eyes of prospective majors to the depth of the automotive program. I have yet to finish my research. Its hard to find graphs that have a good representation of this data, and I am unsure on whether or not I will have to produce my own data points. I plan on using websites as well as hopefully an expert on the subject to attain most of my data.

Ion Detection with Faraday Cup using Ion Mobility Spectrometry

Tyler Westover, Kelton Forson, David Collins (Mentor)

Ion mobility spectrometry (IMS) is an analytical technique used to separate and characterize gaseous ions in an electric field at atmospheric pressure. IMS's strength is in drug and explosive detection, but is used in other areas like environmental monitoring, pharmaceuticals, and metabolomics. This work focuses on the construction of an IMS instrument with a Faraday cup detector. The design employs a high electric potential (e.g., 5000 V) over the length of the drift tube. An additional high voltage source (e.g., 7500 V) is used to create ions outside of the drift region. The drift tube is composed of seventeen stainless steel drift rings separated by ceramic spacers and electrically connected with 1 megaohm high-voltage resistors. An oscilloscope is used to detect current produced by ions striking the Faraday cup. In future work, the drift tube will be temperature controlled, flushed with nitrogen gas, and ion gated.
### Using Python to overcome challenges in analyzing two-dimensional chromatograms

**Brae Petersen, Hector Becerril (Mentor), David Collins (Mentor)**

Analyzing two-dimension chromatograms on TLC plates can be time-consuming and laborious. Precision and accuracy are limited by the mechanical measuring device and the estimates of spot locations. Utilizing Python programming language, a software program was developed to quickly and accurately analyze two-dimensional chromatograms. **Data Analysis of Visual Information from Dots (DAVID)** loads an image, requests separation parameters, analyzes the data, and calculates the rf, ion mobility, and plate heights. Analysis techniques include boxcar averaging, weighted averaging, ensemble averaging, and Fourier transform. DAVID also improves the quantitative analysis of irregularly-shaped spots by comparing spot geometries. DAVID has the potential of becoming an effective qualitative and quantitative tool for the analysis of two-dimensional chromatograms.
**DiaAzo Red Synthesis (The color of the American Flag)**

Kleeber Oliveira, Mandell Lide, Susan Ward (Mentor)

*The conversion of aniline to para red is a four-step synthesis used in Organic Chemistry 2 (Chem 352) to test students’ lab skills over the course of four weeks. In the previous semesters, aniline was converted to acetanilide, then to p-nitroacetanilide and then to para red. Highly caustic concentrated sulfuric and nitric acid are required to convert acetanilide to p-nitroacetanilide. Because of safety problems posed by the use of these chemicals and poor yields faced by students, a new pathway to convert aniline to diazo compound was proposed. In this new path, acetanilide was converted to 4-bromoacetanilide, then to 4-bromoaniline, and finally to diazo compound. The change in the second step of this synthesis improved the poor yields and was accomplished under safer conditions.*

**Formation of a Diazoc Compound (Para Red)**

Mandell Lide, Susan Ward (Mentor)

*Abstract The conversion of aniline to para red is a four-step synthesis used in Organic Chemistry 2 (Chem 352) to test students’ lab skills over the course of four weeks. In the previous semesters, aniline was converted to acetanilide, then to p-nitroacetanilide and then to para red. Highly caustic concentrated sulfuric and nitric acid are required to convert acetanilide to p-nitroacetanilide. Because of safety problems posed by the use of these chemicals and poor yields faced by students, a new pathway to convert aniline to diazo compound was proposed. In this new path, acetanilide was converted to 4-bromoacetanilide, then to 4-bromoaniline, and finally to diazo compound. The change in the second step of this synthesis improved the poor yields and was accomplished under safer conditions.*

**Pressurized Planar Chromatography Improvements for Two-Dimensional Separations**

Kaleb Roberts, Zach Greenlee, Brae Peterson, Jeff St. Jeor, David Collins (Mentor)

*Simultaneous chromatography and electrophoresis (SCE) performs two-dimensional separations by combining the techniques of thin layer chromatography (TLC) and electrophoresis. Previous experiments performed at Brigham Young University-Idaho suggest the use of a pressurized system with preconditioned TLC plates (at the pH of the mobile phase) result in reduced separation times and increased reproducibility; however, these results have never been validated. This work attempts to verify these assumptions by reproducing, collecting, and directly comparing results obtained under said conditions with those of the original design.*
Solving Fosfomycin Solvation Issues via Aliquat 336

Andrew Baker, Nick Henrie, Jonathan Bryan, Susan Ward (Mentor)

Fosfomycin, an antibiotic used to treat UTI, meningitis, pneumonia and pyelonephritis, is being tested to see if its oxirane can be converted to a thiirane and retain its antibiotic properties. Solubility appears to be the stumbling block for this reaction. Generally, substances dissolve in solvents with similar intermolecular forces. The sodium salt of fosfomycin is soluble in water due to its polar properties. However, this polarity becomes a challenge for reactions in non-polar solvents which are necessary to carry out the desired reaction. Adding an aliquat to the reaction should increase the solubility of the fosfomycin in the organic layer by coupling with the positive ammonium ion that exists on one end of the aliquat. Like soap, the aliquat acts like an emulsifier due to the fact that it has characteristics of both polar and non-polar molecules. The product of the reaction was analyzed using IR and 1H-NMR to verify the solubility of fosfomycin in the organic layer and for the completion of the reaction.

Synthesis of Fosfomycin Sulfur Derivative in Organic Phase Using Triphenylphosphine sulfide

Ryan Bradbury, Erich Kumpunen, Tanner Bond, Susan Ward (Mentor)

Fosfomycin is an antibiotic commonly used in the treatment of urinary tract infections. Its epoxide and phosphate groups make it unique, as well as its mode of bacterial inhibition. In recent in vitro experiments, it has had much success against many Gram-negative bacteria. Because of these unique properties, there has been a large renewed interest in its use as an antibiotic. There is of course a tendency for bacteria to develop immunity to fosfomycin after prolonged treatment. This study explores the possibility of a sulfur derivative of fosfomycin, which has potential for antibiotic use. Literature demonstrates various means of converting oxiranes to thiiranes in organic solvents. However, fosfomycin is insoluble in organic solvents which may be used to produce a sulfur derivative of the drug. To overcome this problem, we propose the use of a phase-transfer catalyst to encourage the reaction of fosfomycin with organic-phase triphenylphosphine sulfide. New product will be tested using chromatography and NMR techniques.
Architecture for the People

Dante Frassa, Garth Jensen (Mentor)

When someone mentions the “future of architecture”, one usually imagines futuristic designs and shapes, basically the Sci-Fi fantasy that has the stereotype over the years. Architecture is not just about the design, and frankly, as a society, we can’t afford these over-the-top edifices. When developing a design, we need to think not of what is solely economical or convenient, but what is in the best interest of humanity. My project will focus on examples and ideas of how to approach schematic designs intelligently; from the grand scale of urban planning to the smaller scale of a room in which a person habituates. Architecture should serve the people that the structure was intended for. By this, I am referring to designing the built environment to be a positive impact (socially, environmentally, and economically) for those who come across them. In our present world, technology has taken us so far that we can do anything imaginable, this includes architecture. Examples of these innovations that I will include in this project include community input, environmental design, and future construction methods, to name a few. This project’s intention will hopefully capture the moral responsibility that designers carry, with technological advances in mind. When we build, we build for the future, and so, we are responsible for the coming generations. It is necessary to provide them with quality buildings that will benefit their world in constructive ways. Consequently, this will create more established living environments.

