Pitfalls in Writing & Interpretation of Empirical Analyses

POL 199
Spring 2006
#1: **ALWAYS** indicate what the units are when you discuss numbers.

For each additional case an attorney argued before the Supreme Court, “For every one-unit change in the variable litigating experience, the attorney’s score was predicted to increase by .262.”

**OR:**

“The coefficient indicates that there is a positive relationship between experience and grades, and as experience increases by one, the grade will increase by .262. **In a practical sense, in order to move from a B- to a B (a difference of 5 points), an attorney needs the experience of about 19 trials.”**
#2: Use active voice whenever possible.

For each additional case an attorney argued before the Supreme Court, "For every one-unit change in the variable [litigating experience], the attorney’s score was predicted to increase by .262."

Justice Blackmun is the grade on her oral argument standard deviations from the mean.
#3: You cannot compare the size of coefficients without taking units into account.

Recall, that in this regression, the following was true:

<table>
<thead>
<tr>
<th></th>
<th>B</th>
<th>Std. Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ideological Compatibility with Attorney</td>
<td>0.051</td>
<td>(0.03) **</td>
</tr>
<tr>
<td>Attorney Attended Elite Law School</td>
<td>0.209</td>
<td>(0.07) *</td>
</tr>
</tbody>
</table>

Are the two variables equivalent?

Ideological Compatibility
- Minimum: -3.72
- Maximum: 3.98

Elite Law School
- Minimum: 0
- Maximum: 1
#3: You can NOT compare the size of coefficients without taking units into account.

<table>
<thead>
<tr>
<th></th>
<th>B</th>
<th>Std. Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ideological Compatibility with Attorney</td>
<td>0.051</td>
<td>(0.03) **</td>
</tr>
</tbody>
</table>
| Attorney Attended Elite Law School | 0.209 | (0.07) *  

Use standard deviations:

- If Justice Blackmun’s ideological compatibility with the attorney increases by one standard deviation on our compatibility scale, the attorney’s grade is likely to increase by .05 z-scores.

- If the attorney’s attendance at an elite law school increases by one standard deviation, the attorney’s grade is likely to increase by .02 z-scores.
#4: Use regular English prose.

“The strongest determinants of the scoring of oral arguments by Justice Blackmun were ‘Litigating Experience’ ‘Attorney Attended an Elite Law School’ ‘Washington Elite’.”

“If the attorney attended an elite law school (Harvard, Yale, Columbia, Stanford, Chicago, Berkeley, Michigan, or Northwestern), the dependent variable would be increased by .209.”

Justice Blackmun’s rating of the oral argument

standard deviations from the mean.
#4: Use regular English prose.

Often, a one-unit change in a dummy variable is unrealistic.

An attorney who was 

“Being a member of the Washington elite also 

was likely to receive 

increased the lawyer’s chance of receiving 

a grade on her oral argument 

higher scores from Blackmun. For every one-

unit change in the variable, the Washington 

insider’s score increased by 0.401.”

standard deviations higher than an attorney who was not 

a member of the Washington 

elite.
#4: Use regular English prose.

Each number you use represents something real in the world.
Give (precise) meaning to your variables.

For survey items, discuss your results in the context of what the question and rating scale actually means:

“A respondent who strongly disagrees with the statement that ‘George W. Bush is the best president ever’ is 33% more likely to vote for a Democrat than a respondent who strongly agrees with the same statement.”

Other scales:

“Each additional civic group an individual joins makes her likely to participate in half of one more campaign activity. In real terms, this means that for every two civic groups an individual joins, she is likely to participate in one more campaign activity.”
#5: Don’t report. Interpret.

“If the lawyer has greater resources (if the lawyer is a member of the Washington Elite or is a federal government attorney), then the lawyer will receive a higher oral argument score. If the lawyer is a federal government attorney, then his oral argument score will increase by .165. If the lawyer is a member of the Washington Elite, then his oral argument score will increase by .401.”
#5: Don’t report. Interpret.
And, in your papers, as you discuss the mechanisms by which something happens, draw on what you know from previous research.

