Lesson 4
Tuesday 2/6/24

Summary of Different Sampling Approaches

Sampling

Probability Sampling

Non-Probability Sampling

Simple Random Sampling

Complex Random Sampling

Systematic Random Sampling

- Purposive/Judgment
- Quota
- Snowball
- Availability/Convenience
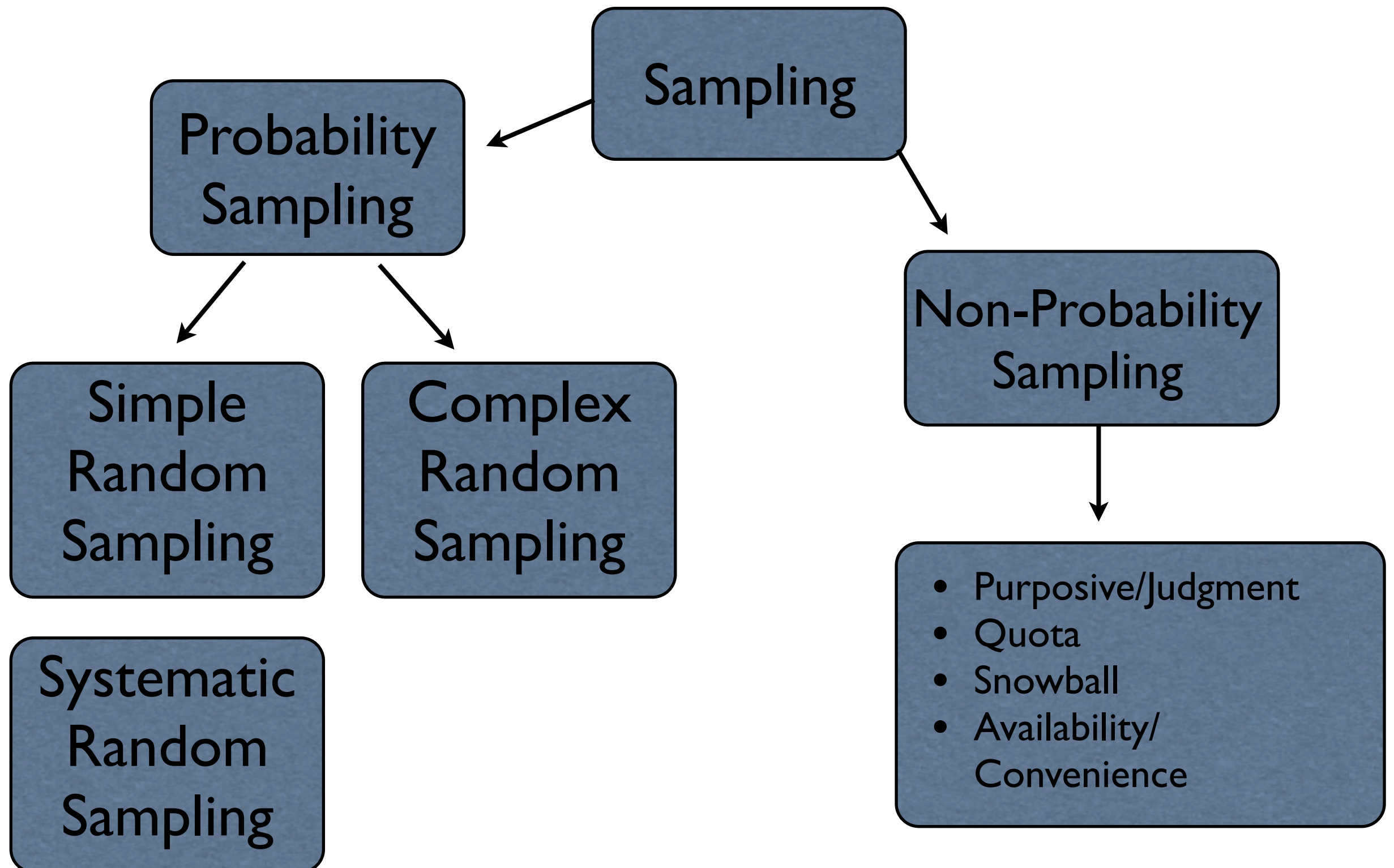
Varieties of Research Involving Statistics

- Descriptive Analysis: "How many" or "how often" questions; documenting patterns.