Continuum Junior High School Conceptual Design Project

Corrine Chidester, Austrie Messer, Justin Morris (Mentor), Leandra Cowley, Monique Dirlam, Rebecca Loosli

The purpose of this project is to conceptually design an educational facility. We will use elements and principles of institutional design to create collaborative learning and a nurturing environment. We have selected to research and focus our design on the opportunities that poverty commonly incurs upon inner-city living. Our design solution will be focused on creating a higher learning center that will elevate the vision of West Oakland, California by community involvement and mentorship based learning. After meeting with the head of the sociology department and conducting extensive research, we feel confident in our ability to create a central campus that will provide a hopeful and optimistic view of the future. The stunning facility will provide emotional and physical stability, including counseling for PTSD (Post-Traumatic Stress Disorder); open, fluid-concept classrooms; muted, inviting color pallets; and collaborative, hands-on learning. In an effort to reach the community, an auditorium will be utilized for student and local performances, allowing the youth to show and explore talents while gaining confidence and purpose. A large gym facility including an indoor track, yoga and cycling studios and a large “park” of fields and courts will allow the students and community to take part in plenty of recreational activities. Continuum Junior High will become a place where wounds, both emotional and physical, will be healed. A place where self-worth is cultivated and treasured. A place where our children will learn the pain ends. A place where the future looks bright.
Donald Triplett Academy for Autism

Kimberly Sargent, Lindsey Nelson, Lizz Grigg, Donghyuk Kim, Lindsey Quinn, Melissa Allen, Justin Morris (Mentor)

Donald Triplett Academy for Autism is an academy, kindergarten through fifth grade, accommodating the needs of children diagnosed with Autism Spectrum Disorder. Sensory needs, life skills, and psychological environmental considerations are the core objectives sought after in this academy. Mid-Century Modern design has been selected to inspire a playful learning environment. Special attention has been given to how lighting, colors, textures, and patterns have caused different Autistic triggers. A specific aspect of Mid-Century Modern design is the use of open floor plans. This school layout has a clean and well-defined design to create adaptable use of learning spaces. Within the school there are several different learning environments including public learning life skills areas such as personal hygiene, laundry, and cooking. The auditorium provides a public space for the parents and community to gather to see the students perform, do fundraising, and informing the public about Autism. There are also public areas used to showcase student artwork. Studies have shown multiple play areas help Autistic children concentrate throughout the day. The unconfined floor plan and multiple play areas allow the children this needed place to exert energy and flexibility in learning.

Juniper Lodge | Off-The-Grid Cabin Design

Jeff MacCabe, Garth Jensen (Mentor)

As a designer, the ability to communicate a concept is vitally important. The Architectural Technology program at Brigham Young University -Idaho provides that ability to aspiring architectural students. With a number of design studios and the latest in industry technology, students are able to produce stunning and unique designs in a variety of both residential and commercial settings. These projects are a culmination of both technical knowledge and artistic style. I wish to present my project titled, "Juniper Lodge." This small cabin is a mere 500 square feet and is conceptually located on a site north of Rexburg in Island Park. It has been required to research various "off-the-grid" architectural solutions, meaning systems that allow the building to function outside both the main power and water grid. As a result Juniper Lodge utilizes some of the latest innovative technologies to produce its own power, water, and sewage treatment. Built to a client scenario, the lodge reduces impact on the environment, utilizes function in a small space, and presents a unique mountain aesthetic. A product called a Hydro-Electric-Barrel, which generates power by spinning along the surface of a nearby creek, stores the cabin’s energy in an industrial battery. Water is collected from rain and snowmelt which accumulates on the roof. Built-ins and custom designed furniture allow spaces to transform from one function to another. A unique canvas covering dominates the aesthetic which shades the building from the south sun and produces a remote getaway experience. The project is still under research and development. The project will be presented with three parts. Mounted panels of presentation graphics will display the researched off-the-grid solutions within the floor plan, elevations, and several computer rendered images. A physical 3-Dimensional model will further demonstrate the design’s form. Finally a video animation will allow patrons to fully experience the space with its materials, lighting, form, and functionality.
Launch Elementary: A private elementary school for students of all learning capabilities.

Juli Bake, Kaitie Nelson, Hannah Briscoe, Alyssa Slade, Laura Knapp, Justin Morris (Mentor)

Launch Elementary allows all students, regardless of their learning capabilities, to excel and grow just as any other student would. The key to its success is in the design. We have designed Launch elementary to be a private school that accepts all students from Kindergarten to Fifth grade. The school accepts all students, regardless of their learning capabilities, and allows them to feel part of a team, not singled out. Our goal with this design is provide each student with a chance to gain self-fulfillment... without having to go through the embarrassment of being pulled from class. Our focus is to make each student feel important and that they truly have a chance to soar as high as they know they can. Our research compiled of the following learning challenges: dyslexia, ADD, speech, motor skills (such as writing or body language), vision and hearing. We wanted to know what ails a student most if she or he has one of these learning challenges, and how we could remedy it with our design. We researched each learning challenge and what triggers and ‘outbreak’, thus we could design to avoid said outbreaks and promote self-progressing work areas. Launch Elementary incorporates learning “pods” for each grade, with appropriate seating and learning centers to build social and team skills. Each pod allows for private areas, impromptu team areas, and teacher-student instruction centers. Our design incorporates new technology into each classroom, learning modules for students to teach/facilitate one another and the highest level of security. Launch Elementary becomes a private school where friendships are made, not judgments. A place where students are happy to learn, not scared to speak up. Launch Elementary encourages students to soar.

Native American Charter School

Becky Gardner, Adrienne Gibbs, Michelle Moyle, Catherine Reid, Pamela Tamayo, Justin Morris (Mentor)

This interior design project is a high school intended to meet the needs of Native American students living in New Mexico. Studies show that drug and alcohol abuse, teen pregnancy, and suicide are more prevalent in Native American communities than most. In research we have discovered a greater need for young Native American’s to feel empowered through learning in a more collaborative, creative, and functional learning environment. We plan to create this school through innovative space planning techniques, sustainable building materials, and unique finishes. It is designed to motivate students to become life-long learners and to help preserve the beauties of their culture. Students will be empowered to make wise choices and discover their own voice through studying the core values of their heritage and applying them to their everyday lives. The learning environment will encourage students to reach new heights as they explore who they are through learning in an interactive environment, collaborating with others, and establishing specific skill sets. Doubling as a cultural center and classroom for people in the community, this school will help break down cultural stereotypes as people begin to appreciate and understand the depth of Native American culture. The rich colors used in their apparel, jewelry, and textiles serve as the inspiration for the interior finishes. Symbolic motifs and patterns throughout the space are derived from Native American baskets and blankets. All who enter this school are inspired to discover their own self-worth through learning from the past, living in the present, and looking toward the future with confidence.
3D Subsurface Mapping of The Conant Valley Quadrangle, Eastern Idaho
Jonathan Schmidt, Robert Clayton (Mentor)

The Conant Valley quadrangle, located in eastern Idaho near Swan Valley, is highly deformed due to high tectonic stresses. The local of Fall Creek located within the quadrangle consists of geologic units ranging back to the early Carboniferous Period. Several wells were drilled in areas nearby that target the porous Nugget Sandstone which acts as a good reservoir for hydrocarbons derived from the Phosphoria Formation. The structures of anticlines and faults act as good conventional reservoirs for oil and natural gas. Inputting both well data and geologic map information into Earth Vision allows for effective 3D modeling of the structures subsurface. After collecting a geologic map of the area, data points of attitudes of the stratigraphic units as well as the contacts between units are put into Earth Vision. When available, well logs are useful for giving Earth Vision known data points of contacts in the subsurface. Earth Visions calculations found several structures fold structures at depth as well as other faults and their angles in which they plunge into the subsurface.

