

Investigating Family Changes Thru the Eyes of Statisticians

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Overview

Overall, my goal for the unit plays off two important mindsets. Primarily, I want my unit to be a helpful tool for teachers beginning to teach AP Statistics. I hope to lessen the burden of teaching some of the highly detailed and rigorous material found on the exam. One of the most complex areas in the course is the topic of inference. Before I started teaching I received numerous publications and resources on this specific statistical area. I found in the preface of every one of these provided resources the authors stating to expect inference to not only be challenging for the students but to be a large hurdle that many teachers struggle getting over. So I plan to provide lessons that will hopefully offer methods to make the job of teaching inference go smoothly. Secondly, I want to utilize information in my unit that will motivate students to learn statistics. Therefore by selecting topics relevant to upperclassmen, then the area of inference will ideally be easier for students to learn than if the instructor solely relies on the textbook to provide examples relating to this very important statistical tool. Ultimately, I hope that making the course fun for students will in turn entice more students' interest and encourage enrollment in the course. Furthermore, it would be ideal to make the course appealing even to students who are in mainstream and do meet the prerequisites. Currently, I believe that too many students are feeling intimidating and overwhelmed by the course, which in turn is discouraging students from signing up for the class.

In addition to using the unit for statistic lessons, I believe the unit could be modified to fit other disciplines in the high school curriculum. Specially, the technology introduced in the unit would be a wonderful tool to use in a variety of classrooms. Also, the website where I found the trend analyzer software,

www.ted.com, there are many talks available online. The website operates under a Creative Commons license, in which the resources are freely available. The site offers to give companies/organizations a set of fifty DVDs for every ten dollars donated. The talks are comprised of ideas related to invention and innovation in regards to various fields such as medical, environmental, and historical. The content alone is powerful, but the presenters are phenomenal. The speakers are extremely captivating and passionate about their work. I feel that the talks can inspire students to be excited about learning and in turn illustrate scads of personal achievement and the effects that an individual work may have or will have on the future.

The unit will cover general aspects of the concept of family throughout centuries. The bulk of the unit, however, will focus on the nineteenth century and the variety of changes existing within the family. Mainly, students will investigate these changes statistically and make predictions for the future based on their findings. Part of my paper will concentrate on the research related to how the idea of family is drastically changing in society. I would also like my paper to cover the strategies/lessons that are going to facilitate students' statistical understanding. Many studies indicate that one of the best ways for promoting student learning is to give them opportunities to develop ownership in the process of education. Hence I would like to provide educators with lessons that encourage students to create their own areas of investigation. They will write papers, use software to analyze data, and communicate their findings and predictions for the outlook of tomorrow. I expect the unit to be covered within a two week span. However, I feel educators can shorten or lengthen this time span in order to meet time constraints placed on by their own district.

Rationale

The AP Statistics course is a recent addition to the long list of AP courses available to students to choose from to take during their high school academic career. Since the late 1990's, the course has undergone numerous changes. Primarily, the course and exam were transformed due to the opportunities opened up by graphing calculator technology. The Pittsburgh Public schools have changed the textbook for the course a few times since the course has been offered. This year was the first year implementing the text, Stats: Modeling the World by Bock, Velleman, and De Veaux. Additionally, this was my first year teaching at Taylor Allderdice High School and AP Statistics was a brand new territory for me. Allderdice High School has the reputation for being one of the best Pittsburgh Public High Schools and offers many courses in a variety of disciplines. Specially, AP Statistics is only offered at three other high schools within the entire Pittsburgh Public School District. Therefore, I was excited to be given the opportunity to teach at such an accredited institution. On the other

hand, I was told by veteran teachers that AP Statistics could be a burden to teach due to the relatively new material present in the context of this subject. Being a fairly new teacher, I was ready to take on any challenges that the course might present to me.

The course is centered on four main components: exploring data, planning a study, probability, and inference. The vision of the National Council of Teachers of Mathematics' (NCTM) in the Principles and Standards for School Mathematics is the "students should gain a deep understanding of the issues entailed in drawing conclusions in the light of variability" (Principles, 2000, 325). Two of the four main areas in the course are not essentially mathematical in nature. Therefore, students are forced to leave the comfort zone of number crunching and visit an area of mathematics that demands analytical thought. To my surprise and many of the students, writing plays an essential element in succeeding in the realm of statistics. The course is intended for mainstream, PSP, and CAS (Center for Advanced Studies) and encourages the use of hands-on activities to be performed individually or in small groups. The field of statistics offers students more than the skill of solving equations and memorizing calculations, but it emphasizes investigating relationships and communication of findings that may exist between events.

