End-of-Year Report for Instructional Grants 2007-2008
Center for Teaching Effectiveness
General Education Initiative
IT-User Services

Faculty Name(s): David C. Wilson

Department(s): Political Science and International Relations

Project Title: Applied Quantitative Reasoning through Public Opinion Research: Analyzing Students' Political Attitudes

1. **Did you complete your project as planned? What changes and modification to the original project did you have to make, if any?**

   The "Blue Hen Poll" (BHP) project was completed as planned. Students conducted a scientific sample survey of undergraduates at the University of Delaware, and presented the quantitative results in a public setting. There were no major changes to the project, however, because it largely student controlled many of the "unknowns" (e.g., how the data would be collected: web, clickers, phone, paper-pencil surveys) mentioned in the proposal became "knowns" (e.g., we decided on web based data collection rather than clickers) which significantly influenced timelines and costs. In addition, many of the ideas that students wanted to implement were much different—especially in terms of costs—than my original thinking about the project. For instance, the students wanted to do more marketing with colorful print materials and also make the public events more like receptions. While some of these initiatives and activities affected the budget, they did not significantly influence the goal of enhancing quantitative reasoning through applied research.

2. **What concrete results have you, your students, and your department seen from your project? Please give specific examples of what has worked well and what needs further refinement.**

   The concrete results are that students and faculty are now aware of a previously underused methodological tool: surveys. Students involved with the project have learned the applied principles of quantitative reasoning. I have learned what aspects of quantitative reasoning require more attention, and which are most applicable to students' interests. Faculty have learned that student engagement and interest in quantitative reasoning can be enhanced through applied work, and hopefully this will lead to more opportunities for students.

   Students made two public presentations, one at the start of the project, and another at the end where they presented findings from the project, and their methodological approach. They handled the large majority of the "question and answer" sessions with confidence, and explained how they went about carrying out the project. The project also received positive attention from faculty with requests for research assistants from the class, as well as many internship opportunities in data analysis and survey research. The project worked well for this group of students because the class was relatively small (12) and there was financial support to help build the "brand" of the BHP. In the future, the project will need to find other means of giving incentives for participation and performance.

3. **How have you assessed student-learning resulting from this project? Give specific examples and attach supporting documentation (e.g. products of student work, writing samples, tests).**

Students learning and engagement were assessed through two methods. First, to assess learning students were given a 33 item pre-test on quantitative analysis in the second class, and then given the same test in the second to last class of the semester. The pre-post test can be seen in Attachment 1 at the end of this report. The pre-test average score was 66.9 and the post test average score was 73.1. This roughly 6 point increase was not statistically significant (t=1.58, p=.14); however, because the class was relatively small larger improvements may not show up as significant. Substantively, while only 42 percent of students passed the pre-test with a score of 70 or better, over half the class increased their post test scores. The pass rate increased to 67 percent in the post-test; 62 percent increased their score by 5 points or more, and 46 percent increased by 10 points or more. I consider this to be marginal, but meaningful improvement (the test was pretty hard).

Second, to assess engagement students were asked to complete weekly online surveys asking a number related to student satisfaction, confidence, and commitment. I have attached a list of the questions and students' week 1 and week 13 scores to the end of this document (Attachment 2). A statistical analysis of the results of surveys reveals significant changes in two areas. First, students increased their comfort levels talking about statistics. This was a main component of the project; I wanted students to not "fear" statistics or statistical language. Second, students decreased their satisfaction with their classmates over time. This is likely due to the pressures brought about by working together on the many challenging aspects of the project. There were many instances where some students felt they were working harder than others, and I told them to feel free to express any attitudes or opinions they had about the class through the weekly surveys. I felt this was an important part of the professional development process where in the "real world" you'll encounter many of the same instances, but the goal of the work should always override the personal (and interpersonal challenges).

I have also attached some final papers presented by the students.

