

PSC 202

SYRACUSE UNIVERSITY

INTRODUCTION TO POLITICAL ANALYSIS VARIABLES

CLASS WEBSITE

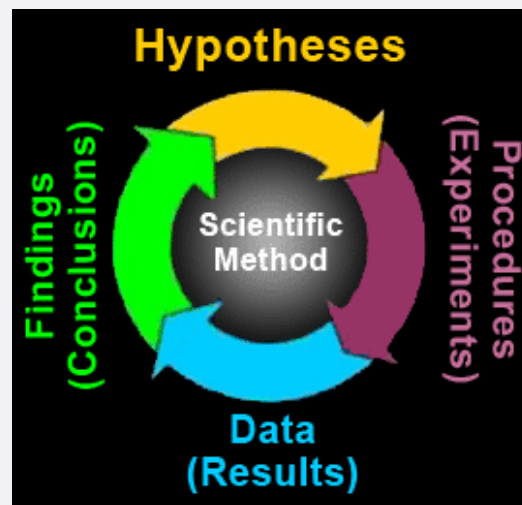
Week 4

- Monday (9/20): Variables
 - Reading: EPA Ch. 2, Sections "Essential Features" and "Levels of Measurement"
 - Multiple Choice Quiz due (11.40 AM, Blackboard)
- Wednesday (9/22): Describing Variables
 - Reading: EPA Ch. 2, Section "Describing Variables"
 - Multiple Choice Quiz due (11.40 AM, Blackboard)
- Problem Set 2 due on Friday (9/24 10 AM, submit on Blackboard)