A 3-D Model of Stacked Thrusts in the Sevier Thrust Belt, Eastern Idaho
Spencer Clayton, Rober Clayton (Mentor)

Using published and new geologic map data and two exploratory wells for control, we constructed a three-dimensional geological model of the Pine Creek area in the Big Hole Mountains of eastern Idaho, where stacked Sevier thrust sheets are exposed at the surface. In this area, Cretaceous crustal shortening displaced and folded strata from Cambrian to Cretaceous in age. Using geologic map data as a primary input to a 3-D model presents a number of challenges, especially representing fault geometries at depth and maintaining strata thicknesses. The highly variable attitudes measured at the surface are also difficult to represent in a subsurface model because they require extensive extrapolation to depth. To overcome these challenges we EarthVision software, which has tools for model construction with minimal data inputs and uses a minimum tension algorithm to create geologically realistic surfaces. We also constructed two primary cross-sections to constrain strata and fault geometries according to structural principles, and used these to guide construction of fault and horizon surfaces. We then designated horizons with the best control as reference horizons to constrain strata geometries, and built the remaining horizons using isochores to add or subtract from those surfaces. The model shows classic flat-ramp thrust geometries as seen farther southeast in the Wyoming section of the thrust belt. The model also shows uniform southwestward tilting of faults and strata in the north end above younger thrusts, but strong effects from a duplex on a younger thrust fault encountered in the southern well, which rotated the strata and older faults above it.
Assessing Tectonic Tilt of the Teton Range, of Wyoming and Idaho, Using Stream Topographic Analysis

Troy Day, Julie Willis (Mentor), Cory Walk

Topographic indices for quantifying tectonic tilt are used to determine the extent and cause of possible range tilting of the Teton Mountain Range, WY and ID. The Teton Range is a young, asymmetric range on the eastern edge of the Basin and Range and the southern edge of the thermally uplifted Yellowstone region. The thermal uplift, attributed to the Yellowstone hot spot, has caused regional tilt north of the Yellowstone area, and it may also cause regional tilt south of Yellowstone. The Teton Range is ideally situated to test this hypothesis. To determine the magnitude and direction of possible tilt we analyzed the transverse topographic symmetry (TTS) in 25 major basins within the Teton Range (13 on the western side and 12 on the east). The basins and their major streams were identified using ArcGIS basin and stream order algorithms to 10-m USGS Digital Elevation Models (DEMs). The algorithms defined the basins based on drainage divides; the stream analysis defined water flow through the basins. The TTS equals Ds/Dm where Ds is the distance from the midpoint of the basin to the midpoint of the stream meander and Dm is the distance from the ridge to the basin midpoint. Dm was determined by drawing transects, with equal elevation start and end points, from ridge to ridge. The TTS is evaluated for each transect and a vector is used to visualize the magnitude and direction of TTS for each transect. TTS was determined at approximately 100-m intervals in the primary E-W trending basins. If tilting of a basin has occurred, the stream will show a general pattern of down-tilt migration. Thermal uplift of the Yellowstone hotspot, if it influences tilt of the Tetons, will cause a general north-south, down-tilt trend. Understanding tectonic tilt in the Teton Range and evaluating the influence of the Yellowstone hotspot on it will help determine, temporally and spatially, past interactions between passage of the hotspot and Basin and Range faulting.

Beaver Head Mountain Landslide

Sara Ramos, Julie Willis (Mentor)

Landslides can cause property damage, injury, and loss of life. It is important to understand development of slides because of the associated hazards. Slide progression is best observed in areas that have not had human development. Because the Beaver Head Mountain slide has not been effected by human development, I was able to study the cause, movement, and reactivation of the slide. Studying movement and reactivation leads to better slide prediction. An assessment offers a better understanding of slides affecting developing areas. Creating a slide assessment will help to produce an effective preventative action plan. A low resolution DEM was used to create slope data. This was overlaid by satellite imagery to produce a model of the landslide. Strike and Dip data was collected to determine structure of the head-wall, and cause of movement. Slope data were used to determine different lobes and reactivation areas. The resulting map will be summarized in poster form showing movement, reactivation, and cause of slide. From this data, future landslide predictions can be produced.
**Heise Cliffs Volcanics: A Preliminary Geologic Map of the Heise Cliffs Area, ID**

Bryce Barney, AJ Jernigan, Dan Moore (Mentor)

The Heise cliffs lie near the southern margin of the Snake River Plain near Ririe, Idaho. Volcanic rocks exposed in this area belong to the Yellowstone Snake River Plain (YSRP) magmatic province. These rocks record the volcanic history of the Heise caldera complex (6.6 – 4.5 Ma). We report detailed mapping of these volcanic units, which lie next to and above Paleozoic and Mesozoic sedimentary rocks and are covered in places by alluvium, colluvium, and loess. Structurally, this area contains a step-over zone, which connects the Grand Valley fault to the south to the Rexburg fault to the north. A series of down-to-the-south normal faults accommodate extension in the step-over zone. The igneous units record three volcanic episodes: pre-Heise, Heise, and post-Heise. The pre-Heise episode includes the Arbon Valley Tuff (10.2 Ma), a basalt, and the tuff of Newby Ranch (7.5 Ma). The Heise episode contains six units: the Blacktail Tuff (6.6 Ma), the Kelly Canyon Rhyolite (5.7 Ma), the tuff of Wolverine Creek (5.6 Ma), the tuff of Elkhorn Springs (5.6-5.8 Ma), the tuff of Hawley Gulch, and the Kilgore Tuff (4.5 Ma). The post-Heise episode includes the Huckleberry Ridge Tuff (2.1 Ma), the basalt of Antelope Flat and basalt of Lyons Creek (~2 Ma), and the Lava Creek Tuff (~630,000 ya). Previous workers mapped the southern boundary of the Blacktail caldera in Ririe Reservoir to the west and along Canyon Creek to the northeast. However, our observations do not allow the caldera boundary to extend through the Heise cliffs. Our mapping indicates that those are fault or paleotopography contacts and that the southern margin of the Blacktail caldera lies farther north.

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**Tectonic Tilt Assessment of the Teton Range, Wyoming and Idaho, Using the Drainage Basin Asymmetry Factor**

Christopher Colwell, Julie Willis (Mentor)

Tectonic tilt of the Teton Range, Wyoming and Idaho is assessed using the drainage basin asymmetry factor (DBAF). The Teton Range is a north-south trending, asymmetric range located on the eastern margin of the Basin and Range province and the southern margin of the Yellowstone region. The DBAF was used to analyze 25 major basins within the Teton Range. The basins and their major streams were identified from 10 meter USGS Digital Elevation Models using ArcGIS basin and stream order algorithms. The basins are defined based on drainage divides. Assuming the dip of bedrock does not influence stream migration, the direction of stream migration shows the direction of tilt. The area of the basin on either side of the stream is calculated to determine stream migration. From these data, regional tilt can be determined. Throw on a normal fault is greatest in the center and decreases away from the midpoint. If this is the primary source of tilt, the range would tilt away from the midpoint, the north end tilting to the north and the southern end tilting to the south. The Yellowstone region has been thermally uplifted, causing the surrounding areas to tilt away from the hotspot. If this is the primary source of tilt, the entire Teton Range would tilt to the south. This study will further understanding of tectonic tilt in association with the passage of the Yellowstone hotspot and Basin and Range faulting.
Was the Challis Earthquake Swarm a Subtle Warning?