4. **Would you consider your project a success? Please elaborate.**

I would consider the project a success. The project was completed on time, students increased their comfort level with quantitative information, and the BHP received positive attention from UD students, faculty, and the media. I have attached the unedited open ended comments from students who participated in the summative evaluation (Attachment 2).

5. **What would you do differently if you could do the project again?**

The success of the project was largely dependent on it being run and presented by students. But because of the spring semester schedule, planning for learning, project implementation, data analysis, and a final presentation was challenging. The semester started in the second week of February, but the survey had to be field by the middle of March in order to give adequate time to data collection (including the Spring Break period), data analysis, and preparation for a final presentation. Thus, some things related to the project might need to be shortened.

There were three components to the course: public opinion, survey methodology, and quantitative analysis. All three were key to doing the applied research project correctly. One thing I would change about the project would be to limit the amount of information students had

to learn about survey methodology (i.e., questionnaire design, sampling, measurement, coding and analysis), relative to quantitative analysis. That is, I would spend more time with students analyzing the data to improve their quantitative reasoning skills and less time on lecturing and assigning readings about how to conduct surveys.

Lastly, I would reconsider where many of the expenditures would go by giving students less control over the operational aspects of the project. There is a fine line between a "student run poll," and a "student poll" [of students]; the latter is future direction of the project. It was important to give the students working on the project some ownership over the way things were done, but in hindsight, this was probably overwhelming for them. The next time, things will be kept simple. Students will have a voice in some matters such as what questions go on the survey, but on others (e.g., promotion materials), the instructor will have to play a stronger role. The good part is that we (the Department) now have equipment to help sustain the core activities of the project.

6. How will the project continue beyond the grant phase?

The project will continue either through a designed Capstone course in POSC, or a new POSC 318 (Public Opinion, Politics, and Society). The Capstone course has not been officially designed yet, but the course related project conducted this year will serve as a model for the future course which would include the BHP project. If the project continued through the POSC 318 course, it would likely take place every spring, but would not involve as much learning because of the lack of prerequisites for the 300 level courses (e.g., taking a data analysis course beforehand). I am currently planning the future of the project with the Department to make sure it can be offered regularly by different faculty. The Department has already committed some learning space in the graduate student workspace in Smith Hall where students can work on analysis and presentations, so there is little doubt the project will continue, it's just a matter of in which course.

7. Complete the budget page for your project expenses.

	Budgeted			
	Requested from Instructional Grant	Department and College Funding	Total	*Spent*
TOTAL BUDGET	$12,725	$4,010	$16,735	
TOTAL EXPENSES [a]	*12,289.62* [a]	*$2,363.00*	*$14,652.12*	
Personnel				
Principal investigator: David Wilson (summer salary)	$4,000 (*$3,704*)		$4,000	*$3,704*
Monthly Benefits Charge (summer salary)	$0 (*$296.32*)	$0	$0	*$296.32*
S-Contract for Graduate or undergraduate student(s) (@ $15/hour, 25 hrs/week)	$1,500 (*$0*)	$1,500 (*$1,500*)	$3,000	*$1,500*
***Equipment* (list):**				
2-Laptops (@$1,500/each) (1 purchased)	$3,000 (*$860.74*)		$3,000	*$860.74*
2-Printers (@$400 each) (1 purchased) (-$120 rebate)	$800 (*$379.98*)		$800	*$379.98*
1-External hard drive (@$150)	$100 (*$0*)		$100	*$0*
1-LCD projector (@$1,000) (2-purchased: 1-data lab & 1-travel)	$1,200 (*$1,461.15*)		$1,200	*$1,461.15*
2-Printer cartridges (@$125 each) (4 color cartridges purchased)	$250 (*$444.96*)		$250	*$444.92*
50-PRS "clickers" (@$35 each) (200 purchased)	$1,750 (*$3,017.00)*		$1,750	*$3,017.00*
5-PRS receivers (@ $75 each)	$375 ($0)		$375	*$0*
4-Easels for promotion (@ 37.99 each)	$0 ($*152.00*)			*$152.00*
Projector/Laptop carrying bag	$0 (*$99.99*)		$0	*$99.99*
***Supplies* (describe)**				
2 - Boxes of printer paper (5K sheets per box) (2 - @$30 each)		$60 (*$0)*	$60	*$0*
Software (SPSS, STATA, AMOS)	$0 (*$427.41*)	$500 ($*513*)	$500	*$940.41*
Other				
Printing and copies	$0 (*$713.50*)	$700 (*$350.00*)	$700	*$713.50*
Postage charges (mailing letters/documents/delivery)	$0 (*$9.86*)	$500 (*$0*)	$500	*$0*
Survey incentives (student determined)		$500 (*$0*)	$500	*$0*
Books/printed materials for course pack	$0 *($280.36*)	$0	$0	*$280.36*
Room related fees and catering for public presentations in Trabant Center	$0 (*$1,171.65*)	$0	$0	*$1,171.65*
Advertising and Promotion (t-shirts, color invitations, color flyers, balloons, etc.)	$0 (*$270.70*)	0 (*$0*)	$0	*$270.70*
Funds transferred to account [a]	-$1000.00		$0	-$1,000

