

Types of Research Design

Types of Variables

EPHE 573

October 5th, 2015

Admin

Find a Thesis Assignment

No Class Next Week

Proposal Presentations Coming Up

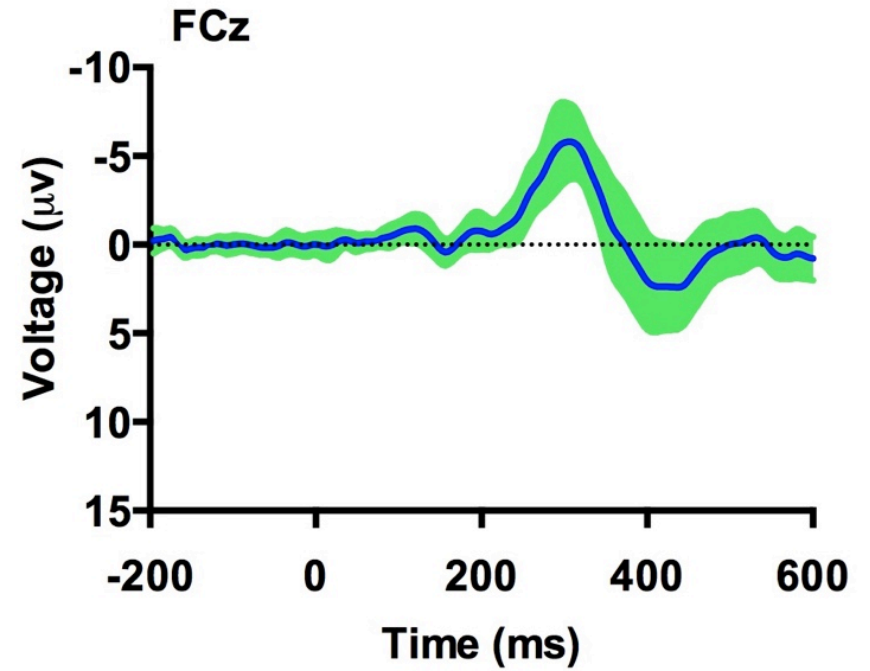
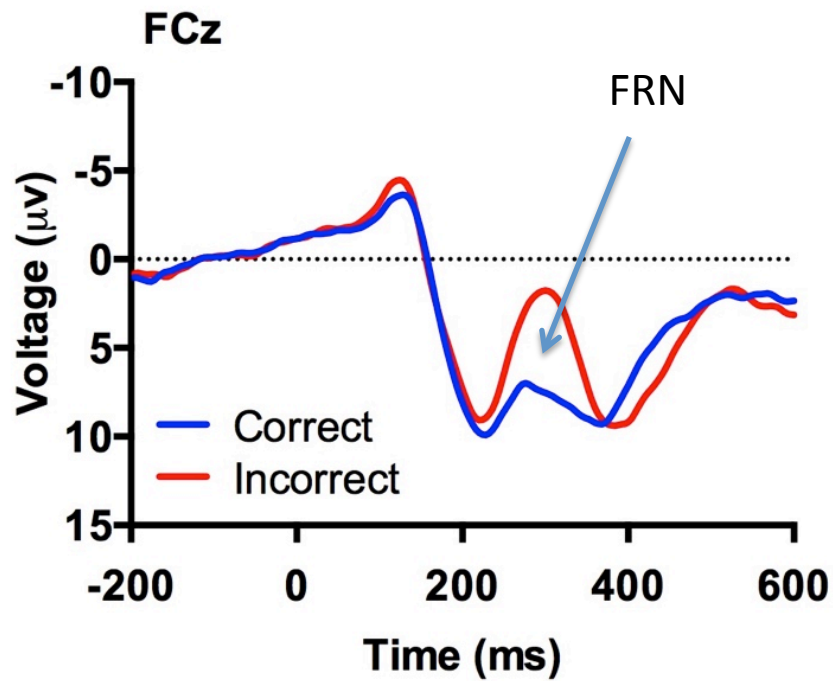
Research Proposal

The Impact of Clinical Fatigue on Error Evaluation

Background

- Clinical fatigue results in an increase in diagnosis errors and medication prescriptions (Smith, 2006)

Background



Research Question

Can electroencephalography be used to assess the impact of clinical fatigue on error evaluation?