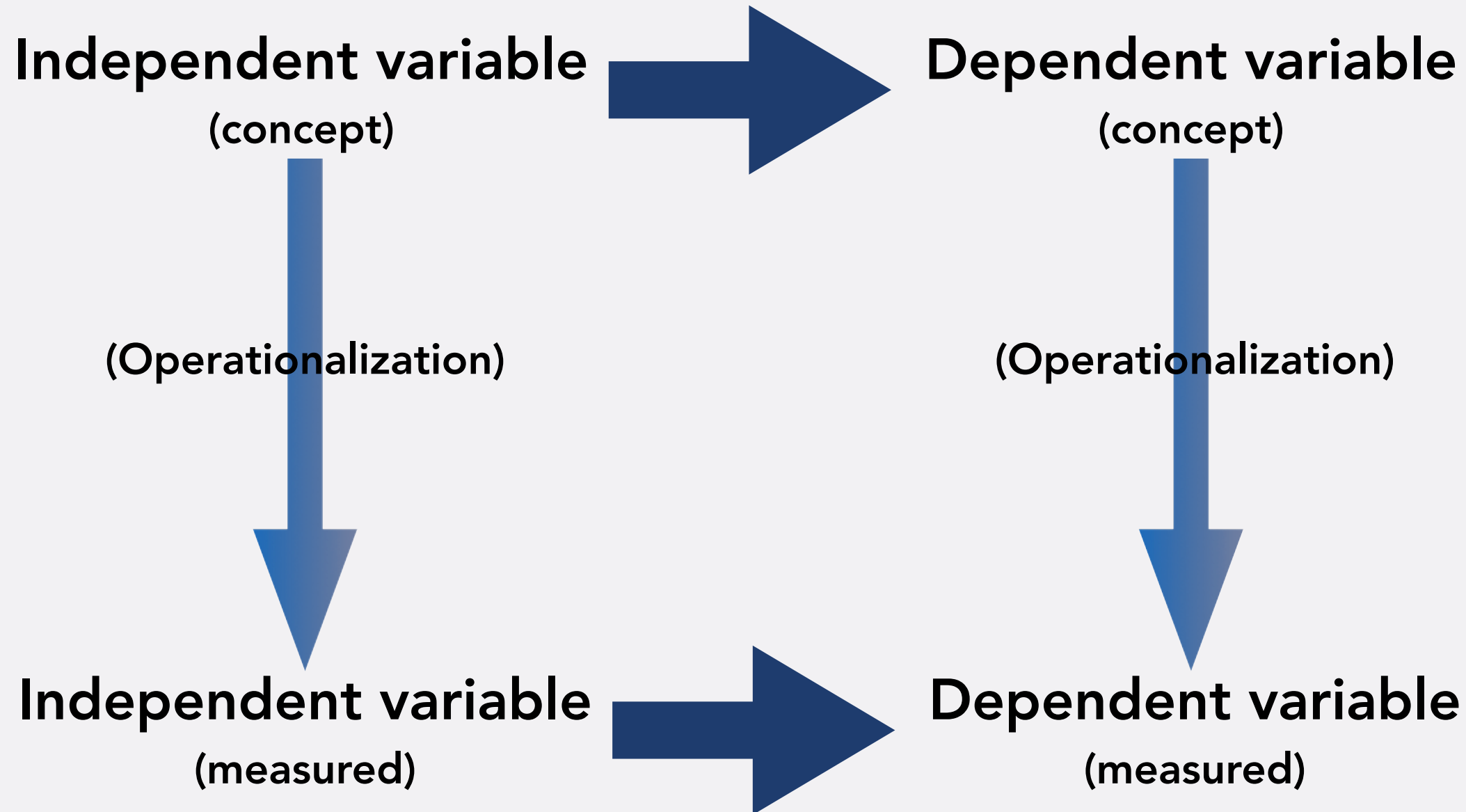
- simonweschle.com/psc202

WHERE WE ARE

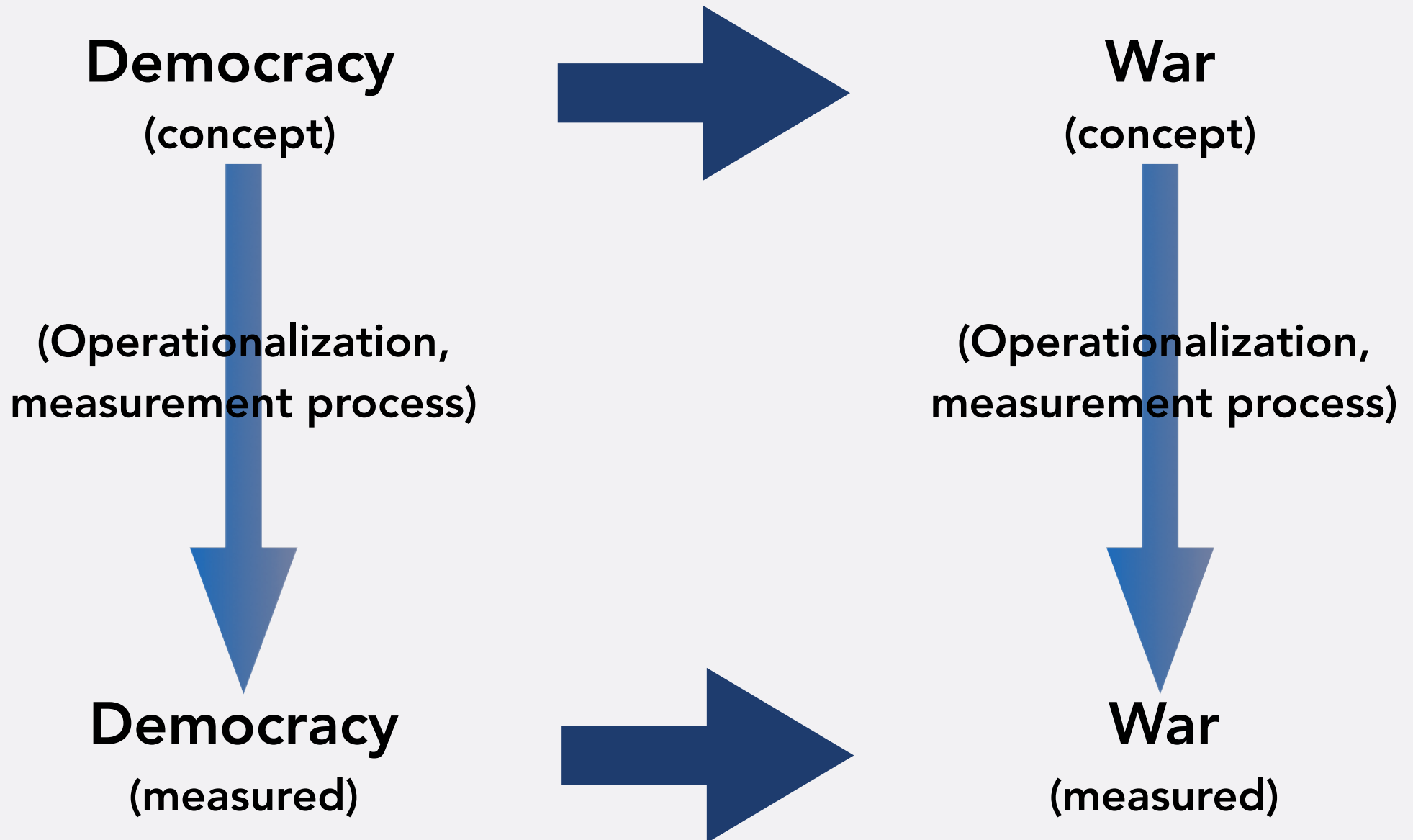
- Formulate research question
- Propose explanation/theory, hypotheses
- Data collection process
- Use data to evaluate hypotheses
- Reassess explanation