Note. Values in parentheses and *italics* are the amounts spent. [a] An additional $1,000 was transferred from a Departmental account to help pay for unexpected costs. This amount is not included in the calculations above, rather I've listed in in the last row of the table. While the expenses exceed the budget on the Instructional grant side, there is actually a small surplus remaining in the account.

Attachment 1: Pre-Post Test Evaluating Student Knowledge of Quantitative Analysis

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

1) Statistics are research tools for 1) _____
A) organizing and understanding large sets of data.
B) generating experimental hypotheses.
C) identifying participants.
D) generating hypotheses, but only at the experimental level.

2) In the notation "p > .05" the .05 is called the _____, which provides the actual error probability as a percentage. 2) _____
A) probability of error B) alpha level
C) measure of dispersion D) type II error

3) In a sample codebook, what might "hrstv" indicate? 3) _____
A) variable name B) question wording
C) code D) column number

4) _____ might be represented in a sample codebook as "5 = strongly disagree." 4) _____
A) Code B) Column numbers
C) Question wording D) Variable name

5) _____ is the process of checking data for entry errors. 5) _____
A) Data assessment B) Data review
C) Data verification D) Data cleaning

6) When a distribution is skewed, the _____ is the best statistic to use because it is less influenced by extreme values and is more informative than other statistics. 6) _____
A) average B) mode C) mean D) median

7) Which type of statistics simplify and organize data? 7) _____
A) descriptive statistics B) multivariate statistics
C) univariate statistics D) inferential statistics

8) Which type of statistics help us draw conclusions about the data? 8) _____
A) interpretational statistics B) inferential statistics
C) descriptive statistics D) None of the above

9) In a skewed distribution, the scores 9) _____
A) primarily cluster on one end of the distribution.
B) primarily cluster in the center of the distribution.
C) fall equally throughout the distribution.
D) primarily cluster at both ends of the distribution.

10) Statistical simplification for nominal or ordinal data is often done by using 10) _____

A) standard deviations. B) frequency distributions.
C) a *t*–test. D) means.

11) Cross–tabulation is the method used to help identify the relationships between 11) _____

A) interval measures. B) strong measures.
C) categorical measures. D) weak measures.

12) Suppose a researcher wanted to classify college participants according to both where they live (dorm, apartment, at home) and type of high school they attend (public, Catholic, other private). The best way to do this would be using a 12) _____

A) univariate count. B) grouped frequency distribution.
C) cross–tabulation. D) univariate distribution.

13) In a distribution with a bell–shaped curve, 13) _____

A) most scores fall at the ends of the distribution.
B) most scores fall at the top of the distribution.
C) all scores fall in the middle of the distribution.
D) most scores fall in the middle of the distribution.