Taking into consideration the rigor and complexity of the course, AP Statistics for many students can be a very challenging and intimidating course. Even students that may have excelled at prior mathematics courses in their high school career discover that statistics requires a new type of thinking. In regards to the elements that make this course not resemble previous math courses, students possess negative views about the content and are reluctant to sign up to take the class. Currently I teach about thirty-five students (two periods) of the content, which is the greatest number of students in the district. However, I have heard from many of the students in the beginning of the year that over half of them were signed up to take Linear Algebra instead and ended up being placed in the course by counselors when the school did not approve Linear Algebra. My aim for the unit is to develop lessons that encourage students to gather data on relevant and prevalent issues that they encounter on a daily basis. I believe that students are naturally more motivated when dealing with statistical analysis of events that they can easily relate to in their everyday lives. Specially, the basis of the issues will concentrate on the changes undergone within families. Students will investigate the past and compare with the present. I am drawn to this type of informational gathering partly due to something I learned in one of my graduate education classes on how students process new information. Studies indicate that the best way to introduce new material is by similarities and differences. Therefore, I feel that this can be a very powerful tool for statistic teachers. I believe that new statistical procedures/concepts will have a greater chance of providing a lasting

impression on students if instructors draw a connection to linking using statistics to draw conclusions on past and present society.

I have only taught AP Statistics this year, but I already noticed that students get excited when completing statistical analysis on the average age of males and females getting married throughout a specific time span compared to some textbook example that may deal with the mean daily fees between two different fictional parking garages. Having taught various other high school math subjects to students, I have found Statistics to be the easiest class to be able to take new conceptual ideas and link them to daily life events. Especially with teenagers, teachers have a wide variety of options to choose from when deciding upon events that would appeal to them. Since this course is mostly taken by upperclassmen, attractive topics may be items relating to individual life changes such as marriage, choices made in college, having children, or sources of income. Upperclassmen are obviously at a time in their life where they have a lot of changes to endure in their future and investigating them statistically can not only be fun for them but the findings might help to aid their future life decisions.

This unit has been designed to be used with 11th and 12th grade students enrolled in AP Statistics. The course is created for any student in mainstream, PSP, or CAS. However, the majority of students taking the course are in the CAS program. These are students that have been identified as gifted at a fairly young age. The students are highly intelligent and extremely motivated. Even though ability and determination in these students is a lot higher compared to the average junior or senior in high school, the teacher cannot automatically think he/she has an easy job. I am a fairly young teacher and my perspectives on teaching have changed drastically after the various teaching experiences I have been given. Prior to actually teaching in the schools, I had thought the role of a teacher was to “feed” the students all the information they might need to know. However, my experience has taught me a quite different approach. Students can grasp concepts easier when they develop new information themselves and link this to what they may already know. Additionally, today’s society promotes a world in which we are used to immediate results and constant engagement. The students that I have the opportunity to work with in this course will be challenged because of the complexity of the material. So, my responsibility lies within the manner in which I can have all students mentally engaged consistently from day to day. This unit will address this concern by a variety of methods and will be placing emphasis on the utilization of current statistics.

Having students work on current statistics throughout the course is necessary in order to maintain engagement and in turn for them to learn the statistical concepts. Students can of course learn from problems provided in their school textbooks. However, as I have already learned the textbook can provide

some outlandish examples. Even though, students can learn the basic procedural steps involved in inference, they cannot gain insight in the real application of the skill they are acquiring. Real-life data can help students see what the tools they are learning can provide for them. Furthermore, current statistics encourages students to question drastic changes and to infer what may be some of the reasons for the change.