RECAP



MEASUREMENT PROCESS



MEASUREMENT PROCESS

Concept



**Precise Definition of Concept
(Conceptual Definition)**



**Measurement Strategy
(Operational Definition)**



Variable

- **Example: Democracy**

MEASUREMENT PROCESS

Concept



**Precise Definition of Concept
(Conceptual Definition)**



**Measurement Strategy
(Operational Definition)**



Variable

CONCEPTUAL DEFINITION

- The concept of democracy is defined as the extent to which countries exhibit the characteristic of having open and competitive contests to decide leadership

MEASUREMENT PROCESS

Concept



**Precise Definition of Concept
(Conceptual Definition)**



**Measurement Strategy
(Operational Definition)**



Variable

OPERATIONAL DEFINITION

- **Example Democracy:**
 - What procedure is used to collect the data?
 - Country experts rate countries
 - How will the concept be measured?
 - regulation of executive recruitment, competitiveness of executive recruitment, openness of executive recruitment, constraints on chief executive
 - What "metric" will be employed?
 - For each of the 4 components, experts rate country, then ratings are added up, resulting in score from -10 (strongly autocratic) to 10 (strongly democratic)

TODAY

Concept



**Precise Definition of Concept
(Conceptual Definition)**



**Measurement Strategy
(Operational Definition)**



Variable

ANOTHER, SIMPLER, EXAMPLE

- Concept: religiosity
- Conceptual definition: The concept of religiosity is defined as the extent to which individuals exhibit the characteristic of attending religious services

OPERATIONAL DEFINITION

- **Example Religiosity:**
 - What procedure is used to collect the data?
 - Face-to-face survey of a random sample of adult Americans
 - How will the concept be measured?
 - "How often do you attend religious services?"
 - What "metric" will be employed?
 - Never; Less than once/year; Once/year; Several times/year; Once/month; 2-3x/month; Nearly every week; Every week; More than once/week

MEASUREMENT ISSUES

- **What qualities should a good operationalization have?**

RELIABILITY

- **Applying the same measurement rules to the same case should produce identical results**

RELIABILITY

3.3 XROPEN (all versions)

Openness of Executive Recruitment: Recruitment of the chief executive is "open" to the extent that all the politically active population has an opportunity, in principle, to attain the position through a regularized process. If power transfers are coded Unregulated (1) in the Regulation of Executive Recruitment (variable 3.1), or involve a transition to/from Unregulated, Openness is coded 0. Four categories are used:

(1) Closed: Chief executives are determined by hereditary succession, e.g. kings, emperors, beys, emirs, etc. who assume executive powers by right of descent. **An executive selected by other means may proclaim himself a monarch but the polity he governs is not coded "closed" unless a relative actually succeeds him as ruler.**

(2) Dual Executive–Designation: Hereditary succession plus executive or court selection of an effective chief minister.

(3) Dual Executive–Election: Hereditary succession plus electoral selection of an effective chief minister.

(4) Open: Chief executives are chosen by elite designation, competitive election, or transitional arrangements between designation and election.

- Polity IV: A team of experts applies a set of coding rules
- Is this likely to produce identical results when done repeatedly?