- Explanatory Studies: measuring the relationship between independent and dependent variables; testing hypotheses.

- Program and policy evaluation: analyzing the effectiveness of various policies and interventions on scientifically interesting criminal justice outcomes.

Examples

- Descriptive Analysis: Which states have the highest rates of police killings?

- Explanatory Studies: Some criminological theory hypothesizes that poor school performance is a cause of crime. A basic question we could answer with data is whether school performance is correlated with crime?

- Program and policy evaluation: do batterer intervention programs reduce future domestic violence?

Police Killings by State

- Within each state, we would need a way to count the number of times someone was killed by the police in a well-defined period of time.

- There is no nationally mandated reporting system for police killings.

- Most research in this area relies on data collected by journalists (see, the Washington Post <u>database</u> for example).

School Performance and Crime

- If poor school performance is a cause of crime, then age should be correlated with crime.

- If school performance is a cause of crime, then the correlation should be measurable under a wide range of circumstances.

- If school performance is a cause of crime, then no other variable should be able to explain the correlation.

Batterer Intervention and Domestic Violence

- If a batterer intervention program is effective, it should be correlated with reduced rates of domestic violence.

- We could randomly assign abusers coming into court during some time period to 2 different groups: treatment and control. The treatment group gets the program and the control group gets whatever the business as usual condition is.

- Then, we can follow people in both groups (for the same length of time) to see whether the treatment group has better outcomes than the control group.

- This is an example of a randomized controlled experiment or trial (pp. 7-8 in your textbook).

Measurement Validity

- Validity is a synonym for accuracy. In research, we say a measure is valid if the measure accurately reflects the concept that is being measured.

- Example: we might use the word "recidivism" to mean "new offending among people who have offended in the past." This is a conceptual definition.