Tyler Pape, Julie Willis (Mentor), Mark Lovell (Mentor)

On March 24 and 25, 2014 the Montana Bureau of Mines and Geology (MBMG) recorded 108 small earthquakes ranging from magnitudes of 1.2-4.8. These earthquakes have a trending north western pattern indicating they may be associated with movement on a specific fault. The data suggests that it may be a fault splay sourcing back to the Lost River Range fault and associated scarp which is a highly active known fault only six miles away. This might be an unmapped fault splay, which raises a lot of safety concerns for the public and has implications for future developments. What is the geomorphology of the area and what is the geologic setting of this fault? Is this something we need to be concerned about, or is this just a micro fault that is done settling? Are there more faults in the area that we may not know about? That area is tectonically active and hopefully this research can help determine what kind of risk the people are living in. The Lost River Range Fault is a highly active fault formed from the Basin and Range extension of the Sevier orogeny. Finding a new fault splay would not be surprising here, almost expected. Further studies are required to determine what kind of fault this is, comparative to the Lost River Range Fault. I will use a GIS computer program which is capable of creating side by side comparison maps and summarize results in poster form that will hopefully lead to a publication of this phenomenon. Hopefully we can determine whether this movement is a concern or not. Since the main earthquake swarm there may have been more earthquakes in that area. This data can be acquired from Mike Stickney of the MBMG who is the onsite geophysicist of the area. Raster and Lidar data will be necessary to perform surface analysis of the area. Remote sensing data can be used to look at the last two years of the area to determine any surface effects of the earthquakes. The Raster, Lidar, and Remote Sensing data can be gathered from USGS and the Idaho Geological Survey.
Dairy Processing From an Engineering Perspective
Harold Bishop, Aaron Schellenberg (Mentor)

Throughout this semester I have studied the process of turning raw milk into American Style cheese and powdered whey protein. The purpose of this project is to put together a presentation that someone who is going into an internship or job in the dairy industry can read through and gain a general understanding of the processes that go into making cheese and whey. I am doing this project because I recently finished an engineering internship with one of the worlds largest cheese and whey producers. I did not have any understanding or knowledge of the dairy industry as it applies to engineering before starting my internship. I believe that the experience that I have gained through my internship and study can greatly benefit someone going into this industry.

Is it cost effective to use DEF (diesel exhaust fluid) on diesel vehicles?
Troy Spratling, Troy Spratling (Mentor)

Research done by Ryan Call, undergraduate in the automotive program, reviews what DEF (diesel exhaust fluid) is, and what it does in the exhaust system. The EPA (environment protection agency) has put strict guidelines on emissions for diesels. NOx (nitrous oxides) and particulate matter (soot) from diesels have to be near zero levels, what NOx is, what it does will also be explained. The automotive industry has overcome this obstacle by using DEF, a DPF (diesel particulate filter), and SCR (selective catalyst reduction). The presentation will demonstrate how all of these systems work together which enables the engines to run at peak efficiency, and the emissions to be near zero. There are some problems with the system, especially for consumers who drive little distances at low speeds, the DPF filter can become clogged. Some misconceptions will be clarified/corrected about DEF and some of the negativity about it, for example, a misconception is that DEF will decrease fuel mileage. In reality, one gallon of DEF equate to saving 3-5 gallons of diesel fuel. Questions that still need more research is, will EGR (exhaust gas recirculation) be phased out, and will we see DEF being used on regular gasoline vehicles?
**Asguard**

Mario Balanzategui, Scott Halbert, Benjamin Garcia, Greg Roach (Mentor), Robert Miller

Several customers were interviewed about their bike lock’s components, weight, failure, cost and so forth. Over time, it was presented that the customer’s top priorities for purchasing a bike lock were the weight of the bike lock and its strength, how much would the customer be willing to pay in U.S dollars and securing vital components of the bicycle. Such customer needs brings a goal for a weight of at least 10% of the bike (approximately 3-4 lbs.) and locking the vital components of the bicycle such as: front tire, back tire, frame and seat. The material of the bike will be made of stainless steel and coated with rubber to prevent corrosion. All these components will be added on the product and the price will be at around $40 unless otherwise noted on the process of the materials and design criteria. The product will benefit those who can’t afford a bike lock with the same components for a price of $100.

**Effects of Wastewater Treatment and Disposal on the Dissolved Oxygen Level of Natural Waterways**

David Wright, Jim Lawrence (Mentor)

Dissolved oxygen (DO) levels were recorded, using a simple dissolved oxygen meter, at several points along a 21.5 mile stretch of the Henry’s Fork River. These points started at the wastewater treatment plant just outside of Ashton, Idaho and ended at Beaver Dick Park, west of Rexburg, Idaho. Initial values were taken immediately upstream and downstream of the treatment plant’s discharge into the river, as well as within the discharge itself. These values were taken to be 7.2mg/L, 6.6mg/L, and 5.9mg/L respectively. Three readings taken within 21.5 miles downstream of the plant returned values ranging from 7.6 mg/L to 8.9 mg/L. Analysis showed that the DO levels started high upstream of the plant and decreased after mixing with wastewater effluent containing a much lower DO level. The rapid return to higher DO levels seen in downstream readings show that the wastewater treatment plant is effective at containing DO level drops to a small area in close proximity to the plant’s discharge. Comparison of the lowest measured values to known safe values showed that the plant is effective at maintaining DO levels within ranges that are safe for fish and other forms of aquatic life.
Flash Flood Aftermath: A proposed solution to household flooding in Hidden Valley Neighborhood

Kelsey Stuhlbrager, David Wright, Jacob Grandy, Preston Merrell, Telisha Fivas, Jim Lawrence (Mentor)

On July 15, 2014, many residents of Rexburg were affected by a devastating flash flood. The Hidden Valley neighborhood, just south of the old Madison High School, had substantial flooding in many of the houses. The City of Rexburg proposed a project that would allow senior-level Civil Engineering majors to design a solution that would protect the residents from a 100-year flooding event. By applying principals of hydrology and hydraulics, along with the help of AutoCAD Civil 3D, the amount of possible water flow from a 100-year event in the area was determined. Knowing the concentrated water flow that the area could be subjected to at a given time, a multi-part solution was proposed and designed. The first part was to extend the present canal behind the houses on South Hidden Valley Road. The second part of the solution was to build two check dams south of the development. The check dams serve as a way to slow down the flow of the water along with filtering debris. With the extended canal and the check dams, the area would be protected against future events similar to the most recent flood; however, the valleys contributing area is too large to simply rely on check dams. The third part of the solution is to build a small detention basin that could hold back excess water in event of a severe storm event. The detention basin would allow for a controlled flow to enter into the canal below. Along with designing the check dams and detention basin, an access road along the side of the valley was designed so that any debris buildup could be cleaned and removed. With all three parts of the proposed solution, Hidden Valley Neighborhood, especially the houses on the east side of S. Hidden Valley Road, will experience a significant drop in household flooding during storm events.

GoTac Flash Bang Pole

Brady Thompson, Colter Angell, Greg Roach (Mentor), Brent Wheeler

The mission of GoTac LLC is to produce tactical equipment for law enforcement to provide a safer environment for officers entering a hostile situation. The current project that is being produced is the Flash Bang Pole. This gives an officer more control when deploying a flash bang grenade during a tactical insertion. This will reduce the risk of injury to both the officer and civilians that may be present. The product has been developed using the input from several SWAT teams around the Southeast Idaho region. Individual interviews, small focus groups, and physical observations of tactical teams were used to gather raw data, culminating in two years’ worth of information. Twenty-five officers, plus two members from the National Tactical Officers association, were interviewed as well.

Mobile Life

Paul Mickelson, Jacob Simmons, Sabrina Spaulding, Ben Browning, Blake Pence, Greg Roach (Mentor)

As part of the curriculum here at BYU-Idaho, Education students are required to spend 4 hours each doing their daily tasks while being in wheelchairs in order to understand the social and physical challenges of being disabled. The students are given no instruction on how to use the chairs but are expected to perform a set of specific tasks during their time periods. This has resulted in a number of broken wheelchairs. A team of mechanical engineering students, known as Mobile Life, was formed to develop a wheelchair that is more durable and cost effective than the current wheelchairs being used.
**Sub-zero Engine Hero**

Chris McCleve, Steven Mortensen, Garrett Lamb, Greg Roach (Mentor), Gabe Gil, Spencer Bendixen

The Sub-zero Engine Hero is an engine heater that improves on modern block heaters. The heater is designed to be a portable block heater that can be used where AC power is unavailable. This will help automobile drivers who live in cold climates to not damage their engine due to cold start. It will improve emissions on cold start and will also improve on driver comfort by warming the cabin of the vehicle more quickly.