Statistics lends itself to an investigation in any field of interest. The seminar offered by Pittsburgh Technical Institute on Changing Family Structure within the Past Hundred Years was definitely an opportunity to gain some data that could help enhance the AP statistics course. The seminar has provided me with scads of information on how Americans are changing throughout the years. There are numerous trends that I feel would be beneficial to investigate further inside the classroom. The data in this unit will maintain a focus on family and income. I felt the area of family and income would be an area of interest for seniors. Especially, I feel income would especially be an interesting area to investigate further with the students. These students are experiencing many life choices right now and one of the biggest ones for them is choosing their future career path. I think giving students the opportunity to see how changes have occurred within certain specialized fields in America will help to shed some light on their own decision-making. Additionally, statistics lets students see not only the numerical changes that may have undergone throughout the years, but it provides an opportunity for an open discussion on why the changes may or may not be occurring. My seminar has helped me realize that a lot of current statistics are greatly affecting this generation of students. One other colleague in the seminar commented on how there has been an article written claiming that this generation of students is the first one that will not do better than their parents. I think all the factors involved in this heavy claim and the truths that may lie behind it are fascinating and worth investigating within a statistic classroom.

The detailed statistical investigation of family and work easily fits into the existing curriculum prescribed by the Pittsburgh Board of Education. The unit is an extension of reinforcing statistical concepts found in the textbook that the school district provided the instructor with to teach the class. The unit has been developed primarily for AP Statistic students, but it can be adapted for use in a number of educational settings. For example, the unit could be modified to teach concepts in an elementary statistics course. The purpose of the unit is to make statistics purposeful and interesting to all students. Therefore, even though the type of skills may differ, the current statistics used within the classroom would most likely fit into any level of achievement that may be present within a particular setting.

Throughout the unit, students should see how to utilize statistical concepts to analyze real life data. I found it necessary to develop a unit in which students were encouraged to use their individualism and creative spirit, by creating their own areas of concern rather than giving each group a specific topic. Giving students complete freedom on deciding their own research limits can help create a spectrum of learning opportunities. Specially, statistics is not a field where cut and dry answers are often found through hours of investigation. Researching topics can help promote the idea of sorting through a variety of data and producing a single but interesting detail. Furthermore, students can stumble upon how easy it may be to lie with statistics and start to see how many individuals in society may take advantage of this prominent characteristic. Unknowingly, students may even want to prove something so strongly and commit a violation by failing to check assumptions for a specific inference test. However, these actions can ignite some powerful discussions within the classroom and inspire students to think similar to real-life statisticians. Debates within the classroom can help students think quickly on their feet, in order to defend their points of view. In some cases the disagreements may help to shed light on the realization that statistics can fail you even though we may hold a very strong leaning towards a certain belief or opinion.

In addition, to the unit creating opportunities to explore events that may concern students in society, the lessons let them explore statistics in a different way. The animated software developed by Gapminder Foundation offers a very dynamic approach to learning. The sample presentation by Hans Rosling gives a wonderful example of how the software can turn complex global trends into lively animations. The website, www.ted.com, presents a wide variety of options and is dedicated to the promotion of new ideas to the world. TED, Technology, Entertainment, and Design, is distributed under a Creative Commons license. Fortunately, the items on the website are freely available to the public. The software will enable students to turn their statistical topics of concern into powerful mathematical findings, in which students can communicate to their peers. I believe that the presentation of Hans Rosling sets a wonderful precedent for the start of the project. I do not want students to feel they would have to emulate Hans, but I would hope the excitement of the findings that lie within the field of statistics would be contagious within the classroom setting.

The tool used to explore statistical trends in society will hopefully excite students. Furthermore, the intent of the unit is to encourage an in depth analysis of family trends. Media displays a lot of change happening within the concept of family in the present day, but I feel students can grow academically and emotionally further if they would collect data from friends and family members.

Students will be free to choose an area of concern connected with families. Students may already have knowledge of a specific trend studied in a previous history or sociology class. However, the students most likely will not have experience in proving societal trends statistically. I feel that it is important for students to gather data on information that may affect their daily lives. At the high school level, the majority of students have formed fairly strong opinions on the area of family and they can support with evidence supplied by personal experiences. The unit can be a vehicle to explore concepts that they may not have been given the opportunity to analyze deeply. Since upperclassmen fill the course, the students are generally very mature. Not only are the students excited about learning, but they are deeply dedicated to their future. At this point in their lives they are thinking and planning all the things that their future may hold for them. Hence topics that lie within the family realm such as occupations, marriages, and children can help to open avenues to support the type of lifestyle he/she may want to maintain in the future. In order to effectively engage all students, the topic has to be something that most likely affects them directly or indirectly.