14) The horizontal spread of a distribution is known as its 14) _____

A) central tendency. B) variability.
C) symmetry. D) frequency distribution.

15) The 50th percentile of a distribution is referred to as the 15) _____

A) median. B) quintile. C) mode. D) mean.

16) A researcher is interested in studying decisions of U.S. college seniors regarding graduate school. With that in mind, how would we classify all of the college seniors in the United States? 16) _____

A) as a sample of college seniors B) as the population of college seniors
C) as a sample of all human beings D) as the entire population of human beings

17) Researchers use samples to 17) _____

A) draw conclusions about the population.
B) reflect precisely population characteristics.
C) gather data from the entire group of people being studied.
D) reflect exactly population parameters.

18) A researcher wants to study all 2000 college graduates from the University of Hawaii. She gathers data from all the college graduates at the University of Hawaii in the year 2000. She has studied a 18) _____

A) statistic. B) population.
C) reference group. D) sample.

19) Type I error occurs when a researcher 19) _____

A) does not reject the null hypothesis when it should be retained.
B) is confronted with random error in the form of participant characteristics.
C) makes a large mistake in data collection.
D) rejects the null hypothesis when it should be retained.

20) If we discover that the value of chi–square computed for a contingency table with 6 degrees of freedom reaches the critical value corresponding to an alpha level of .05, then 20) _____
A) we cannot reject the null hypothesis
B) the null hypothesis is rejected
C) the association between the two variables in the contingency table must be a strong one
D) there is not enough information on which to decide whether to reject or fail to reject the null hypothesis

Use the chi–square output below for the variables SEX and TRUST (extent to which others can be trusted) in the 2002 GSS to answer the next question.

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	3.418[a]	2	.181
Likelihood Ratio	3.413	2	.181
Linear-by-Linear Association	2.991	1	.084
N of Valid Cases	512		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 18.56.

21) According to the SPSS chi–square output above for the variables SEX and TRUST, which of the following statement(s) is/are true 21) _____
A) the variables SEX and TRUST appear to be statistically dependent
B) chi–square has not reached the critical value necessary to reject the null hypothesis at the .05 level
C) the null hypothesis cannot be rejected
D) both C and D

Use the SPSS chi–square output below for the recoded AGE variable and POLITICAL VIEWS variable in the 2002 GSS to answer the next question.

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	14.296[a]	6	.026
Likelihood Ratio	14.144	6	.028
Linear-by-Linear Association	11.852	1	.001
N of Valid Cases	701		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 20.36.

22) In the SPSS output above for chi-square involving the recoded AGE and POLITICAL VIEWS variables, we can see that 22) _____

A) the null hypothesis cannot be rejected
B) the association between age and political views is a strong one
C) the value of chi-square has not reached the critical value associated with an alpha level of .05
D) the null hypothesis can be rejected

Use the SPSS output below for the independent samples *t* test for the variables SEX and TOTINET (total hours per week spent on the Internet for those respondents who spend at least some time on the Internet) in the 2002 GSS to answer the next question(s).

Group Statistics

	Respondents	N	Mean	Std. Deviation	Std. Error Mean
Total hours per week on Internet at home (emhrh+ wwwhrh)	1 MALE	299	9.49	12.063	.698
	2 FEMALE	335	7.17	8.062	.440

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means		
		F	Sig.	t	df	Sig. (2-tailed)
Total hours per week on Internet at home (emhrh+ wwwhrh)	Equal variances assumed	15.087	.000	2.880	632	.004
	Equal variances not assumed			2.818	510.543	.005

23) Using the SPSS output above from the independent samples *t* test for the variables SEX and TOTINET, 23) _____

A) the appropriate *t* statistic to use is 2.818
B) the null hypothesis can be rejected
C) equality of variances cannot be assumed
D) all of the above

24) Using the SPSS output above from the independent samples *t* test for the variables SEX and TOTINET, all of the following statements are true EXCEPT 24) _____

A) there are 632 degrees of freedom associated with the appropriate test statistic
B) whether or not equality of variances can be assumed, the null hypothesis is rejected
C) the average of the hours spent on the Internet is higher for males than for females
D) the distribution of responses to the TOTINET variable is more homogeneous for females than for males

25) The following survey question is flawed. What is the MAJOR weakness of this item? 25) _____
"How old were you the first time you went to a grocery store?"