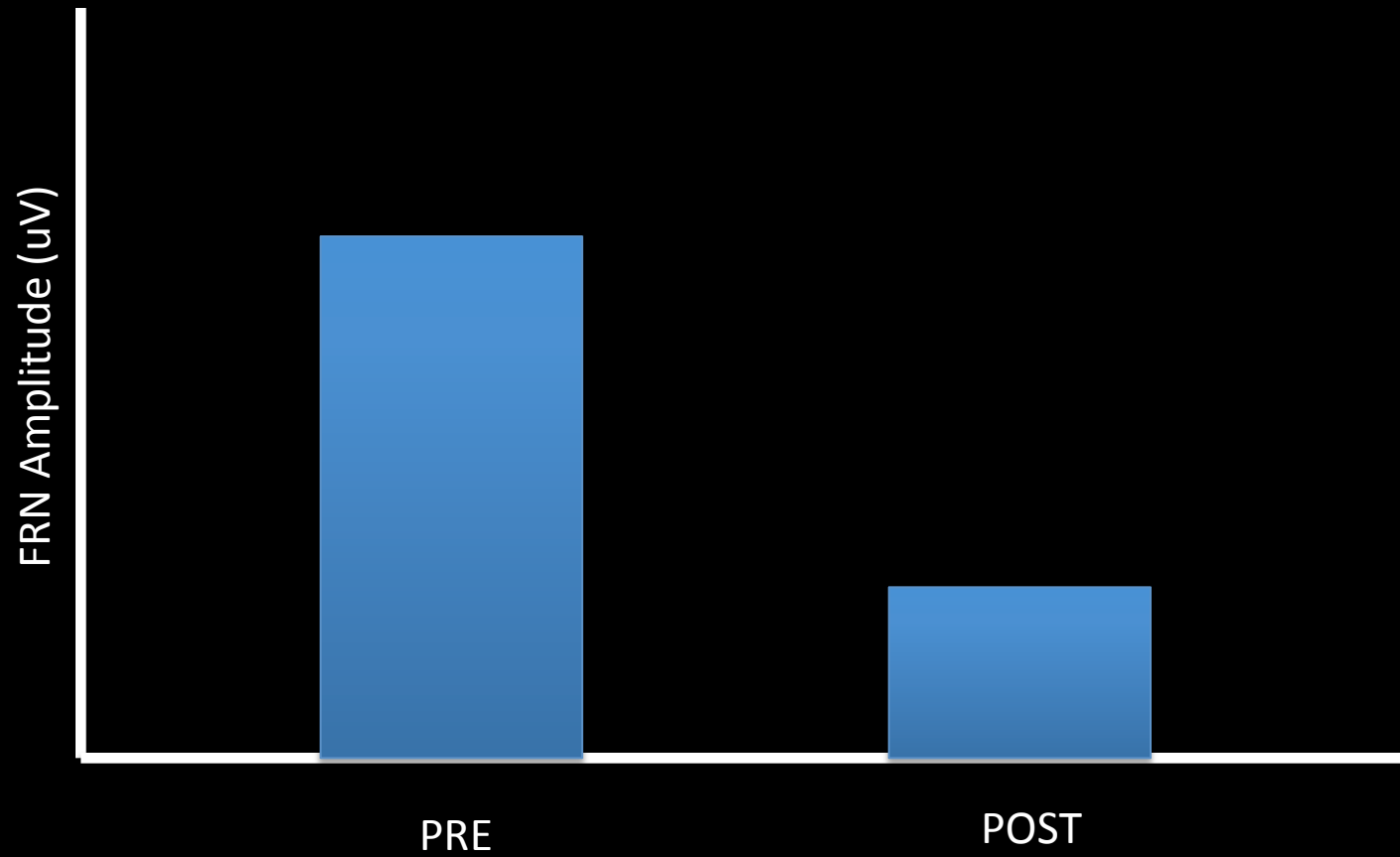
Hypothesis

The amplitude of the feedback error-related negativity will be smaller when doctors on a night on call are fatigued (e.g., post test after relative to pre test before call).

Methods

- 20 medical interns during a night on call
- A MUSE EEG system will be used to measure the amplitude of the FRN pre call and post call
- Interns will also self report level of clinical fatigue using a standardized questionnaire (Jones et al., 2001).

Predicted Results



Limitations

- Does the FRN really index the same error system used to evaluate clinical decisions?

Questions?

Why be interested in other
research designs?

(aka, Why care about what other
people are doing?)

Question

Let's say we are interested in population obesity...

Types of Research Designs

1. Cross Sectional Studies
2. Longitudinal Studies

Pros and Cons

What you are interested in

Q: What would be examples of cross sectional and longitudinal studies of obesity?