Throughout centuries the image of family has greatly transformed. Not only will the statistics illustrate a definite change, but the media provides people with various evolutions connected with family. The classic "Leave it To Beaver" television show portrays family as individuals working together towards a common goal. A woman stayed at home with the children and completed household duties. The man of the household spent the majority of his time working outside the home to provide for his family. Also, we are led to believe in the show that the societal norm is to marry and have children. Presently, through media and our past experiences we have come to know a drastically different world. The U.S. Census Bureau found that in 2000, 27.2 million households consisted of people living independently. Furthermore, this statistic represented a 4.6 million increase in one-person households since 1990.

Resources state a variety of attributes for dramatic changes to the idea of family occurring in society. Many people turn to divorce rates as support of the decline on the value of family. In the book Domestic Revolutions, the authors discuss one of the main components of a family during World War II was a sense of belonging. Marriage greatly increases during this time period. Men wanted the security of a loved one and have children to carry on their legacy. Women held the idea of marriage as a patriotic duty and the money offered to wives was an incentive for many to form a family. Presently statistics exhibit that individuals are waiting longer to get married.

Prolonging marriage is a trend that is transforming American families. Thirty years ago the median age of marriage was 21 and women were giving birth

at 22 compared to the presently which the median age is 25 (Grossman 42). In the article, *Grow Up? Not so Fast*, the authors proclaim that young people are not wanting to settle down (42 -54). The trend characterizes individuals among the age range of 18 – 25 years and beyond. The phase has become so dominant that the name “twixters” has been applied to describe persons that have fear of adulthood. The phase most commonly happens between adolescence and adulthood. “Twixters” are not homeowners, have no children, and are unwed. Since 1970, the percentage of 26 year olds living with their parents has increased from 11% to 20%. The authors report that the majority of Americans feel that the transition to adulthood should be completed by age 26. However, research indicates that society no longer prepares individuals to face the real world. Surprisingly, there is a 53% increase of Americans going to college since 1970, but jobs are becoming harder for them to find consequently. Only half of Americans in their mid-20 earn enough to support a family and on average they receive \$2,323 a year from their parents (Grossman 45). The article stresses that debt is the main reason why young adults are not growing up.

Since a lot of responsibility comes crashing down by adopting the role of an adult, young people fear the future rather than seizing the challenges that embody adulthood. *The Age of Reason, Debt*, Becky Ebenkamp reports that debt for individuals rose 55% from 1992 to 2001, making this group the most in debt in history (18 -20). Appropriately, when these individuals in the study were asked what personal trait they would use to describe themselves the word responsible was the most commonly given answer. Even though the ugly cloud of debt hangs over many current young Americans, they still hold some traditional goals such as, marriage, kids, a house, car, and a satisfying job. The time taken to accomplish these goals is a lot longer than ever exhibited in the past. Divorce rates, political scandals, and the AIDS epidemic are a few hurdles that hinder quick entrance into adulthood.

Divorce rates are an alarming trend in society. Research illustrates that half of all new marriages end in divorce and one million children experience the effects of divorce (Martin 359 – 367). Despite the high rise in divorce rates, 82.5% young adults agreed that marriage is a lifelong commitment. This statistic provides evidence that the desire to have a successful marriage is clearly a goal of Americans. Additionally, studies indicate that a strong correlation exists between marital conflict/disruption and future relationships held by adolescents. Hence, children observing failed marriages are more likely to adopt negative perspectives on the institution of marriage than children from two-parent homes and in turn prolong marriage as long as possible.

Also, birth rates play a prominent role in families. Mintz and Kellogg researched that a woman on average would give birth seven times in 1800. A

century later, women were having 3.56 births. In addition to large differences in numbers, the reasons behind family changes are fairly complex and quite diverse. Therefore, I felt investigation of family structure would work well within the classroom because the topic lends itself to many interpretations. The students are not forced into one correct reason for change. If students are able to statically prove change among family structure, then their job becomes interpreting the change based on their own opinions and prior knowledge. My hope is that the students who may come with little prior knowledge on how to orally communicate changes existing in family structure throughout centuries will rely on statistics to help lead them in a direction and then, use their discoveries to build conclusions and predictions for the future.