RELIABILITY

- Applying same measurement rules to same case should produce identical results
 - If yes: measure is *reliable*
 - If not: Sometimes too high, sometimes too low
 - Random measurement error



not reliable

RELIABILITY

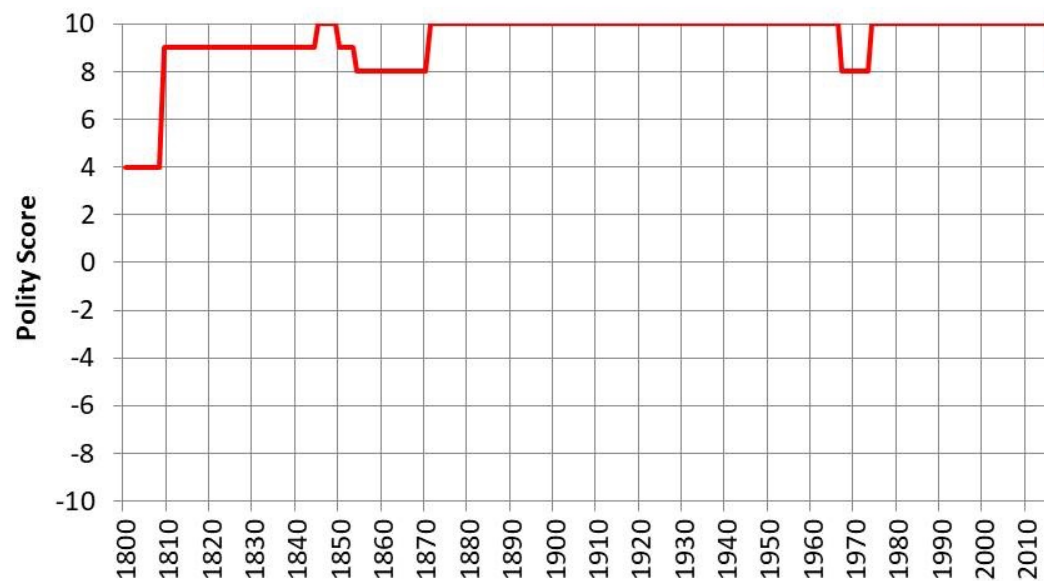
- **Religiosity**
 - “How often do you attend religious services?”
 - Never; Less than once/year; Once/year; Several times/year; Once/month; 2-3x/month; Nearly every week; Every week; More than once/week
- Is this likely to produce identical results when done repeatedly?

VALIDITY

- **Measure should measure what it's supposed to measure**

VALIDITY

Polity Score of the United States



Source: <http://www.systemicpeace.org/inscr/p4v2016.xls>

- Polity IV score for US
- Does this measure the concept of democracy?

VALIDITY

- Robert Dahl: Democracy=contestation and participation
- Polity IV measure only considers contestation: whether country has open and competitive contest for leadership
- It does not consider participation: degree to which citizens can participate in that process

VALIDITY

- Measure should measure what it's supposed to measure
 - If yes: measure is *valid*
 - If not: consistently measures something else than it sets out to measure
 - Systematic measurement error

