Preparing Tomorrow's ACS Users: Teaching Undergraduate Students About Social Inequality Using the American Community Survey

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Overview

- This presentation will summarize how an assignment in SOC 360 Race and Ethnic Relations using the American Community Survey (ACS) can teach undergraduate sociology students 1) about social inequality, 2) prepare them for their capstone courses (SOC 496 Research Methods and SOC 498 Sociological Analysis), 3) and help them prepare for careers that involve data analysis.

Origins of Project

- Participated in a Social Science Data Analysis Network (SSDAN) summer workshop in 2017 at the University of Michigan

- "Introducing ACS Data Analysis into Undergraduate Courses"

Quantitative Literacy in Higher Education

- According to Elrod (2014) "… Quantitative reasoning (QR) is the application of basic mathematics skills, such as algebra, to the analysis and interpretation of real-world quantitative information in the context of a discipline or an interdisciplinary problem to draw conclusions that are relevant to students in their daily lives."

- Also referred to as: quantitative reasoning, quantitative fluency, and numeracy

Quantitative Literacy in Higher Education

- Movement to integrate quantitative literacy across the curriculum in higher education (Elrod 2014):
  - The Association of American Colleges & Universities (AAC&U) identified quantitative literacy as an essential learning outcomes
  - The Lumina Foundation Degree Qualifications Profile has identified quantitative fluency as an important intellection skill students should develop

Quantitative Literacy in Sociology

- The American Sociological Association's Task Force on Liberal Learning and the Sociology Major has also identified quantitative literacy as a key element of an undergraduate education in sociology

- Fifth recommendation:
  - "Provide multiple opportunities within the curriculum for students to engage in empirical inquiry that includes research design, data collection, and qualitative and quantitative data analysis." (p. 31)
    - Recommend doing this across multiple courses and embedded within the curriculum

Quantitative Literacy in Sociology

- This in not a new movement. Rather, the American Sociological Association (ASA) has encouraged faculty to incorporate quantitative literacy into the sociology curriculum since 1990. The goal was to introduce students to data analysis ". . . early, frequently, and sequentially throughout the curriculum" (Howery and Rodriquez 2006:23).

- Furthermore, incorporating data analysis into undergraduate education helps faculty teach basic statistical skills, provide students with examples of how research methods are used, and supplement class topics with real data (Scheitle 2006).

- Finally, these classroom experiences can translate into marketable skills (Ciabattari et al 2018; Sweet and Strand 2006)

What Have we Learned?

- Burdette and McLoughlin (2010) found that a quantitative literacy assignment (using the U.S. Census) resulted in better data interpretation skills.

- Wills and Atchinson (2007) found that students' understanding of table language, hypotheses, and empirical support for hypotheses was improved with the implementation of data analysis modules.

- Wilder (2009) found that students improved their quantitative skills when introduced to data analysis assignments in a course.

ACS Assignment

- SOC 360 Race and Ethnic Relations

- The ACS project took two weeks of class time:
  - One class lecture on the ACS
  - Two days of lab time
  - Three days of class presentations

- Lots of instructions for students:
  - Three sets of instructions (!)
    - Assignment instructions and presentation guidelines
    - How to access data from the ACS
    - How to import and analyze data with Excel

ACS Assignment

- 5-10 minute presentation on median household incomes for racial and ethnic groups within a state

- Presentation included:

- Description of the data

- 10 counties with the most *equality* in median household income between two racial groups

- 10 counties with the most *inequality* in median household income

- Policy implications

- Limitations and suggestions for further analyses

Topics covered

- Sample vs. enumeration
- Response rates
- Sampling error and margins of error
- Variables
- Median vs. a mean
- Importance of protecting the privacy of respondents
- Measurement of race and ethnicity

Skills Taught

- Retrieve data from American Factfinder
  - Two B19013A-I tables from the 2017 ACS 5-year estimates
  - Median household income and margins of error for all counties within a state

- Import data into Excel
  - Comma delimited files
  - Merge two files

- Analyzing Data
  - Create new variable (difference in income)
  - Sort data

- Presentation of results

Rubric Used for Assessment of the Activity

Criteria	Level of Achievement			
	Superior	Good	Fair	Needs Work
Content and organization 25%	Content is entirely appropriate for the assignment. *11-12.5 points*	Content is mostly appropriate for the assignment. *9-10 points*	Content is somewhat appropriate for the assignment. *7-8 points*	Content is minimally appropriate or inappropriate for the assignment. *0-6 points*
Organization 25%	The organization is entirely appropriate for the assignment. *11-12.5 points*	The organization is mostly appropriate for the assignment. *9-10 points*	The organization is somewhat appropriate for the assignment. *7-8 points*	The organization is inappropriate for the assignment. *0-6 points*
Delivery 25%	Delivery techniques (i.e., posture, gesture, eye contact, and vocal expressiveness) make the presentation compelling. Speaker appears polished and confident. *11-12.5 points*	Delivery techniques (i.e., posture, gesture, eye contact, and vocal expressiveness) often make the presentation compelling. Speaker appears mostly polished and confident. *9-10 points*	Delivery techniques (i.e., posture, gesture, eye contact, and vocal expressiveness) intermittently make the presentation compelling. Speaker appears somewhat polished and confident. *7-8 points*	Delivery techniques (i.e., posture, gesture, eye contact, and vocal expressiveness) do not make the presentation compelling. Speaker does not appear polished and confident. *0-6 points*
Data analysis 25%	Statistics are presented and explained with no errors. *11-12.5 points*	Statistics are presented and explained with one or two errors. *9-10 points*	Statistics are presented and explained with three or more errors. *7-8 points*	Statistics were not presented nor explained. *0-6 points*

Assessment of the Project

- Short survey of 9 Likert-response items and two open ended questions

Results

After completing the ACS assignment, I have a better understanding of . . .	Median score (1=strongly disagree to 5=strongly agree)
The difference between an enumeration and a sample	4.0
The strengths and weaknesses of a sample	4.0
Margins of error	4.0
The importance of protecting respondents' privacy	4.0
Importing data into Excel	4.0
Median (versus a mean) for income	4.0
What a variable is	5.0
The advantages and disadvantages of quantitative data	4.5
How race and ethnicity are measured	5.0

N=12

Open-Ended Responses

- **How do you think you might use data in the future?**

- *Personal uses:*
  - "Yes, this data was useful as a POC trying to decide where to start my life."
  - "When moving to a new area, knowing the income can be very useful before actually arriving at the destination."

- *Professional uses:*
  - "I may use data in another class, possibly during graduate school, and possibly throughout my career."
  - "Data will be a part of my job in the future for sure, Excel spreadsheets, etc."

Open-Ended Responses

- **How do you think you can use American Community Survey data in the future?**

- *Personal uses:*
  - "In the future I will use the American Community Survey to help decide where I am going to live. The ACS helps me decide the types of incomes I will have etc."

- *Professional uses:*
  - "The ACS data can help me better understand potential clients I may have in the future by giving me a general idea of the community they live in."

- *Other classes:*
  - "I think I would possibly use American Community Survey data throughout the rest of my schooling. I don't really see myself using this in my career, however, it is possible that I might."

- *Policy applications:*
  - "It would be beneficial when trying to create new policies and/or laws to help a certain topic. The numbers can serve a big purpose to your data."

Limitations

- Exploratory study

- Knowledge competencies vs skills

- Pre and post skill test?

- Small sample size (16 students)

- Conducted a month after the assignment was due

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