The goal of the unit is to provide students with an outlet to investigate interesting and engaging events. The author, E. Kay Trimberger, of *Further Beyond the "M" Word* asserts that society is experiencing a revolution in marriage and family life (82 – 86). Taking into consideration all the changes happening in the area of family, I feel students can not only gather a lot of resources to investigate existing dynamics but also make several fascinating insights. The wide variety of sources available to the public on the family phenomenon, illustrates a world wide concern on the topic. The content can ignite some strong opinions and perspectives. I think giving students opportunities to express themselves is a valuable asset to their education. As educators we strive to discover real world concepts that will spark a student's interest. Ideally, educators would want the students to become passionate enough to develop a solid standpoint and obtain substantial evidence to support their view.

An area of family that receives a lot of attention is the institution of marriage. Individuals argue over whether marriage is here to stay or not. Many researchers believe that the imaginary family, which is one free of tensions and conflicts, ceases to exist. The author, E. Kay Trimberger argues that marriage will not die despite some obvious existing invading factors such as, rising divorce rates, decreasing remarriage rates, high number of out-of-wedlock births, the sudden attraction of cohabitation, and the high mean age of first marriage. The author also adds that marriage will never be the same. In 1970, marriage households were 70.6% of American homes compared to 49.7% in 2005. Never in United States history, has marriage households dropped below 50%. A rising statistic applied to living alone, in which 17% of households were occupied independently and currently the percentage rose to 27%. The author proclaims that marriage no longer serves the purpose for economic security. Individuals are now turning to live back with parents or choosing to live with friends if they ever need financial support during their lifetime. In fact, friendship networks are increasing stronger in present day society. However, friends possess looser connections than the relationships existing within family, which in turn exhibits

that friends are not replacing family. Currently individuals strive for love and deep intimacy in marriage. Before 1965, marriage was the only option for individuals exiting college and entering the real world. However, presently marriage is becoming one of many numbers of paths to a satisfying life. Furthermore, marriage also offers just one of several ways to raise children (Trimberger 86).

Even though some authors do hold an optimistic attitude on the longevity of marriage, the threat on the life of the institution raises a lot of controversy. Several researchers feel that if women were having more children then the decline in marriage would not have such an effect on family life. Statistics demonstrate that in 2005 70% of women have 2 or fewer children compared to 40% in 1976 (Trimberger 84).

Despite several statistics illustrating a pessimistic outlook on family life, the institution remains popular. Studies demonstrate that 90% of Americans marry at some point in their life. Researchers on the concept of family remind society that people do lie with statistics. Misleading statistics are extremely important to mention to students. If students are aware of this unfortunate and common misuse, then hopefully they can become good at investigating various components to determine the validity of the statistic being reported to the public. A statistical lie that received a lot of attention and raised a lot of concerns dealt with women living without spouses. It was once reported, in TIME magazine, that 51% of American women were living without spouses. However, TIME admitted later on that the study's sample included 15-year old girls and 42% of women over 65 who were widows (Trimberger 85). I think pointing out several examples on how statistics can present lies can be a valuable teaching moment. Teachers would not want their students thinking that all statistics reported are true. I think this unit can reinforce methods to analyze the validity of results, which plays an important role in the career of a statistician.

The decrease in the number of births may directly be related to the high expectations for parents. Jay Cookley in "The Good Father: Parental Expectations and Youth Sports", declares that the baseline for good parenting in present day is being aware of the whereabouts and actions of their children every hour of everyday (153 – 163). This 24-hour supervision indicator has led to a high involvement of young children in extracurricular activities. Success in sports illustrates good parenting techniques by the father. Cookley defends his position on this new emerging indicator of a good parent by pointing out that sports has become cultural events and athletes are viewed as cultural heroes.

In addition to the new developing baseline of being a good parent, in which parents are viewed solely responsible for controlling and socializing their

children, there are other various pressures existing within society. Cookley covers the following contributors of stressful lives of parenthood. Primarily, there is a definite increase in the number of single-parent homes. Raising children independently brings scads of pressures to adults. On the other hand two parent homes are feeling tension due to both parents working outside of the home. Secondly, the media depicts the world outside as a dangerous place. Parents retain the general fear of children getting into trouble, which adds to the already existing anxieties.

Objectives

In this unit, learners will investigate a variety of data to help them achieve the following objectives:

- The learners will be able to use inference, especially hypothesis testing and confidence intervals, to explain changes happening in American families.
- The learners will statically analyze a variety of family and income related data and will be able to recognize changes from the past to the current trends and give reasons for differences or static happenings in America.
- The learners will work cooperatively in groups to research a topic of their own dealing with changing American families and summarize their findings statically and give insights into the future on their topic of concern.
- Utilize software that enhances statistical trends
- Investigate changes existing within the idea of family and in turn I hope students will see how the field of statistics can offer the world valuable and pertinent information to a variety of disciplines
- Research already formulated statistics in order to determine the validity of the results.