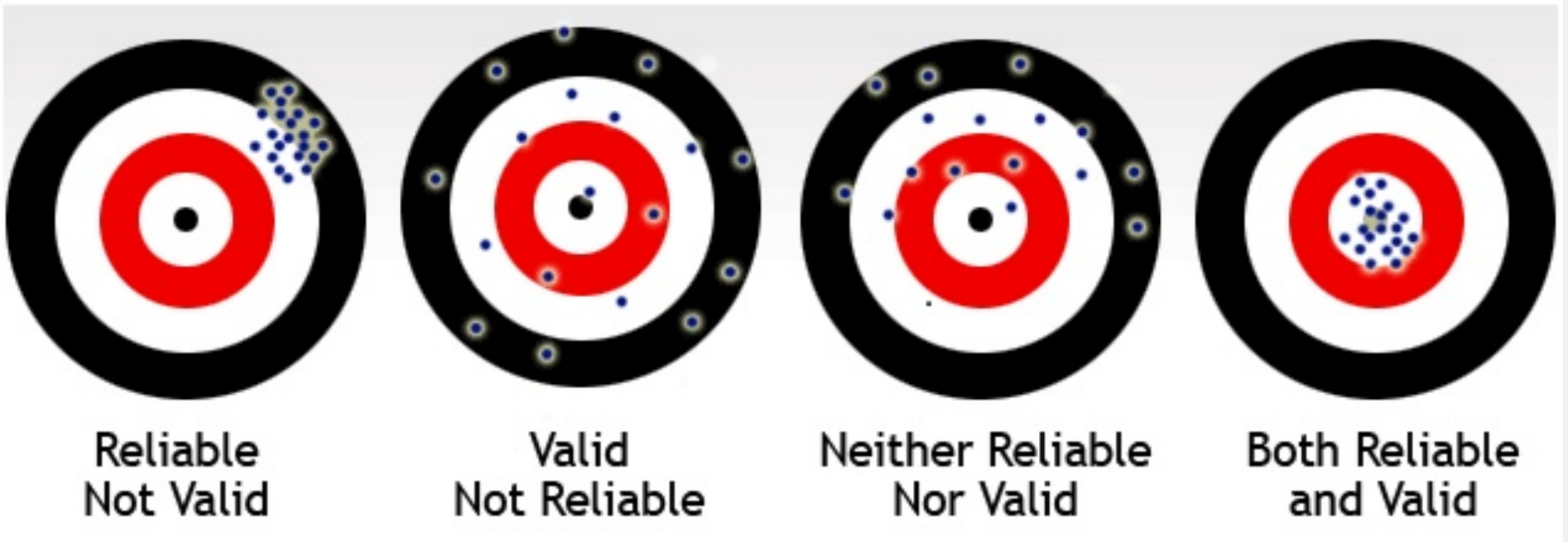


not valid (but reliable)

VALIDITY

- **Religiosity**
 - **"How often do you attend religious services?"**
 - **Never; Less than once/year; Once/year; Several times/year; Once/month; 2-3x/month; Nearly every week; Every week; More than once/week**
- **Does this measure religiosity?**

RELIABILITY AND VALIDITY



TODAY

Concept



**Precise Definition of Concept
(Conceptual Definition)**



**Measurement Strategy
(Operational Definition)**



Variable

DESCRIBING A VARIABLE

Data Editor (Browse) — mp_final.dta																	
id[1]		10001															
	selcom_adm~t	selcom_bac~t	selcom_fin~t	selcom_all~t	selc~iv_post	selcom_pro~t	selcom_sel~t	com_house~t	com_public~t	com_electo~t	com_parl_s~t	com_eccles~t	com_intell~t	gender	oxbridge	othertop	noun:
1	0	0	0	0	0	0	0	0	0	0	0	0	0	female	1	0	
2	0	0	0	0	0	0	0	0	0	0	0	0	0	female	1	0	
3	0	0	0	0	0	0	0	0	0	0	0	0	0	female	1	0	
4	0	0	0	0	0	0	0	0	0	0	0	0	0	female	1	0	
5	0	0	0	0	0	0	0	0	0	0	0	0	0	female	1	0	
6	0	0	0	0	0	0	0	0	0	0	0	0	0	female	1	0	
7	0	0	0	0	0	0	0	0	0	0	0	0	0	female	1	0	
8	1	0	1	0	0	0	1	0	0	0	0	0	0	male	0	0	
9	1	0	1	0	0	0	1	0	0	0	0	0	0	male	0	0	
10	1	0	1	0	0	0	1	0	0	0	0	0	0	male	0	0	
11	1	0	1	0	0	0	1	0	0	0	0	0	0	male	0	0	
12	1	0	1	0	0	0	1	0	0	0	0	0	0	male	0	0	
13	1	0	1	0	0	0	1	0	0	0	0	0	0	male	0	0	
14	0	0	0	0	0	0	1	0	0	0	0	0	0	male	0	0	
15	0	0	0	0	0	0	1	0	0	0	0	0	0	male	0	0	
16	0	0	0	0	0	0	1	0	0	0	0	0	0	male	0	0	
17	0	0	0	0	0	0	1	0	0	0	0	0	0	male	0	0	
18	0	0	0	0	0	0	1	0	0	0	0	0	0	male	0	0	
19	0	0	0	0	0	0	1	0	0	0	0	0	0	male	0	0	
20	0	0	0	0	0	0	1	0	0	1	0	0	0	male	0	0	
21	0	0	0	0	0	0	0	0	0	0	0	0	0	male	0	0	
22	0	0	0	0	0	0	0	0	0	0	0	0	0	male	0	0	
23	0	0	0	0	0	0	0	0	0	0	0	0	0	male	0	0	
24	0	0	0	0	0	0	0	0	0	0	0	0	0	male	0	0	
25	0	0	0	0	0	0	0	0	0	0	0	0	0	male	0	0	
26	0	0	0	0	0	0	0	0	0	0	0	0	0	male	0	0	
27	0	1	0	0	0	0	0	0	0	0	0	0	0	male	0	0	
28	0	0	0	0	0	0	0	0	0	0	0	0	1	male	1	0	
29	0	0	0	0	0	0	0	0	0	0	0	0	1	male	1	0	
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32	0	0	0	0	0	0	0	0	0	0	0	0	1	male	1	0	
33	0	0	0	0	0	0	0	0	0	0	0	0	1	male	1	0	
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35	0	0	0	0	0	0	0	0	0	0	0	0	0	male	0	0	
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37	0	0	0	0	0	0	0	0	0	0	0	0	0	male	0	0	
38	0	0	0	0	0	0	0	0	0	0	0	0	0	male	0	0	
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41	0	0	0	0	1	0	0	0	0	0	0	0	0	male	0	0	
42	0	0	0	0	1	0	0	0	0	0	0	0	0	male	0	0	
43	0	0	0	0	1	0	0	0	0	0	0	0	0	male	0	0	
44	0	0	0	0	1	0	0	0	0	0	0	0	0	male	0	0	
45	0	0	0	0	1	0	0	0	0	0	0	0	0	male	0	0	
46	0	0	0	0	0	0	0	0	0	0	0	0	1	male	0	0	
47	0	0	0	0	0	0	0	0	0	0	0	0	1	male	0	0	
48	0	0	0	0	0	0	0	0	0	0	0	0	1	male	0	0	
49	0	0	0	0	0	0	0	0	0	0	0	0	1	male	0	0	

