FLS 6441 - Methods III: Explanation and Causation

Week 1 - Review

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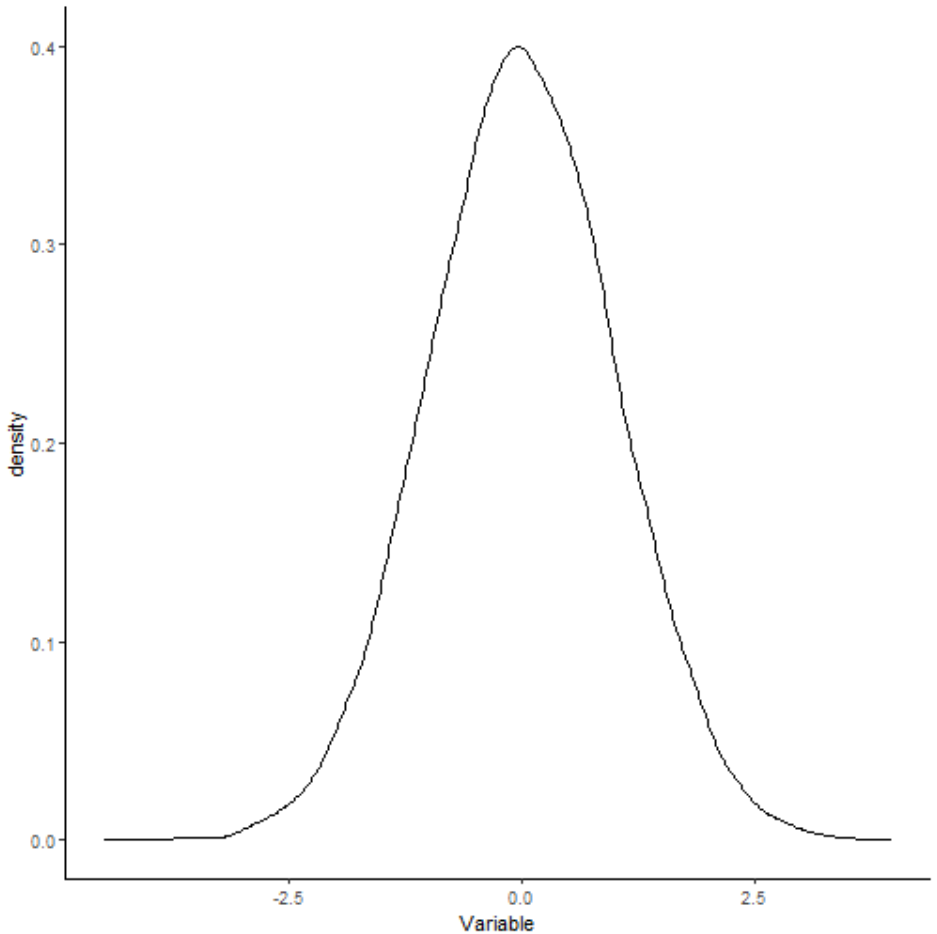
Course Objectives

1. temp

Data

1. We work with variables, which VARY!

	Variable
1	0.19
2	-0.22
3	1.88
4	-0.78
5	-0.03
6	1.37
7	-0.21
8	-0.28
9	0.52
10	1.18



Regression

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3. $E(Y|X)$

Regression

1. Regression is very similar to calculating correlation

Regression Guide

1. **Choose variables and measures:** To test a specific hypothesis
2. **Choose a Model/Link Function:** Should match the data type of your outcome variable
3. **Choose Covariates:** To match your strategy of inference
4. **Choose Fixed Effects:** To focus on a specific level of variation
5. **Choose Standard Error Structure:** To match known dependencies/clustering in the data
6. **Interpret the coefficients:** Depending on the type/scale of the explanatory variable

Regression Models

The Regression Model reflects the data type of the outcome variable:

- Continuous -> Ordinary Least Squares

```
zelig(Y   X,data=d,model="ls")
```

- Binary -> Logit

```
zelig(Y   X,data=d,model="logit")
```

- Unordered categories -> Multinomial logit

```
zelig(Y   X,data=d,model="mlogit")
```