**The I-Walk**

Chad Merrell, Jason Woodhouse, Leland Thompson, Jim Lawrence (Mentor), Kent Carson

Do to the increasing number of students and the fact that BYU-Idaho is a walking campus; it can be seen that there is a need to increase safety and efficiency for both the students walking to school and those driving around campus. An increase of pedestrian foot traffic which has caused increase of backed up traffic at the intersection of W 4TH S and S 1ST W leading onto the campus on W Viking St is also occurring. Several traffic and foot counts were taken during peak hours of the day to show the need to improve safety in this area. In a normal day, during peak hours, (i.e. between classes and devotional), it was shown that an average total of 1662 students passed through that intersection in one hour. During that same hour, approximately 220 vehicles passed through that same intersection on average. With these counts and the immense volume of people, the “I-Walk” is proposed to help prevent pedestrian injuries and backed up traffic on campus. The I-Walk is an elevated pedestrian bridge that will go over the problem intersection. This proposal will completely eliminate foot traffic through the intersection which, in return, will eliminate safety concerns and traffic build up. *While listing Authors and Mentors, the closest department to choose from was Mechanical Engineering. This project however, is from the Civil Engineering department with all Civil Engineering majors.*

**Trench Buddy**

Nathan Johnson, Devaun Crane, Greg Roach (Mentor), Greg Roach (Mentor), Jonathon DeKay, Jayjohn Johnson, Kyle Avery

We are developing a device that is able to lay down and fasten a material in irrigation ditches. This helps to prevent water loss, erosion, and weed growth in the ditches to improve overall irrigation efficiency. The name of this project is the Trench Buddy. This came about when a local farmer came to one of the engineering students and requested a device to help the irrigation system on his farm. The Trench Buddy will be towed behind a tractor and made to attach to a three-point hitch. It will be able to be used on either side of an irrigation ditch. The material that will be applied will be a waterproof, UV resistant, durable material. This project employed the skills of customer needs analysis, concept generation, manufacturing skills and other engineering techniques. Our group spent much of the time developing the final concept and were able to decide on the final design which would run along one side of the ditch.
Backwash
Andrew Woestman, Colt Warren, Dustin Parks, Laurie Keller, Jacob Bishop (Mentor)

The project device is a medical backboard washer. The primary design of a backboard washer is to create a product that will rinse and wash multiple backboards, in a desirable amount of time, leaving them clean and ready to use. A sponsor has contacted BYU-I with certain specifications that have to be met. These specifications include separate wash and rinse cycles, use as little floor space as possible, be able to wash 8-10 boards per load, have some kind of water heater, re-use chemical, cheap and easy to manufacture. Another design specification is that the wash cycle has to be at least 8 minutes and the rinse needs to be long enough to remove all chemical.

DirtBox
Hayden Christensen, Jacob Bishop (Mentor), Alex Zaleski, Jonathon Stiborek, Gavin Simpson, Porter Burtenshaw

For an assignment in ME380, we would like to present our Air-Filter Cleaner Project in the Research & Creative Works Conference. The purpose of this project is to understand the development process of building a product and to adequately satisfy the driving customer requirements. The goal of this project is to accommodate for any size of air filter to be safely and quickly cleaned with our product. This complicates the design process to be specific for commercial grade air filters but universal for all sizes and dimensions. Furthermore, allowing for the design of the instruments involved in the cleaning process to not damage the filters in any sort of way. To clean an air filter, it normally takes about 10 minutes. Our product is aiming for a process of cleaning the air filter in less than 2 minutes and from no external help from the operator. For our presentation at the Research and Creative Works Conference we would like to show the process in which the design took through a poster, prototypes, and with a final working product. The poster will go over in more detail about the design process and the specific obstacles that needed to be addressed in the design of the Air Filter Cleaner. We anticipate to have at least two design prototypes with the analysis with each one. In our presentation, we would like to describe the design evaluations from each prototype and the effects of each evaluation made to the final design of the Air Filter Cleaner.

Junior Jeep- The off-road stroller
Josh Ellsworth, Jacob Tonks, Taylor Armstrong, Jacob Bishop (Mentor), Kurt Hartley

We are improving the design of the modern stroller. While there are many capable and innovative stroller designs currently, to our knowledge there aren’t any that are proficient in conquering the outdoors. We’re developing a stroller that will be capable of handling hiking type terrain with ease, while providing comfort and safety. The motivation for this project in part came from a trip to Yellowstone with an umbrella stroller. This stroller was not proficient in handling the different trails. We want families to be able to still explore the outdoors even when they have young children.
Nomad SurfBoard

Preston Dye, Grant Horrocks, Jake Goodman, Jacob Bishop (Mentor), Daniel Walker

Many surfers travel the world looking for the perfect waves. Often they must spend hundreds of dollars to bring their surf boards with them to surf these exotic locations. Other times, some want the board to be with them wherever they go, so at a moment’s notice they can drop what they’re doing to catch the waves. They want to put the board in a secure location, but many don’t have cars large enough to fit their boards. In order to respond to these issues, a product was designed that can make any board collapsible. Through a market research survey, consumer needs were identified in order to create product specifications for the system. Concept generation was performed in order to ensure that the whole design space was evaluated, resulting in the best system to fulfill all of the customer needs. Proto-typing was performed in order to continue to develop the idea. Finally the system was built and implemented, making a collapsible surfboard both feasible and safe.

Paint Mixer

Noelle Blaylock, Kenny Hrabar, Dallin Hildreth, Jacob Bishop (Mentor), Stephen Moore

The purpose of this project is to create a device that can mix a variety of paints and lacquers and then assist in accurately pouring the paint into a variety of smaller containers. The woodshop at Brigham Young University Idaho uses many types of paints, stains and lacquers to finish projects. This, however, can be a difficult task because of the size of the cans of paint and level of separation in the paint. Some cans of paint weigh 40-50 pounds, and sometimes users can only mix the paint by lifting the heavy can and shaking it with brute strength. This procedure does not always adequately mix the paint, and when the bottom of the can is reached, a heavy sediment is left that cannot be used. With the new ‘paint shaker’ mixing paints and lacquers will require less force and effort on the part of the user, and allow for more consistent and thorough completion of the mixing process. The project will also allow the pouring of paint to be more accurate and safe, as the paint will be supported during the pouring process, allowing the user to have more control with fewer messes and less spillage.

SafeJack: The Combined Hydraulic Jack and Jack Stand.

Sam Vanhorn, Alan Dittrick, Davin Phillips, Jason Prescott, Jacob Bishop (Mentor)

SafeJack is a company to make the everyday garage mechanics’ life easier. This will be accomplished by combining a conventional bottle jack with a jack stand. Not only will the user need 1 jack to safely raise his vehicle, it was also be more affordable. The SafeJack will eliminate the need to raise the vehicle with a jack, and then switch to a jackstand. The SafeJack will safely lock in to place once the vehicle has been raised to the desired level, allowing the vehicle to be stable at the raised height. The SafeJack will use a bottle jack mounted underneath a jackstand. This design will maximize the space under the vehicle for the mechanic, allowing for a large range of mobility. To ensure safe operation, a double sheer pin will be used in case the hydraulic jack leaks. The SafeJack is an entirely new approach to the jacking market. The current market design doesn’t function as efficiently or as safe as it could. The SafeJack will compete and exceed the current market product by safety and price.
Wada Farms Sizer/Sorter Optimization

Andrew Ward, Zach Jensen, Nathan Helm, Jacob Bishop (Mentor), Bryan Shurtz, Ben Allen

In the field of food processing mechanical apparatus's are used to measure the size of different produce and to then sort it accordingly for further packaging. Wada Farms which is a large farming company located in south east Idaho, utilizes a Hagan "Sizer / Sorter" that does just that. Wada Farms grows approximately 30,000 acres of potatoes annually, all of which are sorted and packaged in the processing plant located in Pingry Idaho. The scope of this project was to optimize the existing Hagan system at Wada Farms which specifically singulates, sizes, and sorts an array of potatoes according to their respective weights. In order to accomplish this, the team evaluated the current system, identified key sub-systems, and found the sub-system with the greatest potential for improvement. The team then designed a mechanical apparatus to improve the efficiency of that sub-system. Several areas of potential improvement were found and the ones which were not addressed by a design change were documented and provided as recommendations to Wada Farms.