Vars: 264 Order: Dataset Obs: 4,722

DESCRIBING VARIABLES

The average American household income

As I mentioned, the overall average household income was \$65,751 in 2014. However, the average can vary significantly depending on your household's composition. For example, a single-person household earning \$65,751 could have a completely different financial situation than a family of five with the same income.

With that in mind, here's the average American household income by tax filing status:

Tax Filing Status

Adjusted Gross Income (AGI)

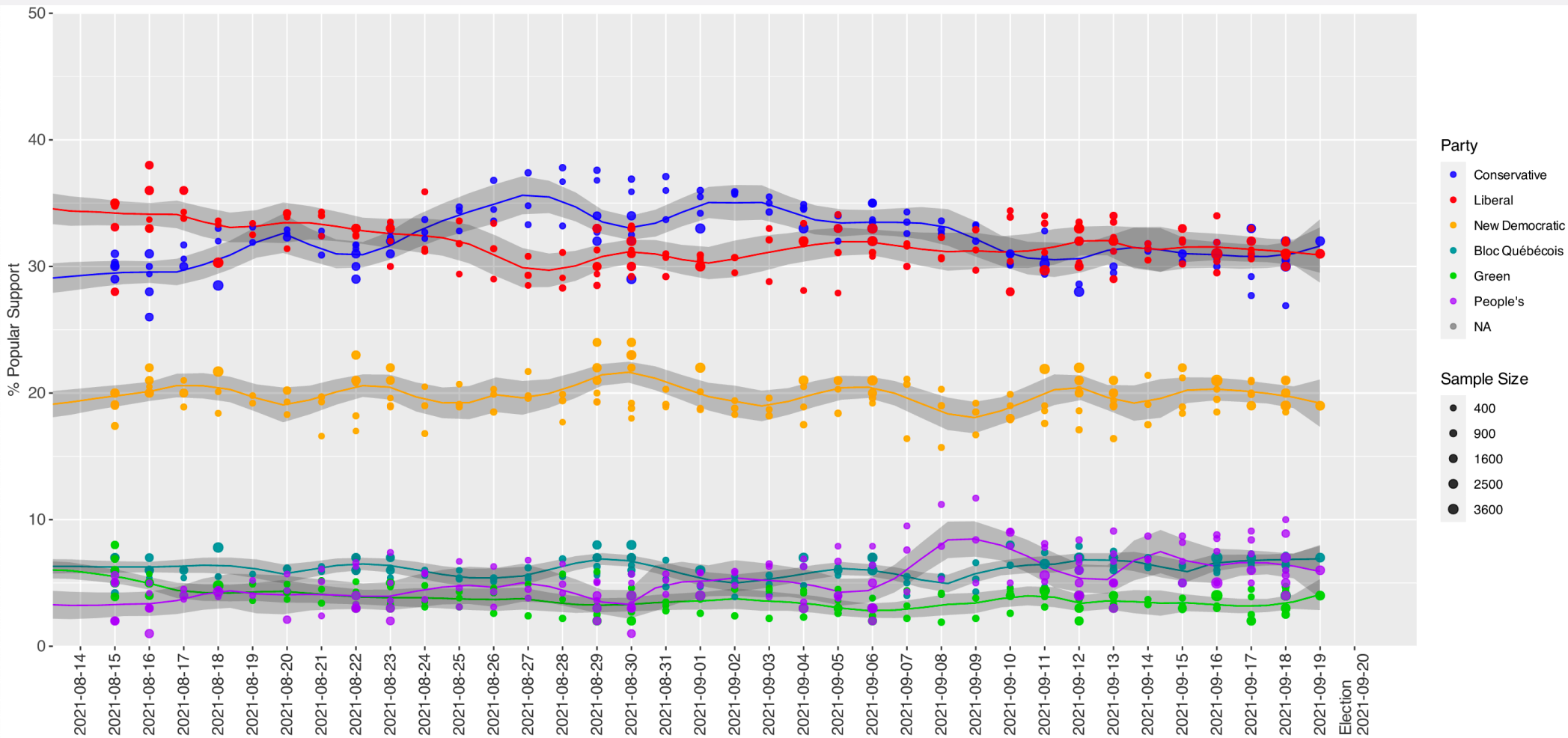
MARRIED FILING JOINTLY	\$117,795
Married filing separately	\$64,819
Head of household	\$35,876
Widow/Widower	\$57,577
Single	\$34,940