- Ordered categories -> Ordered logit

```
zelig(Y   X,data=d,model="ologit")
```

- Count -> Poisson

```
zelig(Y   X,data=d,model="poisson")
```

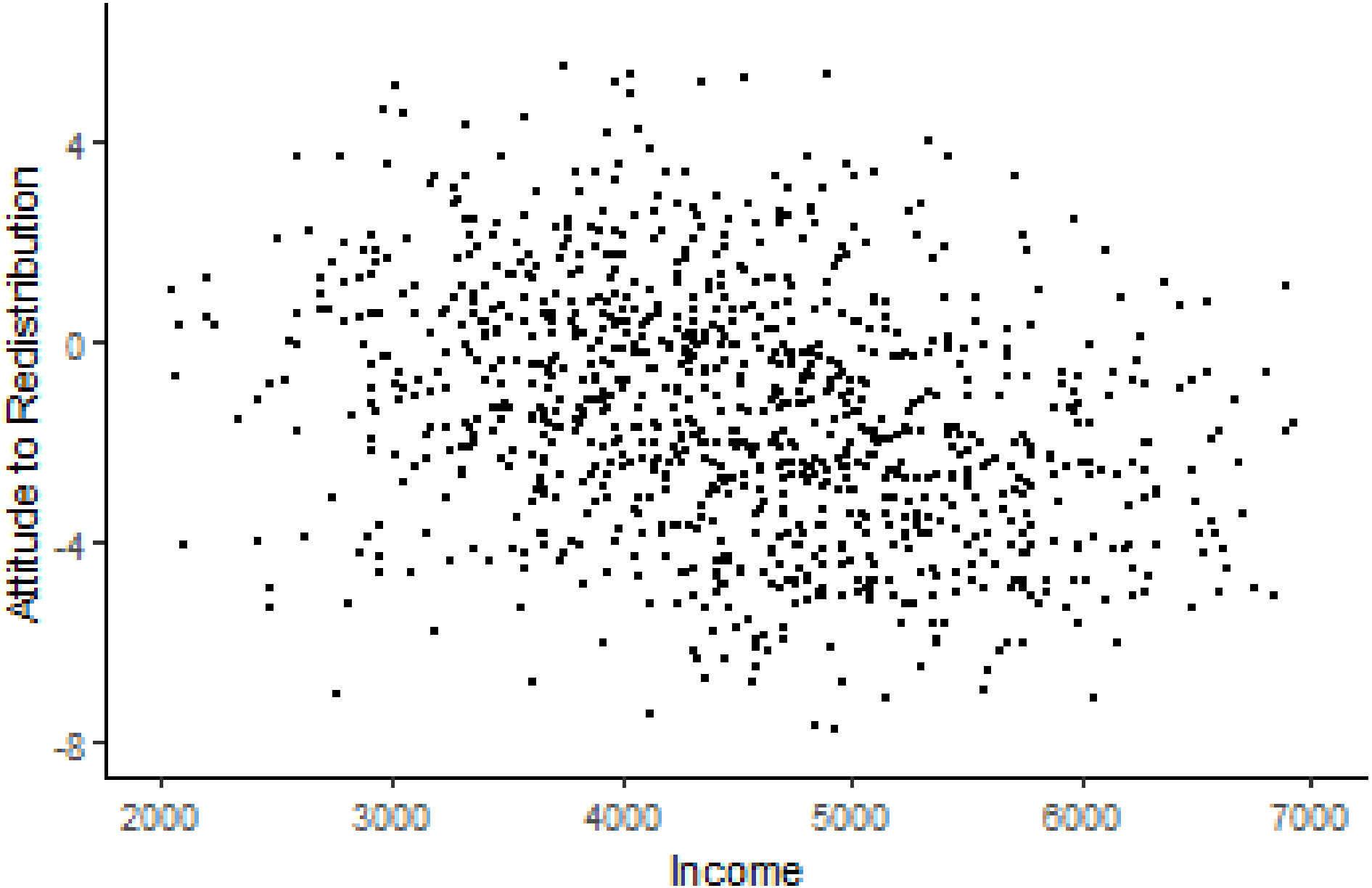
Interpreting Regression Results

- Difficult! It depends on the scale of the explanatory variable, scale of the outcome, the regression model we used, and the presence of any interaction
- Basic OLS:
  - 1 [unit of explanatory variable] change in the explanatory variable is associated with a β [unit of outcome variable] change in the outcome