- For purposes of conducting an actual study, we might define recidivism among a cohort of prison releasees as "any arrest for a new crime within 3 years of release from prison." This would be an operational definition.
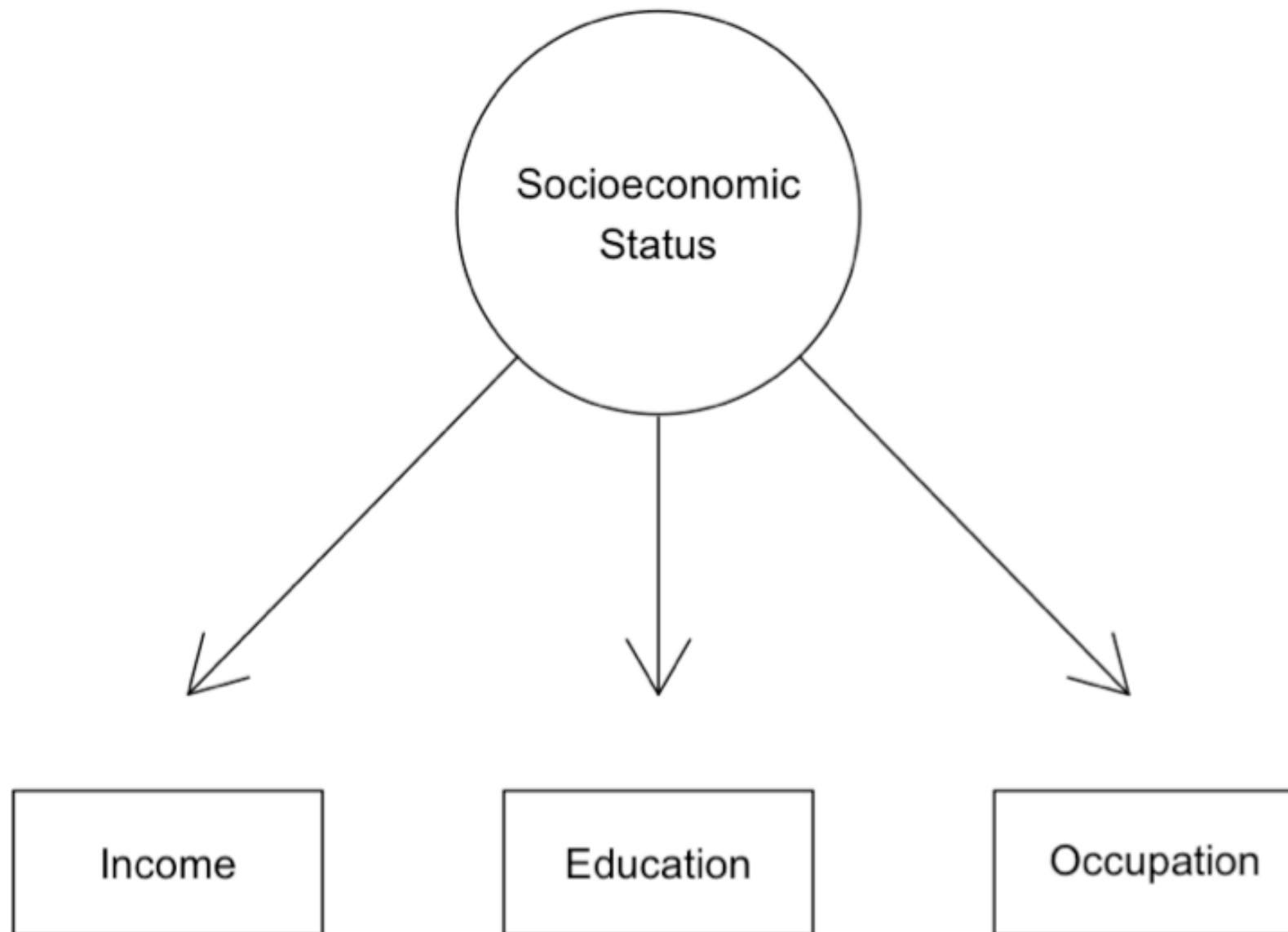
Practice Analysis Exercise 1: Household Burglary in Charlotte and Wilmington NC (2010)

```
nburg.clt=7305
nburg.wil=1109
nburg.clt/nburg.wil
pop.clt=779541
pop.wil=106476
burgrate.clt=(nburg.clt/pop.clt)*100000