Types of Studies

1. Case Study

What would an example of a case study be if we studied obesity?

Types of Studies

2. Field Studies

What would an example of a field study be if we studied obesity?

Types of Studies

3. Survey Studies

What would an example of a survey study be if we studied obesity?

Types of Studies

4. Experimental Studies

What would an example of an experimental study be if we studied obesity?

Types of Experimental Studies

4a. Animal and Cellular Research

Types of Experimental Studies

4b. Human Research

- i) Clinical Trials
- ii) Randomized Control Trials / Lab Research
- iii) Observational / Exploratory Studies
- iv) Retrospective Cohort
- v) Prospective Cohort

Types of Experimental Studies

5. Systematic Review Studies

5a. Meta Analysis

Quantitative versus Qualitative Research

Quantitative Research

In a quantitative design you typically find something you can measure and use inferential statistics to make a decision about a pattern of results.

I hypothesize that vertical jump is impacted by athlete race – African American athletes can jump higher than other athletes.

Qualitative Research

In a qualitative design you still measure something – but it is usually descriptive in nature and different types of analyses are used (sometimes).

I hypothesize that expert coaches will self report different statements about what is important in practice as opposed to non expert coaches.

Mixed Designs

Researchers do use quantitative and qualitative data in the same study.

Example – you can attempt to quantify stage of learning but self reports by learners could be used to support the quantitative data.

Independent versus Dependent Variables

Independent Variables

What we control / manipulate.

Examples: Gender, Time of Measurement,
Experimental Condition, ...

Dependent Variables

What we measure.

Examples: Weight, Height, Brain Activity, Jump
Distance, etc.

The Idea...

Typically we contrast IVs.

Do men and women differ?

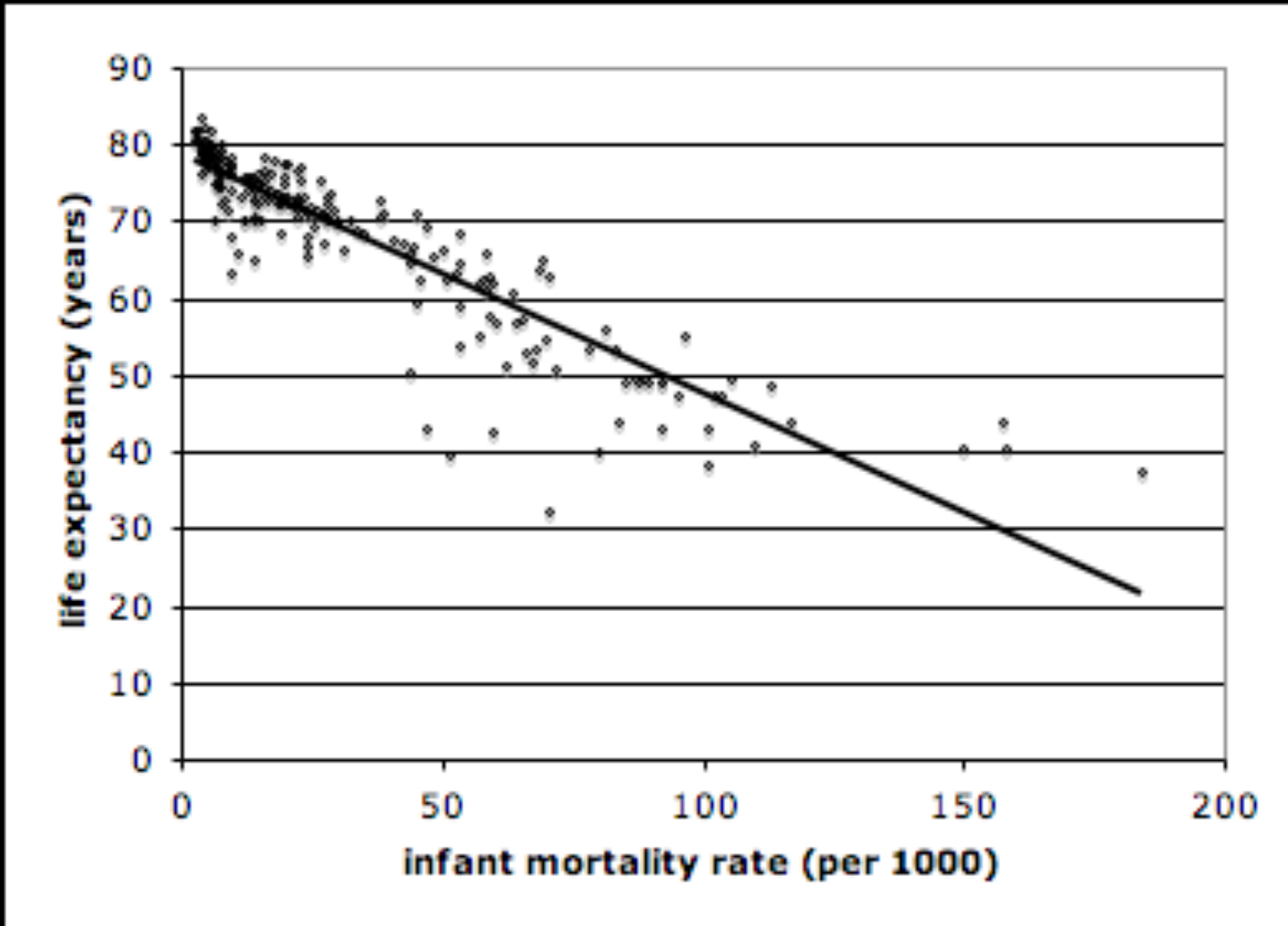
Urban versus rural?