Data source: IRS Statistics of Income, 2014.

DESCRIBING VARIABLES

US income inequality continues to grow

DESCRIBING VARIABLES



VARIABLES

- **Today and next class: Variables**
 - **Properties of variables**
 - **How to describe variables**
 - **How to graph variables**

EXAMPLE VARIABLES

- **Gender**
 - male
 - female

EXAMPLE VARIABLES

- **Gender**
 - male
 - female
- Variable label
- Variable values

EXAMPLE VARIABLES

- **Ideology** **Variable label**

- Extremely liberal
- liberal
- slightly liberal
- moderate
- slightly conservative
- conservative
- extremely conservative

Variable values

EXAMPLE VARIABLES

- Age **Variable label**
 - 0
 - 1
 - 2 **Variable values**
 - 3
 - ...
- Three variables have different characteristics...

AGE

- Values: 0, 1, 2, 3, ...
- Two people: A: 30, B: 60
- Three things we can say about A and B's age:
 -
 -
 -

AGE

- Values: 0, 1, 2, 3, ...
- Two people: A: 30, B: 60
- Three things we can say about A and B's age:
 - Their ages are different
 - B has a higher age than A
 - B's age is twice as much as that of A

IDEOLOGY

- **Values: extremely liberal, liberal, slightly liberal, moderate, slightly conservative, conservative, extremely conservative**
- **Two people: A: slightly liberal, B: extremely liberal**
- **What can we say about A and B's political views?**
 -
 -
 -

IDEOLOGY

- Values: extremely liberal, liberal, slightly liberal, moderate, slightly conservative, conservative, extremely conservative
- Two people: A: slightly liberal, B: extremely liberal
- What can we say about A and B's political views?
 - Their political views are different
 - B is more liberal than A
 - B is two/three/four/X times as liberal as A

IDEOLOGY

- Values: extremely liberal, liberal, slightly liberal, moderate, slightly conservative, conservative, extremely conservative
- Two people: A: slightly liberal, B: extremely liberal
- What can we say about A and B's political views?
 - Their political views are different
 - B is more liberal than A
 - ~~B is two/three/four/X times as liberal as A~~

GENDER

- Values: male, female
- Two people: A: male, B: female
- What can we say about A and B's genders?
 -
 -
 -

GENDER

- Values: male, female
- Two people: A: male, B: female
- What can we say about A and B's genders?
 - Their genders are different
 - B is more ? than A
 - B is two/three/four/X times as ? as A

GENDER

- Values: male, female
- Two people: A: male, B: female
- What can we say about A and B's genders?
 - Their genders are different
 - ~~B is more ___?___ than A~~
 - ~~B is two/three/four/X times as ___?___ as A~~