burgrate.clt
burgrate.wil=(nburg.wil/pop.wil)*100000
burgrate.wil
burgrate.clt/burgrate.wil
```
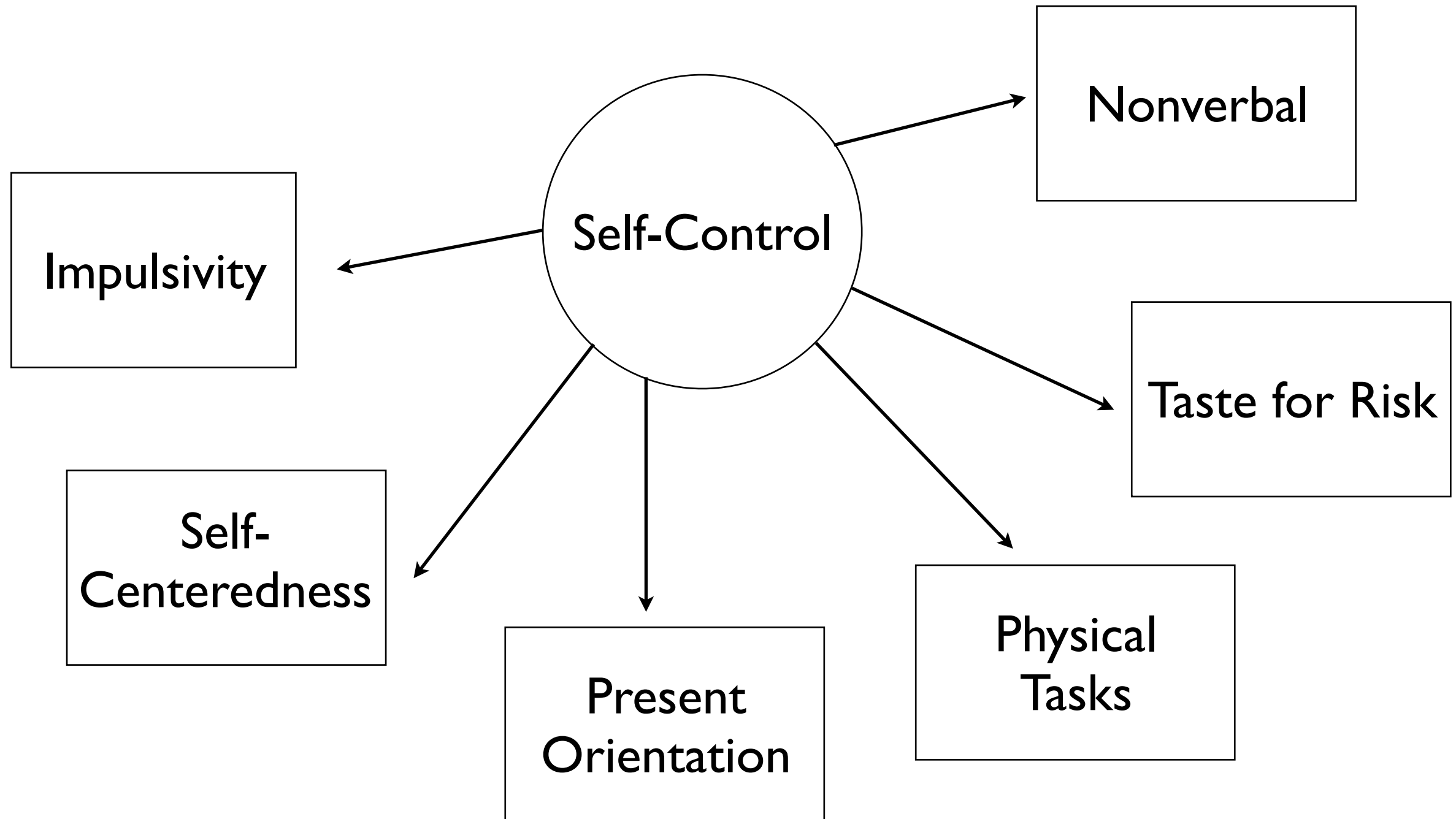
Results

```
> nburg.clt=7305
> nburg.wil=1109
> nburg.clt/nburg.wil
[1] 6.587015
> pop.clt=779541
> pop.wil=106476
> burgrate.clt=(nburg.clt/pop.clt)*100000
> burgrate.clt
[1] 937.0899
> burgrate.wil=(nburg.wil/pop.wil)*100000
> burgrate.wil
[1] 1041.549
> burgrate.clt/burgrate.wil
[1] 0.8997077
>
```