“If an attorney works for the government, their score increases by .165. This score increase is logical because these attorneys tend to have more litigation experience than lawyers who work in private law and/or large law firms. Thus, much like the litigation experience variable, working for the government improves an attorney’s score…..As the data shows, attorneys from Washington gained a .401 score increase over those attorneys from elsewhere. This might be attributed to the fact that unlike lawyers from other parts of the country, Washington lawyers have a more comprehensive understanding of the federal courts system and have better established connections in the area, which leads to greater success in the courtroom.”
#6: Don’t overstate your claims.

*Remember that regressions are based on probabilities.*

*Be wary of strong causal language.*

Use terms like,

- “is more likely to”
- “the likelihood of _____ is”
- “is associated with”
- “evidence consistent with the idea that….”
- “the probability that _____ will happen increases”
- etc., etc., etc.!
END
## Example: Z-Score

<table>
<thead>
<tr>
<th></th>
<th>History of Education</th>
<th>Introduction to Statistics</th>
<th>Developmental Psychology</th>
</tr>
</thead>
<tbody>
<tr>
<td>Your Score</td>
<td>80</td>
<td>65</td>
<td>75</td>
</tr>
</tbody>
</table>

## Example: Z-Score

<table>
<thead>
<tr>
<th></th>
<th>History of Education</th>
<th>Introduction to Statistics</th>
<th>Developmental Psychology</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Your Score</strong></td>
<td>80</td>
<td>65</td>
<td>75</td>
</tr>
<tr>
<td><strong>Mean</strong></td>
<td>85</td>
<td>55</td>
<td>60</td>
</tr>
</tbody>
</table>
## Example: Z-Score

<table>
<thead>
<tr>
<th></th>
<th>History of Education</th>
<th>Introduction to Statistics</th>
<th>Developmental Psychology</th>
</tr>
</thead>
<tbody>
<tr>
<td>Your Score</td>
<td>80</td>
<td>65</td>
<td>75</td>
</tr>
<tr>
<td>Mean</td>
<td>85</td>
<td>55</td>
<td>60</td>
</tr>
<tr>
<td>SD</td>
<td>10</td>
<td>5</td>
<td>15</td>
</tr>
</tbody>
</table>
## Example: Z-Score

<table>
<thead>
<tr>
<th></th>
<th>History of Education</th>
<th>Introduction to Statistics</th>
<th>Developmental Psychology</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Your Score</strong></td>
<td>80</td>
<td>65</td>
<td>75</td>
</tr>
<tr>
<td><strong>Mean</strong></td>
<td>85</td>
<td>55</td>
<td>60</td>
</tr>
<tr>
<td><strong>SD</strong></td>
<td>10</td>
<td>5</td>
<td>15</td>
</tr>
<tr>
<td><strong>Z-score</strong></td>
<td>80-85/10 = -0.5</td>
<td>65-55/5 = +2</td>
<td>75-60/15 = +1</td>
</tr>
</tbody>
</table>
## Comparing Apples and Oranges

<table>
<thead>
<tr>
<th></th>
<th>-3</th>
<th>-2</th>
<th>-1</th>
<th>0</th>
<th>+1</th>
<th>+2</th>
<th>+3</th>
</tr>
</thead>
<tbody>
<tr>
<td>History</td>
<td>55</td>
<td>65</td>
<td>75</td>
<td>85</td>
<td>95</td>
<td>105</td>
<td>115</td>
</tr>
<tr>
<td>Stats</td>
<td>40</td>
<td>45</td>
<td>50</td>
<td>55</td>
<td>60</td>
<td>65</td>
<td>70</td>
</tr>
<tr>
<td>Psych</td>
<td>15</td>
<td>30</td>
<td>45</td>
<td>60</td>
<td>75</td>
<td>90</td>
<td>105</td>
</tr>
</tbody>
</table>
Definitions: Standard Scores

• **Standard Scores**: scores expressed as SD away from the mean (z-scores)

• Obtained by finding how far a score is above or below the mean and dividing that difference by the SD

\[ z = \frac{x - \bar{x}}{sd} \]

• Changes mean to 0 and SD to 1, but does not change the shape (called **Standard Normal Distribution**)