

Tutorial 07, Michaelmas Term

Research Methods for Political Science (PO3600)

Stefan Müller

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Trinity College Dublin

<http://muellerstefan.net/research-methods>

1. Questions asked online
2. Gamma and lambda
3. Cross-tables in SPSS
4. Measurement error
5. Research proposal

1. Difference between confidence intervals and t-test? When shall we use which approach?
2. Calculating lambda and gamma by hand?
3. How can I create a dataset with multiple observations easily to check my results?

Feel free to use this service: <https://tinyurl.com/questionspo3600>.

<https://tinyurl.com/surveypo3600>

- Relationship between two nominal variables
- Question: Can we reduce the amount of error by introducing an explanatory variable?

Lambda: Example

We know distribution of party ID: Lab 50%, Con 30%, Lib Dem 20%

		Father's party identification			
		Lab	Con	Lib Dem	
Resp. party ID	Lab	45	2	3	50
	Con	5	23	2	30
	Lib Dem	10	5	5	20
		60	30	10	100

Father party ID	Our guess	Correct	Wrong
Labour	Labour	45	15
Conservative	Conservative	23	7
Lib Dem	Lib Dem	5	5
<i>Total</i>		73	27

- Original error was 50 (when guessing)
- With the additional information (father's party ID) we have 27 errors remaining

General formula: $Association = \frac{Original\ error - Remaining\ error}{Original\ error} = \frac{50 - 27}{50} = .46$

A value of lambda = 0.46 means that the number of errors of prediction can be reduced by 46% if the IV, father's party identification, is known.

- Download data with party ID: <https://tinyurl.com/datapartyid>
- Create a cross-table
- Calculate Lambda
- What is the difference between `father_party_id` Dependent and `party_id` Dependent?

Calculate Gamma

- Measure for relationship between two variables (e.g. time spent studying and grade)
- Values between -1 and 1: -1 strong negative relationship; 0 no relationship; +1 strong positive relationship

Grades	Time Spent Studying	
	Minimal	Extensive
Bad	20	5
Good	6	10

- Find number of concordant pairs, N_c
- Find number of discordant pairs, N_d

Concordant pairs

Grades	Time Spent Studying	
	Minimal	Extensive
Bad	20	5
Good	6	10

$$N_c = 10 \times 20 = 200$$

Gamma: Calculate Disconcordant Pairs

Grades	Time Spent Studying	
	Minimal	Extensive
Bad	20	5
Good	6	10

$$N_c = 10 \times 20 = 200$$

$$N_d = 6 \times 5 = 30$$

Gamma: Insert values into formula

$$N_c = 10 \times 20 = 200$$

$$N_d = 6 \times 5 = 30$$

$$\gamma = \frac{N_c - N_d}{N_c + N_d}$$

$$\gamma = \frac{200 - 30}{200 + 30} = 0.73$$

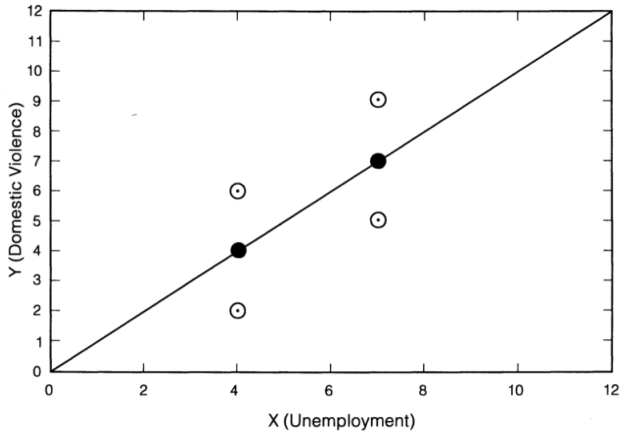
Systematic:

- Consistently overestimate values for certain types of units (e.g. students always over-reporting their income)
- Biased inferences
- Examples: quantitative text analysis; misreporting/consistent misunderstanding; sample selection bias

Random:

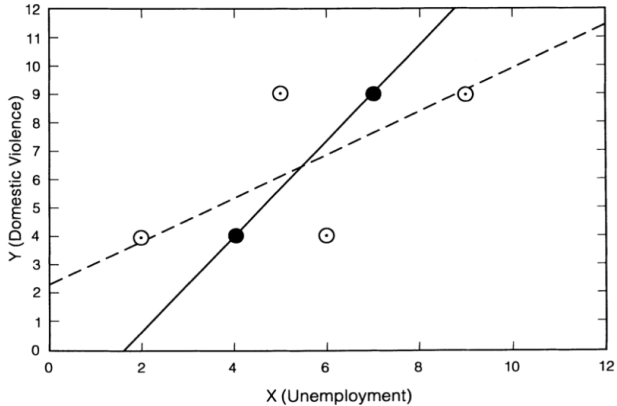
- Random fluctuations without a clear pattern
- More uncertainty in results, only sometimes biased inferences
- Examples: human coding (if not depending on codebook); therefore multiple codings recommended (Benoit et al. 2016)

Measurement Error in Dependent Variable



King et al. (1994, p. 161)

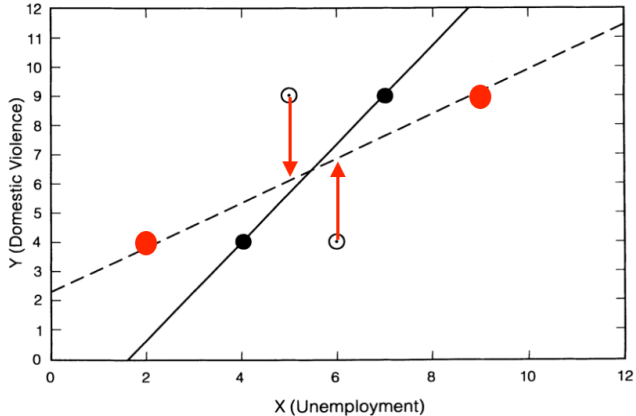
Measurement Error in Independent Variable: Problematic!



King et al. (1994, p. 165)

Measurement Error in Independent Variable: Problematic!

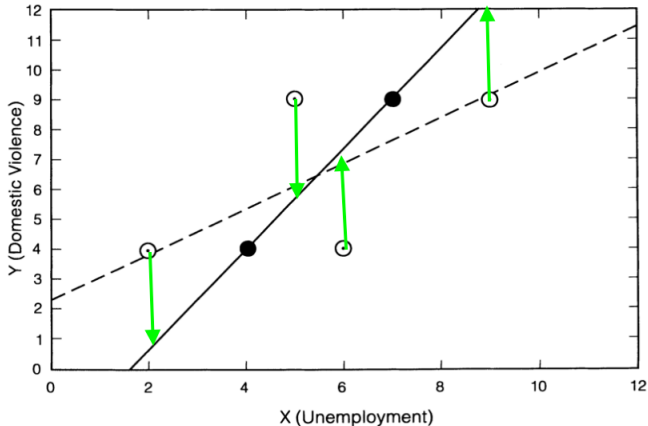
“False” assumed relationship



King et al. (1994, p. 165)

Measurement Error in Independent Variable: Problematic!

“True” relationship: much larger deviation of the observations from the line



King et al. (1994, p. 165)

Team up and discuss (some of) the following aspects:

1. Research question + relevance
2. Theoretical argument + hypothesis
3. Type of data + operationalisation of variables
4. Ways of analysing your data