Another Example (Measurement)

Another Example (Measurement)

Self-Control

Nonverbal

Impulsivity

Taste for Risk

Self-Centeredness

Present Orientation

Physical Tasks

Source: Michael R. Gottfredson and Travis Hirschi (1990). A General Theory of Crime. Stanford, CA: Stanford University Press (see page 90).
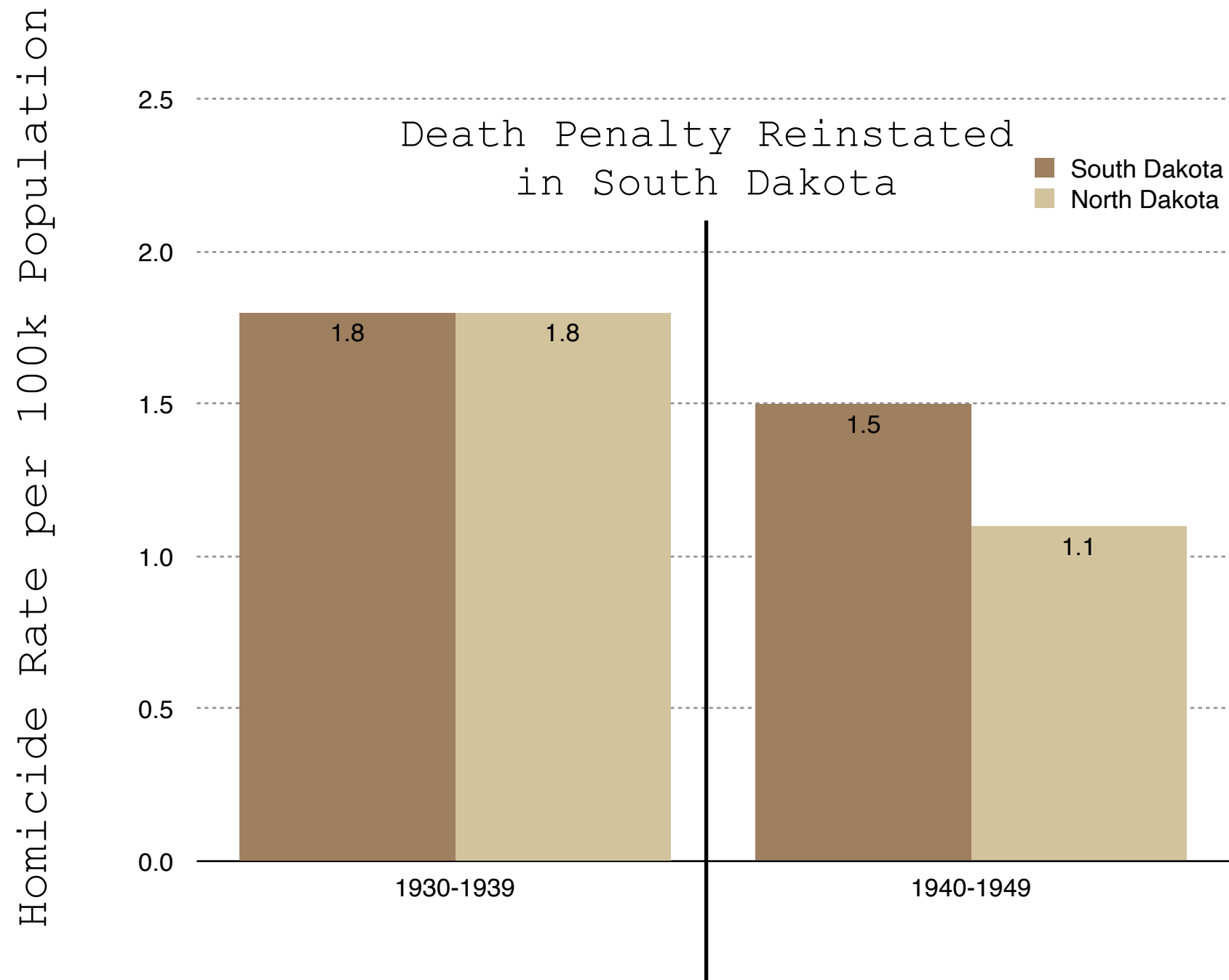
Causal Validity

- Causal validity is a synonym for another term -- internal validity -- that is often used in research methods (note: your book has a typo on page 17 and refers to <u>interval</u> validity; this should say "internal" validity instead).

- The concern here (internal validity) is around whether a study provides convincing evidence of that a causal effect has been measured.

- Three conditions must be met to show that x is a cause of y: (1) x must precede y; (2) x and y must be correlated; (3) the correlation between x and y is not spurious.

- Establishing convincing evidence of cause-and-effect is <u>very difficult</u> as our next 3 examples will show.

- Another type of validity which we will consider later is "external validity"; has to do with the generalizability of our results to a larger population.