1. Under 6 months old
2. 6 months to 12 months old
3. 13 months to 24 months old
4. 25 months to 3 years old
5. More than 3 years old

A) It is too long.
B) Respondents are not fully capable to answer.
C) It is double–barreled.
D) It has jargon.

26) You come across an old question in a survey with the following item. What is the MAJOR weakness with this item? 26) _____

"The Soviets cheated on every agreement to freeze nuclear weapons development since 1950. Don't you agree that the United States should give up on establishing a limitations agreement?"

1. Yes
2. Not sure
3. No

A) It is too long.
B) It is socially desirable.
C) It is biased or leading.
D) It is double–barreled.

27) Dr. Hightone devised a questionnaire in which she asked, "Do you physically beat your children?" What type of problem might she encounter if she used this question? 27) _____

A) It is a leading question.
B) It is a double–barreled question.
C) It is threatening.
D) It has social desirability bias.

28) Which of the following types of surveys has the highest response rate? 28) _____

A) mail questionnaires
B) face–to–face interviews
C) web surveys
D) telephone interviews

29) Which of the following kinds of surveys has the lowest response rate? 29) _____

A) face–to–face interviews
B) web survey
C) mail questionnaires
D) telephone interviews

30) Which of the following types of surveys is the one to choose to determine the quickest results? 30) _____

A) telephone interviews
B) web survey
C) mail questionnaires
D) face–to–face interviews

31) Pie charts are particularly useful for what type of data? 31) _____

A) ordinal level data
B) nominal level data
C) interval level data
D) none of the above

END OF EXAM

Attachment 2: Weekly Assessment Items for First and Last Week

Questions	Week 1	Week 13	Change
Overall, how satisfied are you with the way the course is going?	4.38	4.70	0.32
I am extremely interested in analyzing public opinion data	3.38	3.40	0.02
I am very confident that I understand what is being discussed	3.15	3.20	0.05
I feel very comfortable talking about statistical analysis	3.00	3.30	0.30*
I am very committed to learning about data analysis	3.54	3.50	-0.04
I feel very prepared for the next class	3.54	3.40	-0.14
Satisfaction with The reading materials	3.85	4.00	0.15
Satisfaction with My classmates	4.46	4.10	-0.36*
Satisfaction with The activities in class	4.38	4.40	0.02
Satisfaction with The instructor	4.77	4.70	-0.07
Satisfaction with My own performance	4.23	4.20	-0.03

Note. *$p<.05$; All items are measured on a 5-point Likert scale with higher values indicating more “agreement” or “satisfaction.”

Attachment 3: Un-Edited Open-Ended Class (POSC 413) Comments

Each week students (n=12) were asked to participate in a brief 10-item online survey evaluating their satisfaction with various components of the course including instruction, peers, materials, topics, self-reported progress, and comfort. The survey was automatically sent to their email addresses, and the data were downloaded with only a number assigned as a response identifier. To allow for more open responses, students were told that their answers were anonymous and strictly used as input into the class. Each survey included an open-ended comment text box for any feedback, concerns, or thoughts, the students might want to pass along. In the final week, I asked students to fill in the box with their overall thoughts on the class. Not every student provided comments on the final survey, but for those who did, their unedited responses are below.

"In the box below, insert any comments you have about the class, including your classmates, the topics we discuss, the assignments or readings, or the professor. You will not be penalized in any way by your responses, and what you say will be held in complete confidence."