Etc.

However, sometimes we do not if we think the information itself is interesting (e.g., a case study)

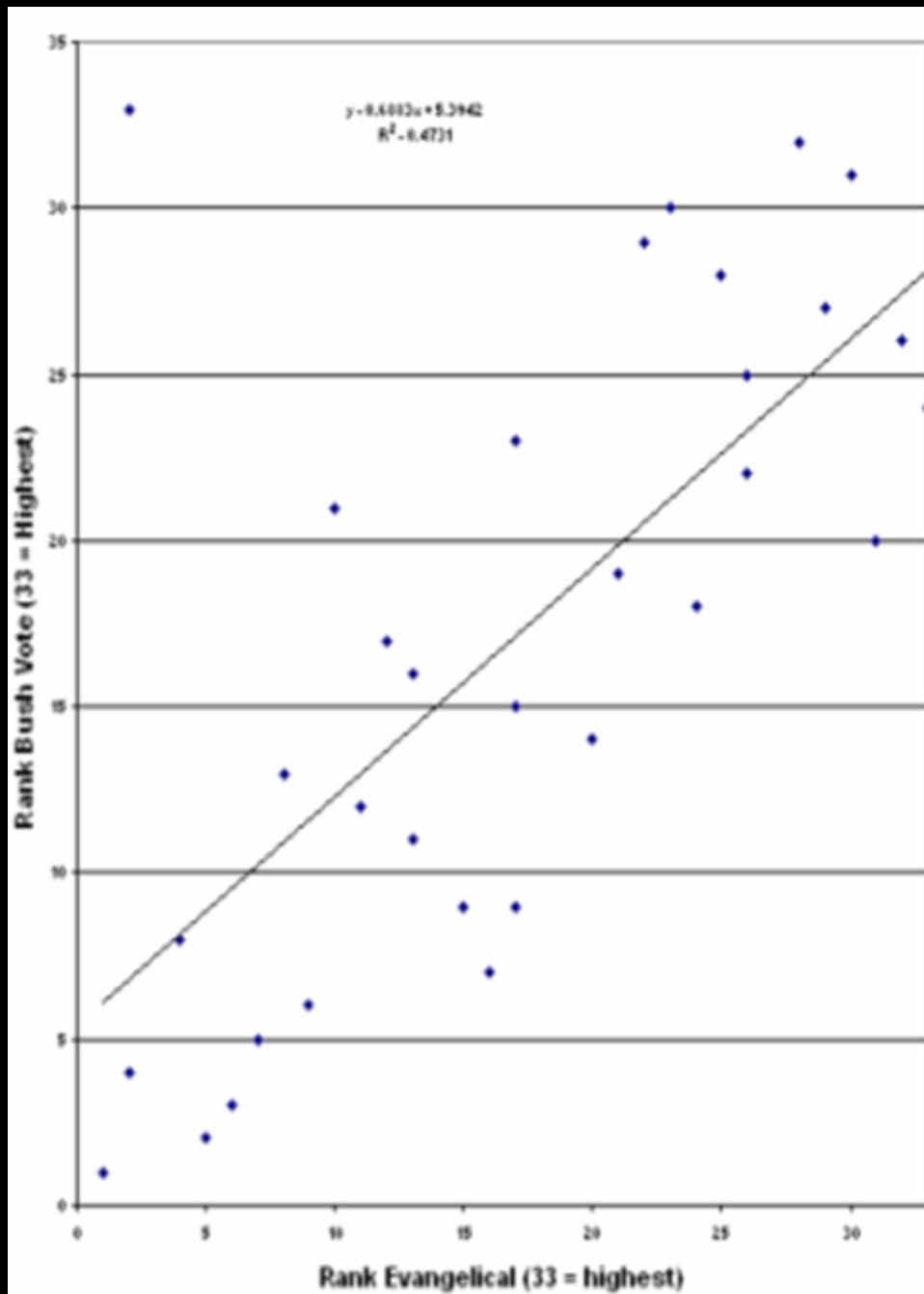