Strategies

This curriculum is designed to be used at Taylor Allderdice High School in AP Statistics. The course emulates a college level introductory statistics course. Hence, students are expected to perform at this anticipated college level. In order to ensure all students are motivated to learn all the rigorous and complex material the course has to offer, the unit proposes current statistics to entice and excite students about the world of statistics.

The unit can be implemented during the topic of inference. Usually, inference is the last main component of the AP exam. Periods at Taylor Allderdice are about 45 minutes in length and AP Statistics is a year round course.

Therefore, the unit will most likely be taught during the third nine weeks. This unit lends itself to be fairly flexible in regards to time partly due to the urgency of getting thru all materials needed for the AP exam. Being a new teacher to the curriculum, I had to be very cautious of time spent on every new concept. Consequently, the unit can be used as a review tool for the exam. Practice AP free-response questions and multiple choices questions are indispensable to an AP student's performance on the exam, but many of my students have taken the Calculus AP exam and stated that a whole month of doing the same questions is redundant and counterproductive. I feel the unit can provide an outlet for creativity and self-expression greatly needed during this time period. The students are preparing for most likely two to three other AP exams and the teacher has the responsibility to make the class intriguing, in order for students to want to do well on the exam.

Classroom Activities

The following outline details the activities designed to help students achieve the objectives of this curriculum unit. Approximately ten to twelve forty-five minute class periods should be allotted for instruction. The following is only a suggested timeline. The unit can be adapted to fit the needs of all students.

Day 1

Students will be given a variety of interesting distributions that focus on changes in society that specially are taken thru 1999 - 2000. The trends examined will be from the book, "The First Measured Century" by Theodore Caplow, Louis Hicks, and Ben J. Wattenberg. Learners will be given four graphs of Divorce Rate (divorces per thousand married women per year- p. 79), Personal Computers (percentage of households with a personal computer-p.277), Alcohol consumption (Gallons of each beverage per adult per year-p.143), and population by household size (percentage of population living in each size household-p. 93).

Students review the distributions. The students will vote on the distribution that they feel is the most interesting/shocking to them. The distribution that is picked will be the one that will be reviewed with the students. Primarily the students will be asked to describe the distribution as they would on the AP free response section. All students should be familiar with the acronym SOCS – shape, outliers, center, and spread, in order to correctly and fully describe a distribution. After describing the distribution, students will give reasons for any changes in the distribution they may see from observation. The other three distributions will be assigned for homework. Also, students will be asked to name a topic for a distribution that would interest them in seeing how the area has evolved over a specific period of time.

Day 2

The students will go further into describing distributions by using inference to illustrate change in society. Give students data on average income of a family, which can be found in the previously used book on page 165. The graph is given as a line graph, so the learners will have to translate into numerical descriptions from 1900 to 2000. Encourage students to use methods of inference they have learned to determine the best way to analyze change of average family income from 1900 to 2000.

Day 3 – Day 4

Have students form groups of four and distribute distributions on various work and employment trends. The pages from the book for these are pages 25, 31, 37, 41, 43, 45, and 47. Guide students to develop a hypothesis test and confidence interval for the trend their group may have been assigned. In addition to statistical findings, encourage students to create their own insights and opinions on reasons for a change. Students should present their statistical trends and communicate the explanations of the change.

Day 5 – Day 6

Use the statistics found on <http://www.census.gov/> to take an in-depth look separately at individual's income over the past century and the number of two parent and single parent homes. Have students investigate the question, Does the annual income made by an individual depend upon if they were brought up by single or two parent homes? Students supply own data by their method of choice. Students could choose to use data found on the Internet or conduct their own surveys. Remind students to be cautious about the assumptions and conditions that have to be made when conducting a statistical analysis.

Day 7

Students will be shown the talk given by Hans Rosling found on www.ted.com. They will be asked to write a brief reaction paper to the lively animations depicting the commonly held belief among the population that the western world is characterized by long life small family and the third world defined by short life and large family. Students will be asked to comment on not only the statistics found on the typical held belief, but asked to write opinions on the software that is used in the presentation. Also, students will need to give their reactions to the dynamics of the presenter, Hans Rosling. Students will be reminded to state both

advantages and disadvantages of both the software and the presenter.