Student 1:
I liked the class a lot. I think I learned much more about public opinion in this hands-on format than I would have learned just sitting in a classroom and being lectured on survey methodology and public opinion. At times, I was dissatisfied with the effort put forth by some of my classmates, but that's partly the nature of a group project. Overall, I really enjoyed being exposed to the material and learning about it. I would do it over again if I could!

Student 2:
I would just like to thank you for the opportunity to be a part of this class and this project. I learned a lot about data analysis, team work, the public, and putting together a finished product. I think if you were to do this again, I would suggest having a couple more students and also making sure from the beginning people are committed to contributing the WHOLE time, not just when it's crunch time. I also would suggest maybe breaking up the course into one semester of prep; reviewing analysis, putting together ideas for the survey, having the marketing plan etc etc. and the second semester putting everything together, sending out the survey, doing the analysis and then finally presenting it to the public. Overall, I'm satisfied about how the course went and I really enjoyed it. Thanks!

Student 3:
I felt that the class was very well structured and overall a lot of fun to be a part of. I learned much about public opinion polling and measuring statistical data that will prove to be valuable for my future. I truly enjoyed being one of the Blue Hen Pollsters.

Student 4:
I feel that the class was not treated by some students the way it was intended to be taught. Although the final product was okay, a lot of stress by all members of the class could have been avoided had people actually considered the advanced nature of the course. My final suggestion (one that will probably change for the better just by this course not being a pilot any more) is that both instructor and students help others realize and know that the material and substance is so new to the team that there should be an automatic level of confidence and trust in the team since the team is made up of the only ones who know what is going on; that is they are the only people who have an idea of what exists both in the project itself and the campus.

Student 5:

I do not believe that there are any suggestions for improving this course because I do not believe that it needs to be improved. The course really depends on the hardworking mentality and the drive of the students in the class. They need to constantly be reminded to put all of their effort in the beginning because it will make their job easier at the end. I feel that this was an amazing course because it is not typical of your average college classes especially as it is taught. It is more interactive which makes the course more enjoyable and you feel as though you are getting more out of the course. Meaning, you can see the product of your hardwork and if your are a hardworker and do well you feel that it was a more rewarding experience and that you made a difference. This has been one of my most favorite classes because we were held to a higher standard than other students and we had to prove that we could reach this standard. When we did, we realized that we can accomplish most anything. I am sure that the next class will be even more successful! Again, I sweat DW and heart the BHP:)

Student 6:
Awesome, great learning experience for myself. I feel that you have to really be interested in the topic in order to gain something from this course (something i noticed from the lack of participation of certain classmates). Maybe in the future use a pop quiz or graded lab to keep the less involved student more engaged. Still an overall great experience, I am very happy that I got to take part in the first Blue Hen Poll!

Student 7:
I have enjoyed the class overall however, at times I felt very frustrated. I was putting in a lot of time outside the class and I know that it wasn't showing in my performance. I liked having the freedom to choose what my final topic is however, I felt that when I first presented it the idea was met fondly however, towards the end it was not. I think that if the topics were assigned it might be better to make sure that the topic they would be covering at the final presentation that they put time into will be one that will be successful. By giving them a lot of time in advance they will be able to focus their time on that instead of choosing something that in the end everyone is not especially happy with.

Student 8:
In the end I think that everything came together really well. I csn tell that everyone learned a lot, even if the "final exams" don't quite look that way! I also think that DW is a great professor and inspired us to be interested in the BHP project. If I had room in my schedule for other classes that don't count for my major, I would definitely take another class with him. I think that the poll's questions could be altered in upcoming years possibly to deal with less politics as the election comes to an end. It would also have been interesting to have a question for respondents that asked what they would have liked to been asked about and weren't. Overall, I am very pleased with how everything went this semester. It was trying at times, but well worth it in the end.

Student 9:
More Lab time is needed as a class. More direction should be provided from day one for the groups, especially marketing on what you want done and how to get it done quickly. Excellent class. I really enjoyed learning more about data analysis and polling.