Homicide Rates in South Dakota
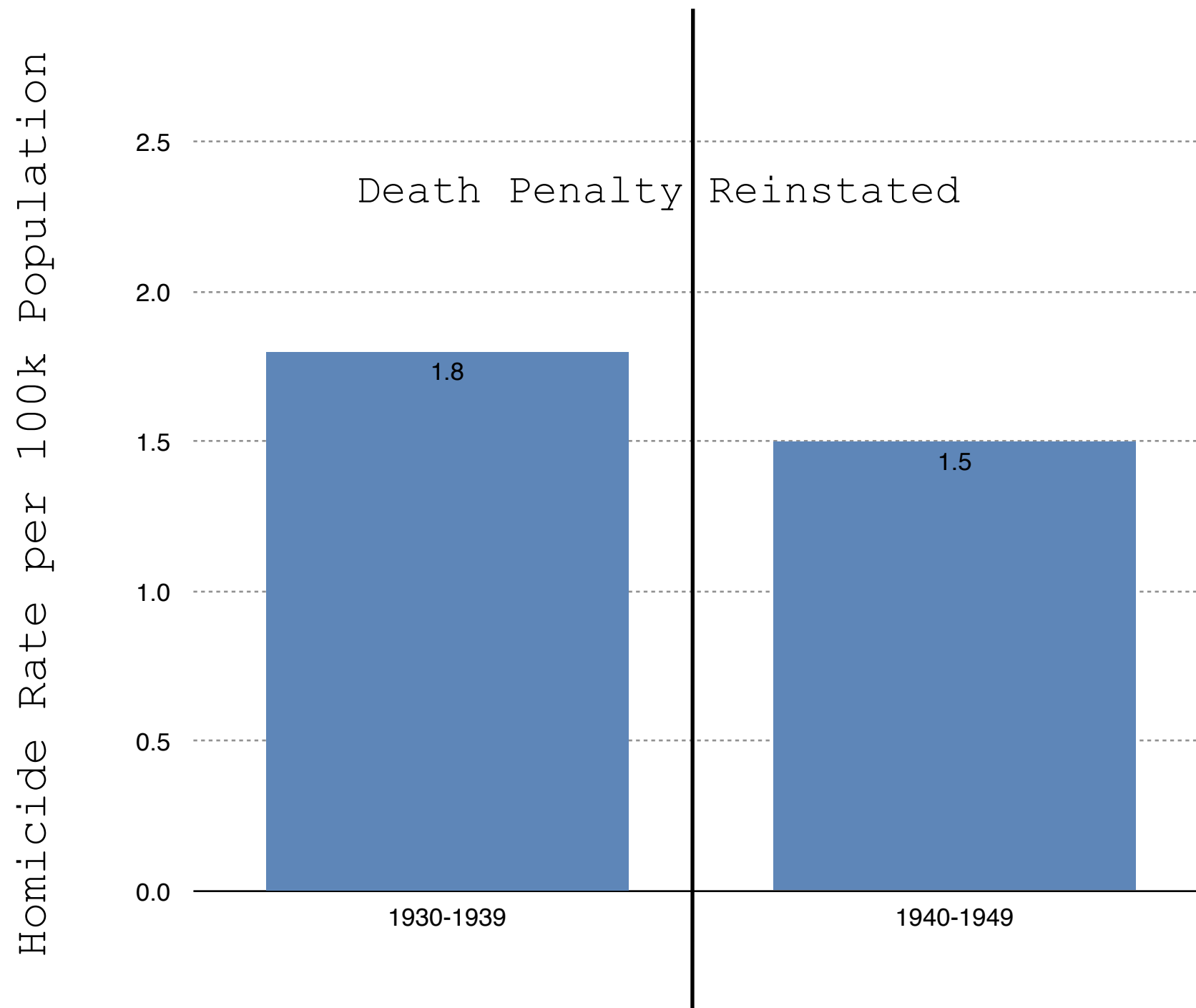
Source: Karl Schuessler (1952). The deterrent influence of
the death penalty. Annals of the American Academy of
Political and Social Science, 284:54-61 (at page 58).

Homicide Rates in North & South Dakota

Source: Karl Schuessler (1952). The deterrent influence of the death penalty. Annals of the American Academy of Political and Social Science, 284:54-61 (at page 58).