Our Belief

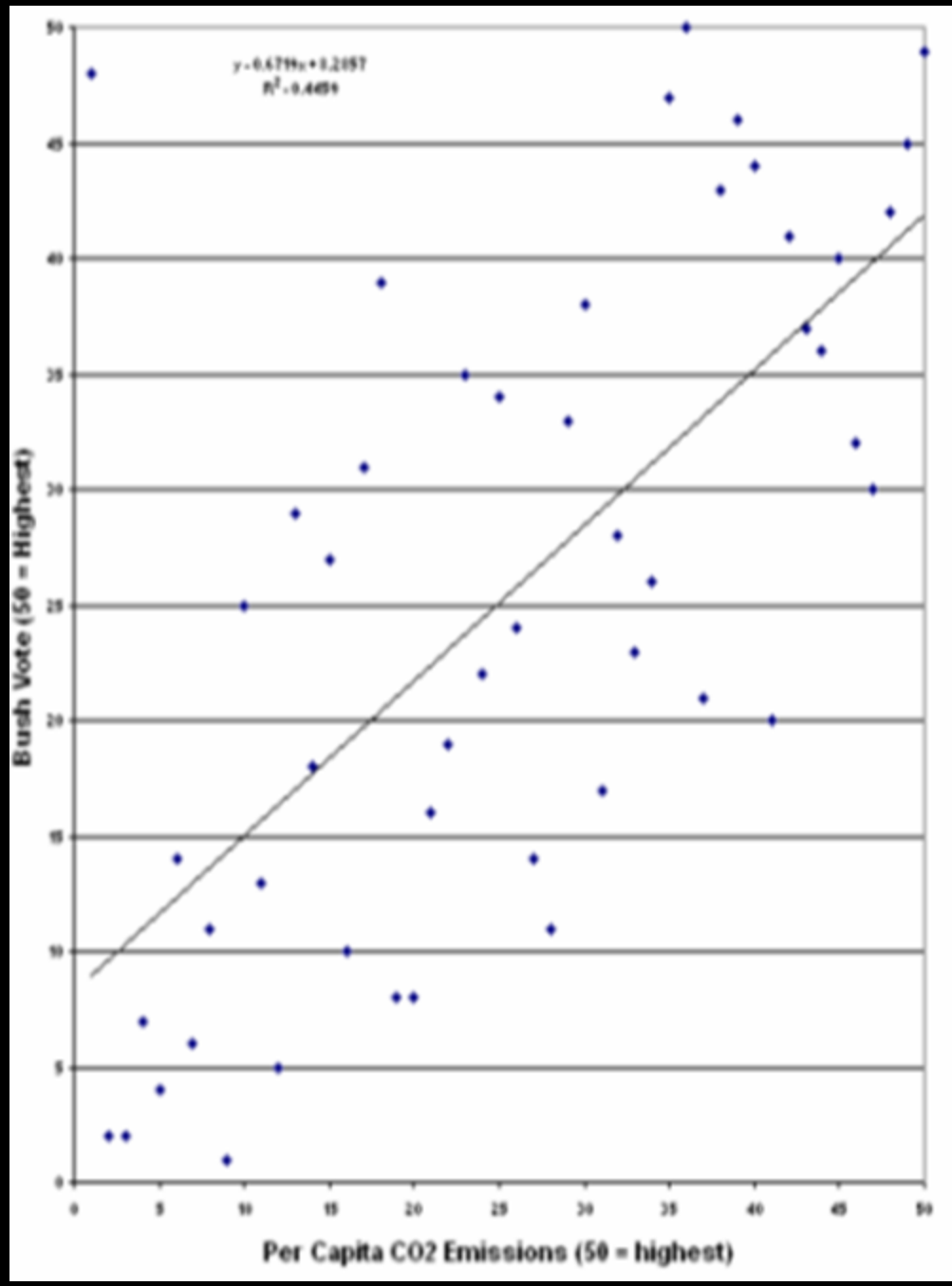
We believe that our IV predicts a difference in the DV (H1) or is does not (H0).



