

Teaching Introductory Statistics with Community Based Projects

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Incorporating Community-based projects in a General Education Statistics Course

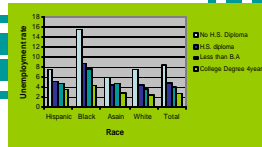
We incorporated semester long group projects addressing local civic issues into a general education course in statistics at Metropolitan State University. Project groups were formed based on students' interest levels in the topics. The projects were used to reinforce course concepts and to help students see the significance of mathematics and statistics in understanding civic issues and the potential to use that knowledge to help find solutions to the issues. In addition to the group projects, connections between civic issues and knowledge of mathematics/statistics were explored through carefully chosen lecture examples, homework and group work.

Project Stages

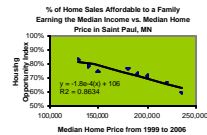
- Stage 1 Brainstorming for topics** Students come up with a list of possible topics.
- Stage 2 Background investigation** Students research available resources for background information.
- Stage 3 Proposal** Groups submit one page proposals with bibliographies.
- Stage 4 Data Collection** Groups gather data from surveys or from reliable sources.
- Stage 5 Rough Draft** Groups submit typed rough drafts of their report for initial feedback.
- Stage 6 Oral Presentation** Groups give 15 minute presentations to the class with a 5 minute question and answer period.
- Stage 7 Final Written Project and Dissemination of Results** Groups prepare final report and then take an action by writing a letter to a local paper, community group or university/state official.

Topics Chosen by Students for Group Projects

- Domestic Abuse in Downtown Minneapolis: Gender, Race and Language
- Mercury in Metro Lakes and Fish Consumption Advisories
- Does Where You Live Affect the Price You Pay for Prescription Drugs? A comparison of prescription drug costs in urban, suburban and rural areas surrounding the Twin Cities
- Housing in Ramsey County: A comparison of diversity, affordability, types of loans and foreclosures
- A Comparison of Crime Rates to Costs of Rental Properties in the Communities of Minneapolis
- Health Insurance in Minnesota: The Characteristics of Uninsured Adults without Children
- Methamphetamine Use in the Twin Cities
- Crossing the Border: Online Drugs from Canada
- Housing Foreclosures in Minnesota
- Life After Retirement: An education on the benefit of saving
- Early Childhood Education: A Wise Investment of Public Funds
- The Impact of Bottled Water on the Local and Global Environment



"Minnesota Unemployment" by C. Cassin, D. Drew, J. Zacharison, 2007



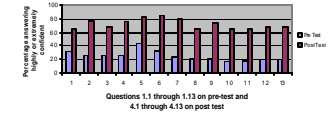
"Housing in Ramsey County" by K. Cassin, H. Hassan, T. Nguyen, P. Wong, 2007

Assessment

Survey of SENCER students found:

- 47% felt that the group projects were the course activity that helped them learn the most.
- 75% felt that addressing real-world issues was of much help or very much help to their learning in the course.
- 67% felt that the interplay between statistics and civic issues was of much help or very much help to their learning in the course.

The Math SENCER SALG (Student Assessment of Learning Gains) pre-and post-versions were administered to n=51 students enrolled in 2 sections of Statistics I. The results from questions 1.1-1.13 on the pre-test and corresponding answers to 4.1-4.13 on the post-test are displayed in the bar graph.



Unexpected Outcomes

- Non-math students looking for employment after finishing their degrees at Metropolitan State University and realizing the importance of their completed group projects are requesting letters of recommendation and references from the instructor. In 11 years teaching at the university level, I have never before been approached from students in a general education math course for a letter of recommendation for future employment.
- One student who took Statistics I in the spring of 2007, used the instructor as a reference for a job at the Mayo Clinic as a bio-statistician in the summer of 2007. The student accepted the position and is now working in that capacity.



By J. Jara, A. Kierulff, J. Vassallo, J. Cunningham, A. Yermum, 2007

Questions on bar graph: I am confident that I can...

1. Discuss statistical concepts with my friends or family
2. Think critically about statistical-related findings I read or hear about in the media
3. Make an argument using statistical evidence
4. Determine the difference between appropriate and inappropriate use of statistics
5. Interpret tables and graphs
6. Understand statistical concepts commonly found in books, newspapers and journals.
7. Find journal articles, or statistical data using library/internet databases
8. Extract main points from a statistical report and develop a coherent summary
9. Give a presentation using statistics to my class
10. Describe how statistics is used in analyzing civic/environmental problems
11. Pose questions that can be addressed by collecting and evaluating statistical evidence
12. Organize a systematic search for relevant data to answer a question
13. Write reports using logical reasoning or data as evidence

Student Comments

"This was one of the best classes I have EVER taken in terms of really learning something as a result of the experiential learning opportunity of this project. This comes from a student that wanted to avoid any additional math. You should also know that I consistently refer to this course as one of the few courses I have taken that I actually use everyday. So I say THANKS TO YOU and all of the forces that dropped me into that particular statistics course."

"The course gave a global picture to understanding the use and need for statistics – that made a big difference in my desire to learn."

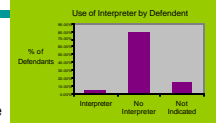
"Keep doing the group projects. They are a lot of work but worth it for understanding stats better."

"The group project not only helped me learn a lot but also gave me the chance to feel close to some of my classmates. My experience with other classes where there was no group project was loneliness. Maybe because of my "difference"."

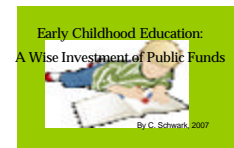
"To be able to put what we learn in statistics and use it for a reality check, I was able to grasp the material faster and learn it better."

"The project helped me see how statistics is related to everyday life instead of seeing it as a requirement for my major."

"The project was great. I would encourage it for all courses because it encourages students to get involved and get in the know."



Domestic Abuse in Downtown Minneapolis: Gender, Race and Language by K. Cassin, S. Strand, M. Kobayashi, 2007



By C. Schwab, 2007