Water Sample Solutions

Nephi Stanford, Colin Stong, Brandon Ackerman, Jacob Bishop (Mentor), John Tobiasson

Groundwater monitoring wells are used to test the quality of underground water tables and to monitor the containment of any water contamination that might have occurred. These monitoring wells can be found in places such as oil field production sites, city landfills, gas stations, and mining operations. In order to collect a sample a cylindrical collecting tube, known as a bailer, is lowered into the well, filled with water, and then pulled back out with water captured for testing. This process can be repeated many times at a given site and cross-contamination from one well to another, or from testing components coming in contact with the ground, is important to avoid. For this reason the bailer, and the string that is used to lower the bailer, can only be used once and careful handling of the bailer is required. The process of sampling with a bailer is currently done by hand which provides an opportunity for automation that could decrease sample time, sample effort, and assist in contamination prevention. Our team has taken on the challenge of automating the water bailing process through the designing and building of a portable water bailer pulling device. Customers and professionals involved in environmental testing were the first contact for understanding the challenge at hand. Their insight and statements were used to build a pool of customer needs to be addressed. These customer needs were then transferred by the team into a list of measurable metrics. Each team member will work with patents, professionals, and personal insight to generate different product concepts in order to create a product that fits those metrics. Out of the various concepts one will be chosen, developed, and tested. The final product will be presented at the Research and Creative Works Conference.
Clean Water Delivery Systems Development for H2O for Humanity

Austin Doutre, Andy Vidmar, David Sanborn, Rob Doty, Alan Dutson (Mentor)

H2O for Humanity began in January of 2010 when the co-founders, Kevin Cluff and Eric Cliff, decided to apply their engineering and business expertise to help the under-served communities of India. Using the technology of reverse osmosis, they implemented several water filtration stations in communities across India. Since H2O for Humanity began, their cause has allowed for over 20,000 families to receive purified drinking water supplied from over 70 different water filtration stations. The current means for a family to obtain clean water is by foot or to have it delivered by truck for a fee that is four times the cost of water. The demand for clean water is high and H2O for Humanity came to us with the need to develop an efficient water delivery system at an affordable cost to each family. Our team began with the idea of a simple piping system and has since constructed a working prototype of the system, with special consideration towards water safety, customer variability, and efficiency. We have verified our prototype by running several experiments and using computer software models to explore the extent of our system. With the implementation of such a system, the quality of life among the people of India will be positively affected for generations to come and the footprint of H2O will be able to grow and reach a larger portion of the Indian population.

Elastic Processing Device

Erica Crampton, Eli Edwards, Camilyn Crane, Shaley Beaty, Alan Dutson (Mentor)

Dawn Enterprises is a non-profit sewing company that provides work for many disabled people. Many of their products require elastic to be sewn into them. Their current process for cutting elastic is entirely done by one person by hand, therefore becoming a bottleneck process at times. The goal of this project is to improve the production speed of the elastics to benefit the entire manufacturing operation. The customer needs obtained included increased production speed, safety, and simple design. Concepts were then generated by the design team before selecting a concept to develop into a device for improving the elastic cutting process. The solution to this design problem still requires an operator which coincides with the mission of Dawn Enterprises of providing work for disabled people. The design team developed an innovative clamp for handling the elastic. The team also focused on incorporating safety features into the process and device to allow more people to do this operation.

Ground Defroster

Tyler Nelson, Alan Dutson (Mentor)

In the cold winters of Idaho, cemetery sextons deal with the hardships of digging in frozen ground to bury the deceased. In designing a method to thaw the ground, team Grave Diggers has conducted research on the impact of the ground thawing project will have on society. The economic impact of this product could be nationwide in the colder areas of the country. On a small scale, this product will save the Rigby Pioneer Cemetery time and money. Although there will be an initial cost, the city will save money on operation costs because the new model will burn propane more efficiently than current units. The product will also be more durable and last longer than the current model. In areas where ground frost can be deep, sextons that use this product, instead of using machinery for digging, will reduce the wear on the machinery. We believe that this unit will help those who serve families during hard times, be more efficient and productive with their time.
Natures Sunshine Bottle Flipper

Harold Bishop, Oscar Ibanez, Alan Dutson (Mentor), Keith Cockrell, Taylor Jenks

This project entails designing a prototype piece of machinery for Natures Sunshine Products that will invert and air rinse containers to ensure that no contaminants are in the bottle prior to filling it with product. The machine is required to adjust and accommodate various bottle sizes. Current solutions to this problem exist, but they are expensive and are not adjustable. The team worked around constraints which entailed space, time, FDA regulations, budget constraints, and safety. The team has worked closely with the customer to ensure that all project requirements have been met.

Pill Poppers Prescription Bottle

Taylor Larsen, Weston Dunn, Hannah Wheeler, Andrew Bayba, Alan Dutson (Mentor)

Berry Plastics, the company sponsoring this project, is one of the leading manufacturers of plastic containers. One of their highest selling products is the prescription bottle. Increased market competition amongst other companies has driven Berry Plastics to redesign the common prescription bottle to increase customer appeal. The current design produced by the company is sold throughout the country in common pharmacies such as Walgreens, CVS, and Wal-Mart. Although Berry Plastics manufactures this product, they do not hold the patent for this design. Accordingly, the company pays an annual royalty in excess of $800,000 per year to use the patented design. The BYU-Idaho Pill Poppers team is tasked with the responsibility to redesign the look, feel, and function of the prescription bottle. The product must be manufactured using inexpensive injection molding, and must be child safe, and senior friendly. Several concepts will be generated. The concept that best meets the company’s expectations could be the design that is sold in pharmacies throughout the nation.
**A Study on Photo Elasticity**

Cameron Smallwood, David Johnson (Mentor)

Photo elasticity refers to the phenomenon of observing stress concentrations visually using polarized lenses to see how the light refracts through a transparent part. The purpose of this study is to find out whether a direct correlation can be drawn between the calculated stress in a part and how many refracted rays can be observed by photo elasticity. Three approaches are being used to find this correlation: numerical analysis through the use of ANSYS software, analytical analysis, and experimental analysis by visually inspecting a part made of Plexiglas and photographing the results. The number of refracted rays will be counted and a correlation will be attempted to be drawn. The desired conclusion is to find whether the number of refracted rays in a part can be related to a value of stress directly. Cameron Smallwood will be presenting this research, being mentored by Brother David Johnson of the Mechanical Engineering Department. This will be a poster presentation. No special needs are required for the presentation of this research.

**Carburetion: The horse and buggy of fuel delivery**

James Van Buskirk, Troy Spratling (Mentor)

Fuel is one of three major requirements needed to make an engine combust. The fuel delivery system started when the first engine was created using a carburetor. Now we see cars with different forms of fuel injection systems which are better and require less attention. The ever changing environments where motors were used required advancement to make them run smoothly wherever the operator would take them. There were many short comings within older fuel systems, quickly making them obsolete as computers were introduced into cars. The mystery of how the vehicles learn from their environment is unraveled by looking at fuel delivery management systems. To reach the perfect combustion in a gasoline engine it requires almost fifteen parts air to one part fuel which the car calculates for the driver. There are many aspects to a car that makes it successfully move down the road but without fuel reaching the engine at the right moment and in the correct amount the engine would quit. It was identified by thorough research and hands on learning that in early vehicles fuel calculation was a set matter calculated and built for one elevation for optimum combustion. The newer vehicles with computers have been using sensors and injectors which open and close upon computer command making fuel delivery variable so vehicles will be running at their best wherever it would be taken.
**CNC Router/ Plasma cutter**

Troy Denning, Adam Dean (Mentor)

The purpose of the project was to create a CNC (computer numerical control) machine. The machine uses computer controlled motors, called stepper motors, to accurately position the cutter. These types of machines increase accuracy and production in various applications of the manufacturing industry. Some of the benefits included in this project include: learning how the computer software communicates to the stepper motors to provide more accurate positioning results, constructing the machine according to industry standards, learning how to use engineering design software to model parts, create tool paths for the machine to cut, and learn how to program g-code into the CNC machine. I designed the frame and mechanical components in engineering design software called Solidworks. I then called different companies to order the metal, fasteners and electronics to build the machine from the ground up. In my design the CNC machine is able to convert from a router cutting head to a plasma cutting head. It also has the capability to cut 4x8 sheets of wood and metal, and to cut round stock, including wood with the router, and pipe with the plasma cutter. Most CNC machines on the market today are only able to be a router, or just a plasma cutter; not both at the same time. The machine is currently complete, except for the round stock and pipe cutting attachment.