LEVELS OF MEASUREMENT

- Variables provide different amounts of information
 - differences between values
 - ranking of values
 - exact differences between values
- Determines how you can summarize/graph/analyze variable

LEVELS OF MEASUREMENT

Relative Differences Ranking Exact Differences Between Units			

LEVELS OF MEASUREMENT

	Nominal		
Relative Differences	✓		
Ranking	X		
Exact Differences Between Units	X		

- e.g. gender

LEVELS OF MEASUREMENT

	Nominal	Ordinal	
Relative Differences	✓	✓	
Ranking	X	✓	
Exact Differences Between Units	X	X	

- e.g. ideology

LEVELS OF MEASUREMENT

	Nominal	Ordinal	Interval
Relative Differences	✓	✓	✓
Ranking	X	✓	✓
Exact Differences Between Units	X	X	✓

- e.g. age

EXERCISE

- Variable names below
 - What are the variable values?
 - What level of measurement does the variable have?
-
- Income
 - Marital status
 - Support for universal health insurance
 - Class grades

INCOME

- **Values: Dollars per year**
- **Relative Differences?**
- **Ranking?**
- **Exact differences between units?**

INCOME

- Values: Dollars per year
- Relative Differences? **YES**
- Ranking?
- Exact differences between units?

INCOME

- Values: Dollars per year
- Relative Differences? **YES**
- Ranking? **YES**
- Exact differences between units?

INCOME

- Values: Dollars per year
- Relative Differences? YES
- Ranking? YES
- Exact differences between units? YES

INCOME

	Nominal	Ordinal	Interval
Relative Differences	✓	✓	✓
Ranking	X	✓	✓
Exact Differences Between Units	X	X	✓

- There is an ordering to the values, and the distance between them is known

MARITAL STATUS

- Values: single, married, divorced
- Relative Differences?
- Ranking?
- Exact differences between units?

MARITAL STATUS

- Values: single, married, divorced
- Relative Differences? **YES**
- Ranking?
- Exact differences between units?

MARITAL STATUS

- Values: single, married, divorced
- Relative Differences? **YES**
- Ranking? **NO**
- Exact differences between units?

MARITAL STATUS

- Values: single, married, divorced
- Relative Differences? **YES**
- Ranking? **NO**
- Exact differences between units? **NO**

MARITAL STATUS

	Nominal	Ordinal	Interval
Relative Differences	✓	✓	✓
Ranking	X	✓	✓
Exact Differences Between Units	X	X	✓

- Values just represent a category, there is no ordering to the values

HEALTH INSURANCE

- **“The United States should have universal health insurance”**
- **Values: strongly agree, agree, disagree, strongly disagree**
- **Relative Differences?**
- **Ranking?**
- **Exact differences between units?**

HEALTH INSURANCE

- “The United States should have universal health insurance”
- Values: strongly agree, agree, disagree, strongly disagree
- Relative Differences? **YES**
- Ranking?
- Exact differences between units?

HEALTH INSURANCE

- “The United States should have universal health insurance”
- Values: strongly agree, agree, disagree, strongly disagree
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- Ranking? **YES**
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HEALTH INSURANCE

- “The United States should have universal health insurance”
- Values: strongly agree, agree, disagree, strongly disagree
- Relative Differences? **YES**
- Ranking? **YES**
- Exact differences between units? **NO**

HEALTH INSURANCE

	Nominal	Ordinal	Interval
Relative Differences	✓	✓	✓
Ranking	X	✓	✓
Exact Differences Between Units	X	X	✓

- There is an ordering to the values, but the distance between each of the values is unknown

SOME EXERCISES

- **“How often do you attend religious services?”**
 - **Never; Less than once/year; Once/year; Several times/year; Once/month; 2-3x/month; Nearly every week; Every week; More than once/week**
- **Nominal, ordinal, or interval?**

SOME EXERCISES

- **“How often have you attended religious services in the past year?”**
- **Nominal, ordinal, or interval?**

SOME EXERCISES

- **“In what religion were you raised?”**
 - Protestant, Catholic, Jewish, Muslim, etc.
- **Nominal, ordinal, or interval?**

CLASS GRADES?

- **A, A-, B+, B, B-, C+, C, C-, D, F**
- **What is it?**