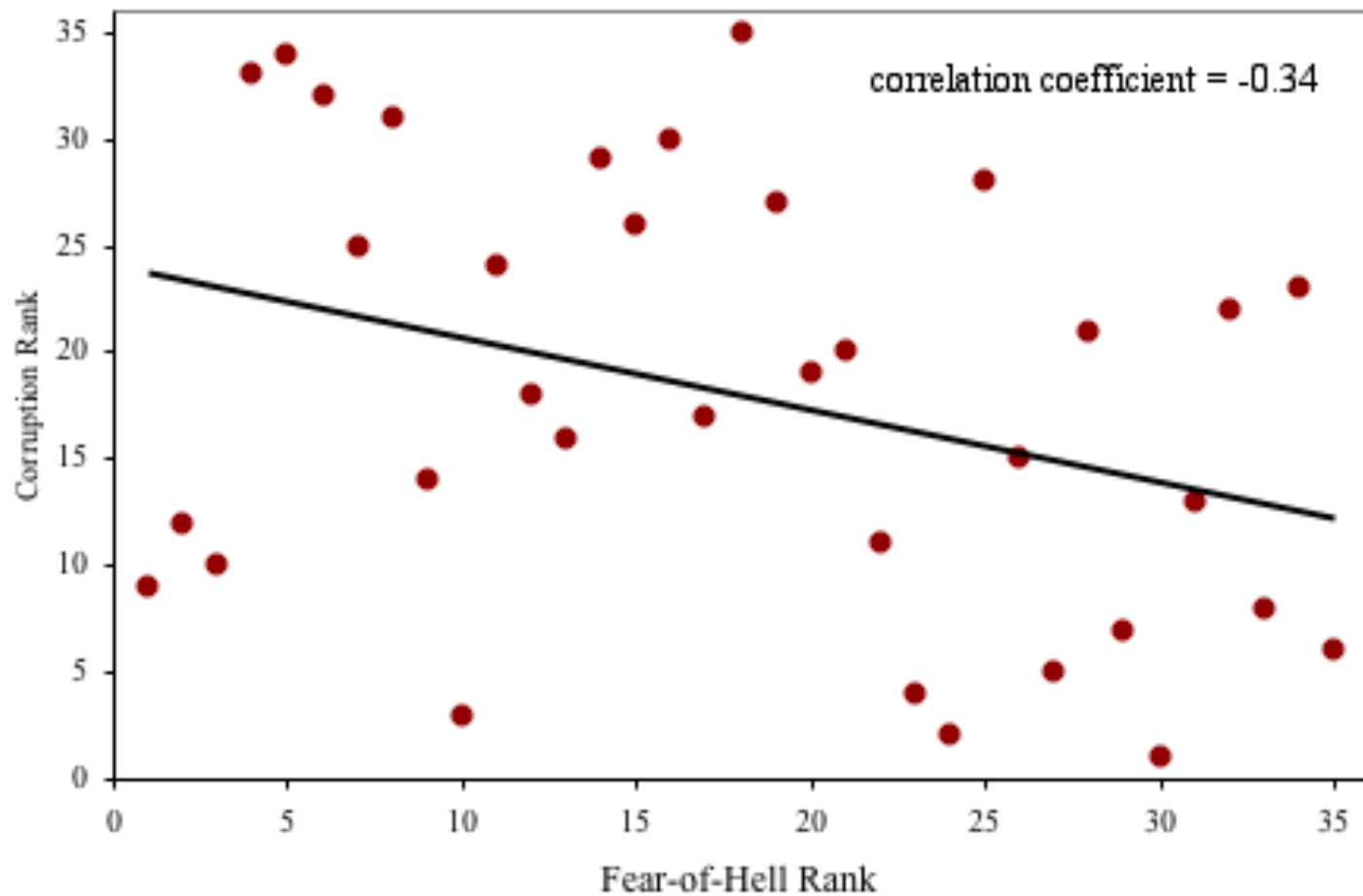
Negative Relationship
Imperfect Relationship

X ↑ Y ↓





Corruption and Fear of Hell



$$y = mx + b$$

DV

IV

Checklist

1. Research Question (discuss with me / supervisor)
2. Hypotheses (at least one)
3. Figure out type of study
4. Figure out IVs and DVs