**Electronic Throttle Control**

Jesse Salmon, Troy Spratling (Mentor)

Electronic throttle control is replacing the mechanical system that was placed on vehicles to control the acceleration of the vehicle. I will be answering the question of why we have switched from mechanical to electronic. In my presentation and in my research I have looked at the different benefits to switching to the electronic system and why it is a more enhanced way of controlling the vehicle vs. the old mechanical type system. These new systems are safer, can last longer, and have many other benefits that people have yet to understand. I will also provide and display any risks that are associated with electronic throttle control. As I have researched electronic throttle control and what it can provide to a vehicle, we can see that it is a good improvement to how the vehicle is run and to the advancements in safety.

**Fighting the Smog: Exhaust Gas Recirculation**

Brock Hartshorn, Troy Spratling (Mentor)

In today’s world it is not uncommon to sight a dark cloud over many of the most populated cities. This “cloud”, has come to be known as smog. This occurs because of a chemical reaction between the rays of sunlight and the chemical nitrous oxide, or NOx. The main cause of this smog is, not surprisingly, all of our many automobiles on the road today that use combustion engines. With the amount of automobiles on the road constantly increasing, what can we hope for in terms of smog control? Well this question was already considered many years ago, so since about the 1970’s many automakers have been equipping their vehicles with an exhaust gas recirculation system. This system’s main purpose is to lower the amount of NOx put out by today’s vehicles. Completely eliminating the production of NOx is nearly impossible for a combustion engine, so instead the aim is to eliminate the circumstances in which the most NOx is produced. At 2500 degrees F and above NOx is formed at a very fast rate, so EGR (exhaust gas recirculation) systems take the burnt exhaust gas and put it back into the intake, where it is sucked into each cylinder. The general idea is that this gas cannot be burned again, so really it is just taking up the space that combustible gas would so that the temperature stays as low as possible.
Analyzing semi-trailer side skirts through Computational Fluid Dynamic (CFD)

Eric Young, Russell Daines (Mentor)

Whether they are called side skirts, air dams, freight wings, air fairings, side fairings or truck fairings, we are referring to the sheet metal installations between the set of tires on a tractor trailer for a semi. These reduce wind resistance (or air drag) and increase fuel efficiency. It has been reported by companies that sell trailer side skirts that 4.00% to 15.00% fuel savings for the average trucker. That could pay off the side skirts in a year due to the savings accrued. The purpose of my project is to model these side skirts and understand how they reduce wind resistance and increase fuel efficiency. This will be done through the use of Computational Fluid Dynamics (CFD) by building a 3-D model of a semi and simulate a semi traveling with a side skirt. The CFD program used will be OpenFOAM, a free open source software package. That model will be analyzed in order to be able to improve upon the current design of side skirts for even more savings for freight companies and truckers.

BYU-Idaho Rocket Dynamics

James Fish, Jayme Johnson, Tom Cooley, Scott Halbert, Ryan Bell, Joseph Olivero, Russell Daines (Mentor)

Founded in 2011, BYU-Idaho Rocket Dynamics is an interdisciplinary organization dedicated to the design, building, and testing of sounding rockets for scientific research. The mission of this team is to develop engineering and scientific thinking in its members, to forward aerospace research at BYU-Idaho, and connect members with professionals in the aerospace industry. The goals for the team this semester were to make improvements on the design of the rocket from competition, as well as to perform preliminary payload testing. Specific improvements were made to reduce drag and weight for the structure of the rocket, upgrade the stability of the avionics package which students had designed, update the real-time tracking system to include telemetry transmission, and optimization of motor performance. New additions to the design include the addition of mission-specific payloads to collect scientific data during each launch. Research and development played a significant role within the team this semester, with many students choosing to do semester projects related to the rocket. The analysis of streamlining the body of the rocket, the modeling of the flow of hot expanding gases within the burning motor, and the development of a high-fidelity trajectory model have all been research opportunities which students have participated in this semester. BYU-Idaho Rocket Dynamics is establishing itself as a premier research and development organization here on campus. It will continue to set itself apart through the fulfilling of its goals of excellence in science and engineering, and through providing the best learning environment for students planning on entering the aerospace industry.
BYU-Idaho Rocket Fuel Strand Burner

Michael Sanora, Alan Dutson (Mentor)

The BYU-I Rocket Team is looking to experiment with different fuels in their rocket motor designs. The rate of fuel burning is a critical design factor and must be accounted for before a proper design can be completed. Because different fuels have different burning characteristics, the team is in need of a testing method that is both cost and time efficient. A common way to test rocket fuel and find the burning properties is by the use of an apparatus called a strand burner. Strand burners are pressure vessels that can house dry fuel samples while measuring the rate of fuel burning. Release valves are installed on the housing and are set to a specific pressure. During operation, excess gas is released until the pressure drops to the designated level. The strand burner must be able to safely handle pressures between 300 and 2000 psi (pounds per square inch) without rupturing. The fuel also burns at temperatures around 2000 degrees Celsius (3600 degrees Fahrenheit). The vessel must be constructed with materials that can handle this excess heat without being damaged.

A prototype has been constructed in the past with limited success. The prototype only functions at one pressure, is extremely time consuming to set up, and delivers questionable results. It serves as a starting point for a new strand burner design but is not adequate for the needs of the rocket team. A new design will need to handle various pressures and reduce the amount required setup time. It also needs to be constructed so that it is easy and safe to use. Only one build will be attempted due to the cost of materials and extremely limited funding. Proper analyses must be performed to ensure its safety.

The Effectiveness of sound barriers on the mitigation of highway noise

Jacob Grandy, Nathan Harris (Mentor)

Silence is golden, but for some areas of the world it comes with a price. For residences and industries along major traffic arteries noise can be a serious nuisance. Various noise mitigation technologies, such as the erection of sound barriers, have been included in metropolitan areas to minimize the impact of noise. A study was conducted to evaluate the effectiveness of concrete wall sound barriers on the transmission of vehicular traffic noise adjacent to the noise source and at various distances away from the source. Two locations along Interstate 15 in the Salt Lake City area were studied; one with a sound wall and the second without. At both locations traffic noise readings were measured with a decibel meter at various distances from the road. The experimental data from both sites was compared to evaluate the effectiveness of the noise barrier. The experimental data and resulting conclusions will be presented at the conference.
Wing Tip Vortex

Josiah Waite, Russell Daines (Mentor)

A wing tip vortex refers to the swirling motion of air trailing an airplane wing in flight. These vortices created by the two wings of an airplane present a hazard to any aircraft that might encounter such swirling fluid. It is especially dangerous for aircraft that are close to the ground, such as when one airplane follows another during an approach to landing at an airport. The swirling air from the first airplane could cause the second to suddenly jolt uncontrollably toward the ground, possibly causing the airplane to crash. Understanding the behavior of such vortices is important in many ways, especially in maintaining the safety of aircraft passengers. In this project, the wing tip vortex over a BAC (Boeing Aerospace Company) 442 wing tip airfoil was modeled using computational fluid dynamic software. This model provides information regarding the direction and magnitude of the air flow and shows the moving vortex of air trailing the wing tip.
Digital Temperature Sensor

Colby Robbins, Scott Wood, Karl Stange, Helmut Neher, Ron Jones (Mentor)

The Digital Temperature Sensor is designed to monitor car audio equipment and drive fans to control cooling. This module provides a simple yet elegant temperature control solution. This research is significant because there is currently no product like this on the market. We are using a PIC microcontroller as the heart of our system in order to create a cost effective yet powerful product. Our research consists of understanding I2C and SPI protocol, signal interpretation, PIC microcontrollers, C programming, switch mode power supplies and fan speed control methods. Last semester we presented this product using an MSP430 microcontroller. At that time the project was less ambitious. We are now in a redesign stage, preparing to present a re-purposed system using the PIC processor and an infrared sensor. This has required us to re-purpose our code to work with the new system, learn to minimize signal degradation over a long distance, and design circuitry to protect against inverse voltage. Some of the design requirements are to use an LCD screen to display the sensor information in an easy and intuitive way, have the module able to drive fans with user set thresholds, save user preferences with an intuitive menu system, and have the module in an easy to handle and small footprint design.