Predictions from Regressions

- temp

Omitted Variable Bias



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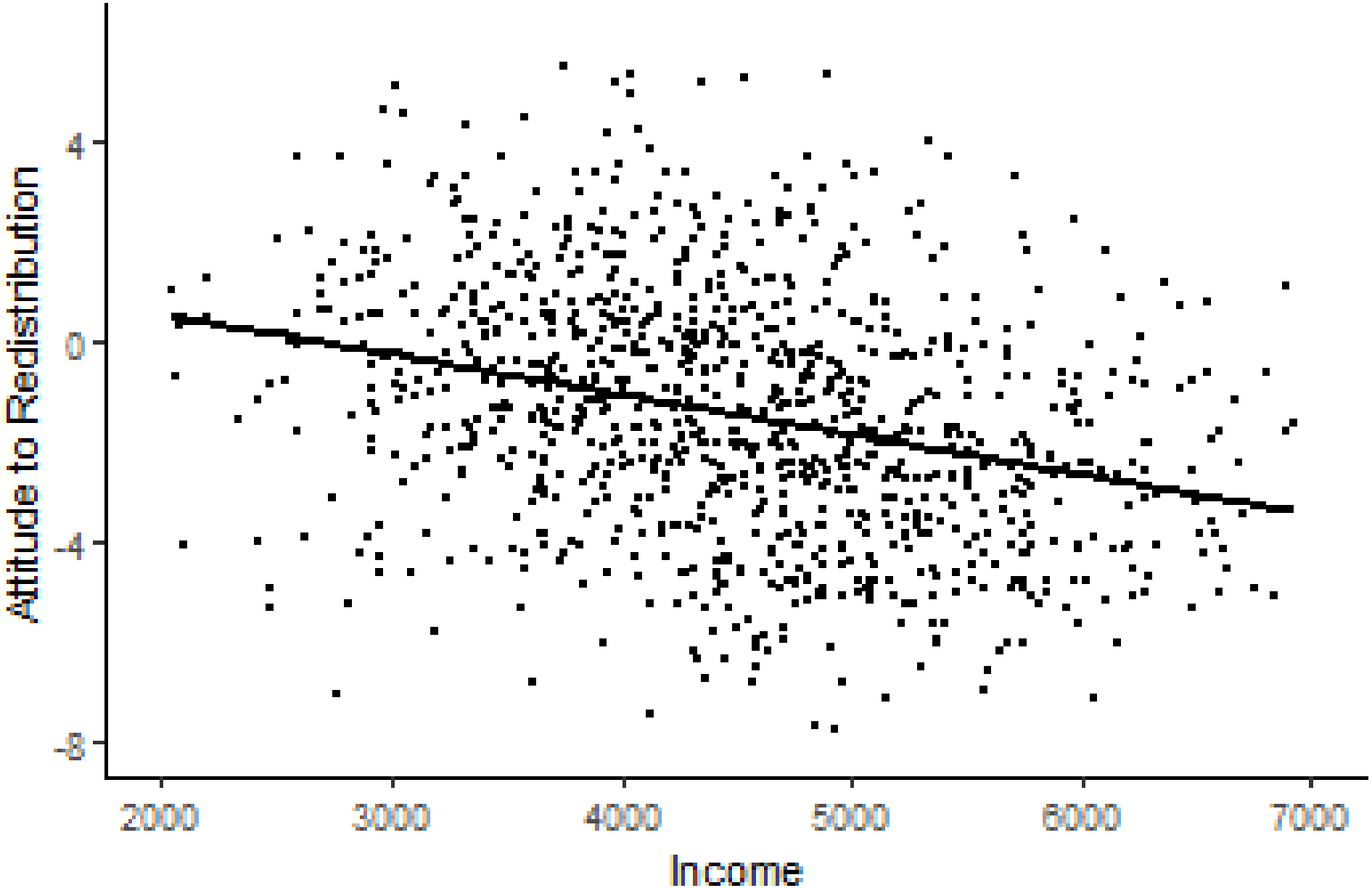
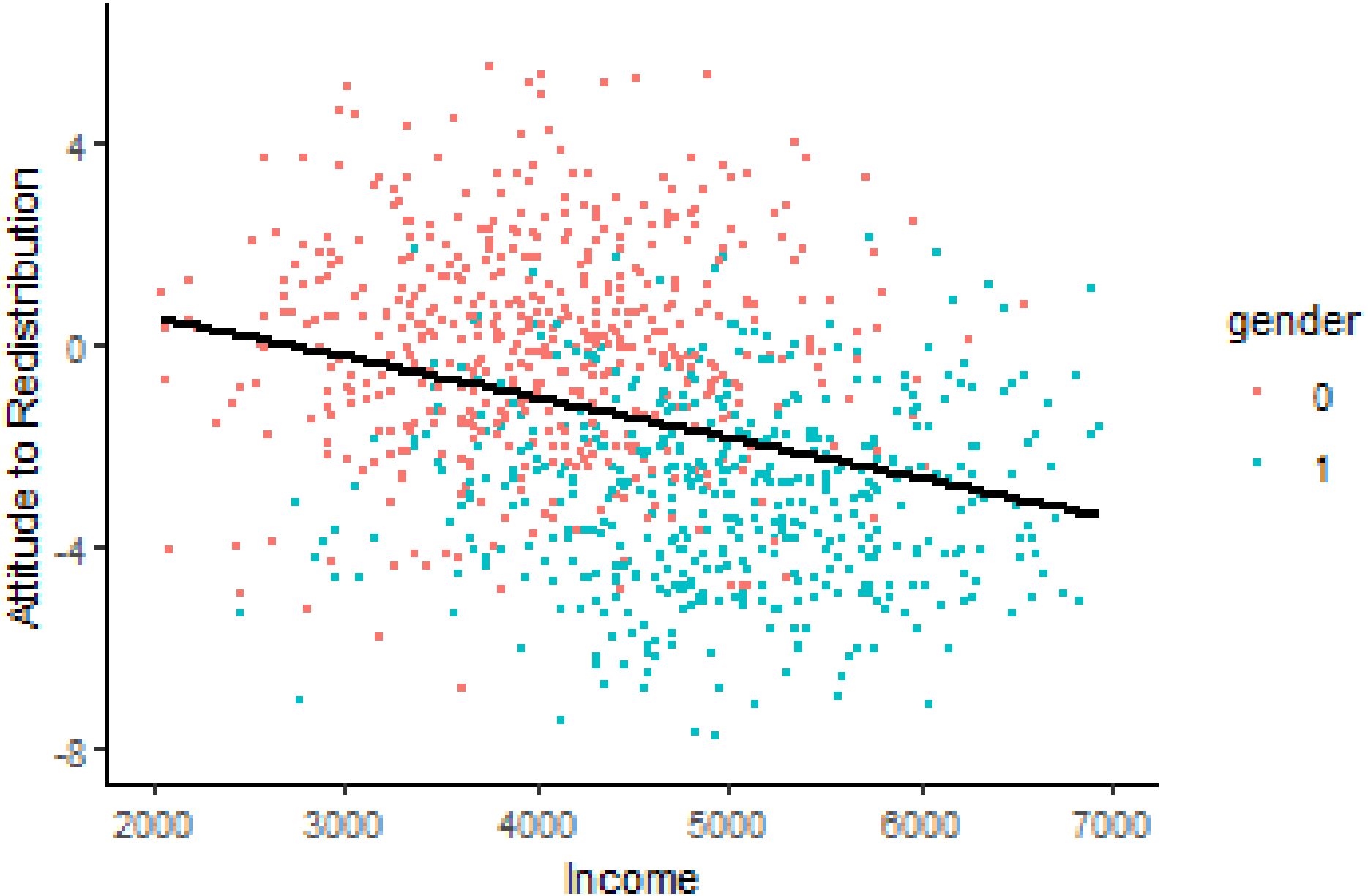


Omitted Variable Bias



Omitted Variable Bias