Day 8 – Day 12

Learners will work collaboratively in groups again on their own statistical projects. Groups will be able to choose their own topics dealing with changing America. Students will be encouraged to construct their own database by interviewing family, relatives, and friends. They will be required to use the trend analyzer software used by Hans Rosling in the video shown previously in the classroom. Students should be given three days for research and formation of statistical analysis. Then, approximately two days should be given for presentations. A clearly outlined rubric will be given to students in order to give the students an idea on how their grade will be determined.

Annotated Bibliography/Resources

Bock, David E., Paul F. Velleman, and Richard D. De Veaux. Stats Modeling the World. Boston: Pearson Education, 2007. 1-600.

This textbook is used in AP Statistics courses and offers students a wide variety of real world context problems.

Caplow, Theodore, Louis Hicks, and Ben Wattenberg. The First Measured Century. Washington D.C.: American Enterprise Institute P, 2000.

This book contains a fascinating compilation of facts on the twentieth century seen through statistics. The vast amount of information provided by the authors can smash stereotypes one may have about the past years and it can raise significant questions on the past, present, and the future.

Coakley, Jay. "The Good Father: Parental Expectations and Youth Sports." Leisure Studies 25 (2006): 153-163. Academic Search Premier. EBSCO. Yale University, Pittsburgh. 25 June 2007. Keyword: family.

The author explores the evolution of fatherhood. Also, the article gives a detail account on the increase in youth involvement in the sports and the implications this trend has on the concept of family.

Ebenkamp, Becky. "The Age of Reason, Debt." Brandweek 46 (2005): 18-20. Academic Search Premier. EBSCO. Yale University, Pittsburgh. 25 June 2007. Keyword: family.

The author reports findings of a 30/30 vision study sponsored by VH1. The goals of a typical 30-year old in present day are explained in the article and a discussion of the rising concern of debt creeping into the lives of young Americans.

Grossman, Lev, Nadia Mustafa, Deirdre Van Dyk, Kristin Kloberdanz, and Marc Schultz. "Grow Up? Not So Fast." Time 165 (2005): 42-54. Academic Search Premier. EBSCO. Yale University, Pittsburgh. 25 June 2007. Keyword: family. A new phase developing within society known as the "twixters" is fully explained. The author offers many viewpoints and reasons for this new developmental period existing heavily in present day.

Martin, Paige, Gerald Specter, Maggie Martin, and Don Martin. "Expressed Attitudes of Adolescents Toward Marriage and Family Life." Adolescence 38 (2003): 359-367. Academic Search Premier. EBSCO. Yale University, Pittsburgh. 25 June 2007. Keyword: family.

An in-depth analysis of marriages and divorces in present day. The article contains various significant statistics. An excellent article to pull data from for classroom use.

Mintz, Steven, and Susan Kellogg. Domestic Revolutions: a Social History of American Family Life. New York: Free Press, 1988.

An account that provides readers with an excellent historical overview of American families. The authors give a very detailed perspective of how the concept of family has evolved.

Rosling, Hans. "TED: Ideas Worth Spreading." TED. Apr. 2007. 15 Mar. 2007 <<http://www.ted.com>>.

This site contains numerous talks relating to a large variety of topics that can be used within the classroom. Also the trend analyzer software can be located on this website.

Trimberger, E. K. "Further Beyond the "M" Word." Dissent 54 (2007): 82-86. Academic Search Premier. EBSCO. Yale University, Pittsburgh. 28 June 2007. Keyword: Family and Marriages.

This reading is a response to writings on family by Arlene Skolnick. The paper focuses on to what extent is the institution of marriage dying or is it dying at all.

"U.S. Census Bureau." U.S. Census Bureau. June 2007. U.S. Government. Apr. 2007 <<http://www.census.gov/>>.

This site offers data on the United States Census. Students could use this site to gather data for projects.

Appendix-Content Standards

- Appropriate technology will be used to organize and analyze data taken from the local community. (2.6.11 B)
- Make predictions using interpolation, extrapolation, regression and estimation using technology to verify them. (2.6.11 D)
- Determine the validity of the sampling method described in a given study. (2.6.11 E)
- Use sampling techniques to draw inferences about large populations. (2.6.11 H)