Modern Recommender Systems: Analysis and Application

Cassie Black, David Stowell (Mentor)

Recommender systems are used in a variety of ways to help businesses estimate and know what their customers want or need. Well-known companies such as Netflix, Amazon, Google, Yahoo and others use recommender systems to assist customers in purchasing choices. Users are given suggestions based on their ratings of certain items. In this project we analyze one such method called the Collaborative-filtering approach. This method recommends items based on recommendations given by users with similar preferences. We discuss different methods for measuring similarities between users and how these methods lead to different results. Results are presented using a test database provided by Yahoo! Research.
Results for Orbital Consequences from the Giant Impact Hypothesis

Anthony Hales, Brian Tonks (Mentor)

Much has been studied upon the theory that Moon has come into being from a giant impact occurring near the beginning of Earth’s own planetary formation. A question has been posed that asks whether or not such a large object should have knocked the Earth out of its current orbit around the Sun. The research that I am providing, with assistance and mentoring from Dr. Brian Tonks in the Physics Department, is to determine how likely such a scenario could happen. I have acquired a selected amount of scientific journals that address the specifications of the Giant Impact Hypothesis and my research is purely an interactive program simulation. I am currently using the numerical computing program named MATLAB. I will be using the Euler-Cromer Method to program an orbital and impact simulation of the impact object and the Earth. This method will be run multiple times through the Monte Carlo Method to determine which initial conditions will produce our current orbit in the solar system. I will have this program allow a user-interface in which one may determine the size of the impacting object and other initial conditions that they can determine to use or see while the program runs. I will collect and display multiple graphs of data to show probability of each scenario and how close the subsequent orbits match the Milankovitch cycles that our Earth experiences during a 1000 year period. In current development of this project there will also be an analysis of any bias that has been introduced into the setup of the research. I hypothesize that the question posed above will prove to be negative and that the real question will be the results of the subsequent orbit from the impact and how closely it matches our own. I also would state that any perceived bias into the calculations will be nullified by the amount of sampled measurements that will be given by the current programing code. I would like to present these findings via the poster session and allow any viewers to interact with my computational program to view how such impacts affect a planet’s orbit around the Sun.

SAE Aero Design Research & Analysis

Brett Wilson, David Johnson (Mentor)

Research, performed by the SAE Aero Design Team, focuses on three main areas: Electronic Performance, Structural Analysis, and Airfoil Optimization. The purpose of this research is to design and build a remote control airplane that is able to lift the greatest payload. The aircraft design must meet specific design specifications set by the Society of Automotive Engineers (SAE). The aircraft will be competing in the SAE Aero Design West competition in April 2015 against 74 other participating teams from both domestic and international universities. At this conference, the Electronics Team will be presenting its analysis of the electrical system and how it has managed to optimize thrust with only 1 kilowatt of power available. The Structural Analysis Team will show that the design can withstand the forces that will be experienced during landings and sharp turns; the aircraft will need to be designed to withstand a hard landing with up to a 30 pound payload. Lastly, the Airfoil Analysis Team will present its research on maximizing lift while maintaining an aircraft with stable flight characteristics.
Acoustic Shock Wave Propagation
Sarah Young, Todd Lines (Mentor)

The explosion of gas-filled balloons provides an engaging demonstration for a chemistry or physics class. In addition, exploding balloons on a large scale provide a stable source of acoustic shock waves for study. BYU researchers partnering with a BYU intern used what is known as “weak-shock theory” to mathematically predict the sound pressure level (measured in decibels). This model was then used to predict the sound pressure level from an initially 200+ decibel shock wave at distances ranging from 1 foot to 1 mile. Using data obtained at the Bonneville Salt Flats in July of 2014, real sound pressure level data was compared to the weak-shock propagation curve and confirmed that large shock waves decay over a distance in the nonlinear fashion predicted by weak-shock theory. This extends the validity of weak-shock theory beyond low decibel noises and may provide a predictive tool for distance and sound pressure level measurements.

Five-dimensional representation of grain boundary energy in UO2
Timothy Harbison, Michael Tonks, Yongfeng Zhang, Evan Hansen (Mentor)

Understanding the microstructural evolution at the meso and atomic scales is critical for predictive modeling of fuel performance at the engineering scale. Currently, Idaho National Laboratory is developing a multiscale modeling toolkit for nuclear fuels where the meso-scale microstructure evolution is handled by the phase field code MARMOT with inputs from the atomic scale. One critical issue in modeling fuel performance is the evolving grain size which affects thermal conductivity, fission gas release, and mechanical stability of the fuel. The evolution in grain size depends on the grain boundary energies and mobilities; both can be highly anisotropic. Adopting a recently published model for fcc metals, in this work we aim to describe the grain boundary energies in UO2 in a five-dimensional space in accordance with the five degrees of freedom. The continuum scale model is based on molecular dynamics calculations for grain boundary energies for parameter fitting and also verification, and it is capable of estimating the energy for any arbitrary grain boundary. Such a model is being implemented into MARMOT to allow for more accurate simulations of grain boundary migration and thus grain size evolution.

Life detection using a microwave back scatter
Ross Blaszczyk, Todd Lines (Mentor)

The purpose of this work was two fold, first to see if the x-band microwave system that BYU-Idaho currently owns is sensitive enough to detect the movement and breathing rate of a living being. Second was to see if a prolate spheroid model could be used to accurately predict the change in intensity from the change of shape breathing would cause. This was accomplished through using an x-band microwave system and a living rat and various proxy objects for its size and shape. The microwave beam used bounced off the rat and the signal coming off the the side that the emitter was located on was collected. Then put on a time graph which was compared to video that was taken at the time of the experiment to verify findings. The signal was also put through a power spectrum paradigm to look for the frequency of breathing. Both these analysis task was completed using Matlab programs written by the student and Primary researcher. Movement was found to be quiet easy to detect once noise was eliminated. The breathing rate signal is most likely there but requires further work to refine the beam collection method.
Numerical Flight Simulation for High Powered Rocketry

Jacob Hales, Jacob Hales, Evan Hansen (Mentor), Evan Hansen (Mentor)

High-power model rocket trajectories exhibit aerodynamics that are sensitive to the atmospheric conditions and the vehicle shape, velocity, and angle of attack. A numerical strategy for predicting the flight path is presented based on the Barrowman equations to estimate the normal force and the United States Air Force Stability and Control Datcom method for axial drag. The simulator includes six degrees of freedom and accepts detailed input including the rocket geometry and thrust curves from static motor tests. To estimate measurement error, a gaussian-weighted Monte Carlo framework is included in the simulator. Specifically, this allows for estimates in the error for apogee (maximum altitude) and landing position. Also, each contribution of error can be isolated to aid model rocket designers in improving the correlation between real flights and the simulation results. Program output is compared with OpenRocket and Cambridge Rocketry Simulator for validation. The BYU-I simulator predicts apogee and landing positions consistent with these other simulators. Further work is recommended in comparing the program to GPS data from real launches.