Analysis of Multiple Years of NSSE Data: Tips and Strategies

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National Survey of Student Engagement
Overview

Introduction

Five Multi-Year Analysis “Tasks”
1. Identifying Multi-Year Questions
2. Methods for Multi-Year Analysis
3. Data Quality
4. Changes in NSSE Over Time
5. Merging Multi-Year Data

Multi-Year Results
Task 1:
Identify and Focus on Specific Questions
Identifying Multi-Year Questions

Confirming stability and reliability

- How stable was our data from one year to the next?

Measuring change due to campus initiatives

- Given the implementation of a specific campus initiative, how much did engagement change before and after?

Identifying trends over time

- What trends in the data are apparent in given engagement measures over time?
“Undergraduate Student Research Program” (2006-07) gives resources to students and faculty for research projects outside of class.

Question: Did research with faculty increase between 2006 and 2008? If so, did changes vary by gender?
Task 2:
Select and Employ Appropriate Methods of Analysis
Methods for Multi-Year Analysis

NSSE 2004

First-Year

Senior

↑ C

↓ C

NSSE 2008

First-Year

Senior

A

B

C

A:

B:

C:
Methods for Multi-Year Analysis

Statistical Difference
- *t*-tests
- ANOVA
  - Needs at least *three* years of data
  - Can use statistical controls
- Regression
  - Can use statistical controls

Practical Difference
- Effect Size (see our new *Effect-Size Analysis!*)
- Percentage Change
$t$-tests to determine statistical significance

Effect size to determine practical significance
Task 3:
Attend to Data Quality for Each Year in the Analysis
Data Quality

- Response rate, non-respondent bias
- Respondent counts
  - Sampling Error (frequencies)
    (depends on sample and population sizes)
  - Standard Error (means)
    (depends on variance and sample size)
- Missing data
Start with the *Respondent Characteristics* in your *Institutional Report*

- Check your response rates
- Check student characteristics
- Check your sampling error
  - Preferred sampling error: +/- 3% to 5%

Check the *NSSE Multi-Year Reporting Logic Over Time* [Handout]
### NSSEville State University – Data Quality

<table>
<thead>
<tr>
<th>Year</th>
<th>Response Rate</th>
<th>Sampling Error</th>
<th>FY Gender</th>
<th>SR Gender</th>
</tr>
</thead>
<tbody>
<tr>
<td>2006</td>
<td>32% (30% FY/34% SR)</td>
<td>4.1% FY/4.4% SR</td>
<td>81% FY Female, 74% SR Female</td>
<td></td>
</tr>
<tr>
<td>2008</td>
<td>35% (36% FY/34% SR)</td>
<td>3.5% FY/3.5% SR</td>
<td>69% FY Female, 68% SR Female</td>
<td></td>
</tr>
</tbody>
</table>
Task 4: Take into Account Changes in NSSE Items and Reports Across Years
Changes in NSSE Over Time

- Big changes in 2004!
- *NSSE Multi-Year Variable Tracking Sheet*
  - Question changes
  - Response value changes
- Benchmark considerations
  - See our new *NSSE Multi-Year Data Analysis Guide* and our new *Multi-Year Benchmark Report*!
Changes in NSSE Over Time

Use the NSSE Multi-Year Variable Tracking Sheet Codebook Handout to interpret the Excel spreadsheet (.xls)

Important variables to always consider:

- **classran**: Institution reported class rank
  (1 = First-Year, 4 = Senior)
- **inelig**: Identifies eligibility (1 = Eligible)
- Sample type
  - **Smpl01** (2001-2003): 1 & 2 are random
  - **Smpl05** (2004+): 1-3 are random
- Weight (**stuwt2** for 2001-2003, **weight1** for 2004+)
- Any other controlling, independent, or dependent variables
For my analyses, I want to “keep” the variables classran, inelig, smpl05, weight1, gender, and RESRCH04
Task 5:
Merge Multiple Years of Data
Merging Multi-Year Data

- Account for any changes in variable names
- Don’t forget to create a variable to account for the data’s year!

Merge options

- SPSS pull-down menus
  - Data -> Merge Files -> Add Cases
- Write your own syntax
Merging Multi-Year Data with SPSS

Save a copy of each year of your data with only the variables you want to “keep”

In each year of your data create the same variable **Year** with a different value representing each year

0 = 2001, 1 = 2004, 3 = 2007, 4 = 2008, etc.

Open your “base year” and add the next year

Data -> Merge Files -> Add Cases

Repeat for each additional year
See *Using SPSS to Merge Multiple Years of Data* [handout](#)

GET FILE='C:\temp\NSSEville 2006.sav' /KEEP classran inelig smpl05 weight1 gender RESRCH04.
COMPUTE Year = 0.
VARIABLE LABELS Year 'The year the data was collected'.
VALUE LABELS Year 
  0 '2006'.
EXECUTE.
SAVE OUTFILE='C:\temp\2006.sav'.

GET FILE='C:\temp\NSSEville 2008.sav' /KEEP classran inelig smpl05 weight1 gender RESRCH04.
COMPUTE Year = 1.
VARIABLE LABELS Year 'The year the data was collected'.
VALUE LABELS Year 
  1 '2008'.
EXECUTE.
SAVE OUTFILE='C:\temp\2008.sav'.

GET FILE='C:\temp\2006.sav'.
ADD FILES /FILE=* 
  /FILE='C:\temp\2008.sav'.
EXECUTE.
SAVE OUTFILE='C:\temp\NSSEville 2006 2008.sav'.

After running this syntax, I now have an SPSS dataset called “NSSEville 2006 2008” with the six variables I wanted to use in my analyses and a new variable that identifies the year of the data.
NSSEville Results

Worked on a research project with a faculty member outside of course or program requirements

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>Percent “done”</th>
<th>Statistical Difference?</th>
<th>Effect Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>2006 F-Y Male</td>
<td>69</td>
<td>4%</td>
<td>NO</td>
<td></td>
</tr>
<tr>
<td>2008 F-Y Male</td>
<td>133</td>
<td>5%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2006 F-Y Female</td>
<td>306</td>
<td>4%</td>
<td>YES**</td>
<td>.13 (small)</td>
</tr>
<tr>
<td>2008 F-Y Female</td>
<td>309</td>
<td>7%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2006 SR Male</td>
<td>82</td>
<td>21%</td>
<td>NO</td>
<td></td>
</tr>
<tr>
<td>2008 SR Male</td>
<td>143</td>
<td>22%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2006 SR Female</td>
<td>238</td>
<td>18%</td>
<td>YES***</td>
<td>.17 (small)</td>
</tr>
<tr>
<td>2008 SR Female</td>
<td>325</td>
<td>25%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Were on a research project with a faculty member outside of course or program requirements

Percent of Senior Students Doing Research with Faculty by Gender

2006
- 79% (No research)
- 21% (Male)
- 18% (Female)

2008
- 78% (No research)
- 22% (Male)
- 25% (Female)
Multi-Year Results

Percentage of excellent ratings of the quality of academic advising

- Arts and Humanities
- Biological Sciences
- Business
- Education
- Engineering
- Physical Science
- Social Sciences
Multi-Year Results

Number of written papers or reports of **between 5 and 19 pages**

- 2002
- 2004
- 2006
- 2008
Questions?

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