Statistics and Research Methods

Psych 3101 Section 200

(12:30 – 1:45p TR)

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Office Hours: T-R 11a – 12p Muen D-0041D

or by appt. (IBG)

3 Teaching Assistants

- Jesse Hawke
  - Friday 11-12:50p (meets this week)
  - Wed 11-12:50p
- Huromi Sumiya
  - Thurs 8-9:50a
  - Thurs 10-11:50a
- Joshua Madsen
  - Tues 10-11:50a

Course Objectives

- Facilitate critical evaluation of research findings and the use of statistics in everyday life
- Facilitate intellectual access to scientific journals and books
- Provide an introduction to the conduct-ing and reporting of psychological research
- Provide an introduction to computerized data analysis

Course Materials

Text: Fundamental Statistics for the Behavioral Sciences (5th Edition) by David Howell

Additional materials will be placed on reserve in the library or provided as handouts (text CD on reserve)

Class list: http://psych.colorado.edu/courses.html

Course Requirements

- 12 Lab assignments
- 6 Quizzes
- 2 Midterms
- Final Exam (Saturday, May 1, 10:30a – 1p)

Laboratory Assignments

12 approximately weekly assignments

Friday Lab meets this week and will meet the week before all other labs

Assignments due at the next lab meeting

Assignments are worth 10 points each

2 lowest scores will be dropped

total of 100 points

no make-up for missed labs

Quizzes

- Total of 6 quizzes
- Items taken from chapter exercises
- Quizzes will take place during Lab
- Each quiz will be worth 10 points
- Your lowest score will be dropped for a total of 50 points

- Your overall lab grade will be based on both assignments and quizzes for a total of 150 points

Exam Schedule

- Midterm I: February 12
- Midterm 11: March 18 (Thurs. before Spring Break!)
- Final: May 1 (Sat: 10:30a – 1p)

Assessment and Grading

• Laboratory grade:	30%	150 pts
• Midterm I:	20%	100 pts
• Midterm II:	20%	100 pts
• Final Exam:	30%	150 pts
• Total Grade		500 pts

About This Course

- Not your ‘typical’ psychology course
- More like a math class
- But it is not a math class!
- It will require:
    - regular class/lab attendance
    - reading the text
    - regular practice
    - cumulative synthesis of material

Structure of Course

- Descriptive Statistics
- Introduction to Inferential Statistics
- Advanced Inferential Methods

Basic Terminology

The Meaning of Statistics

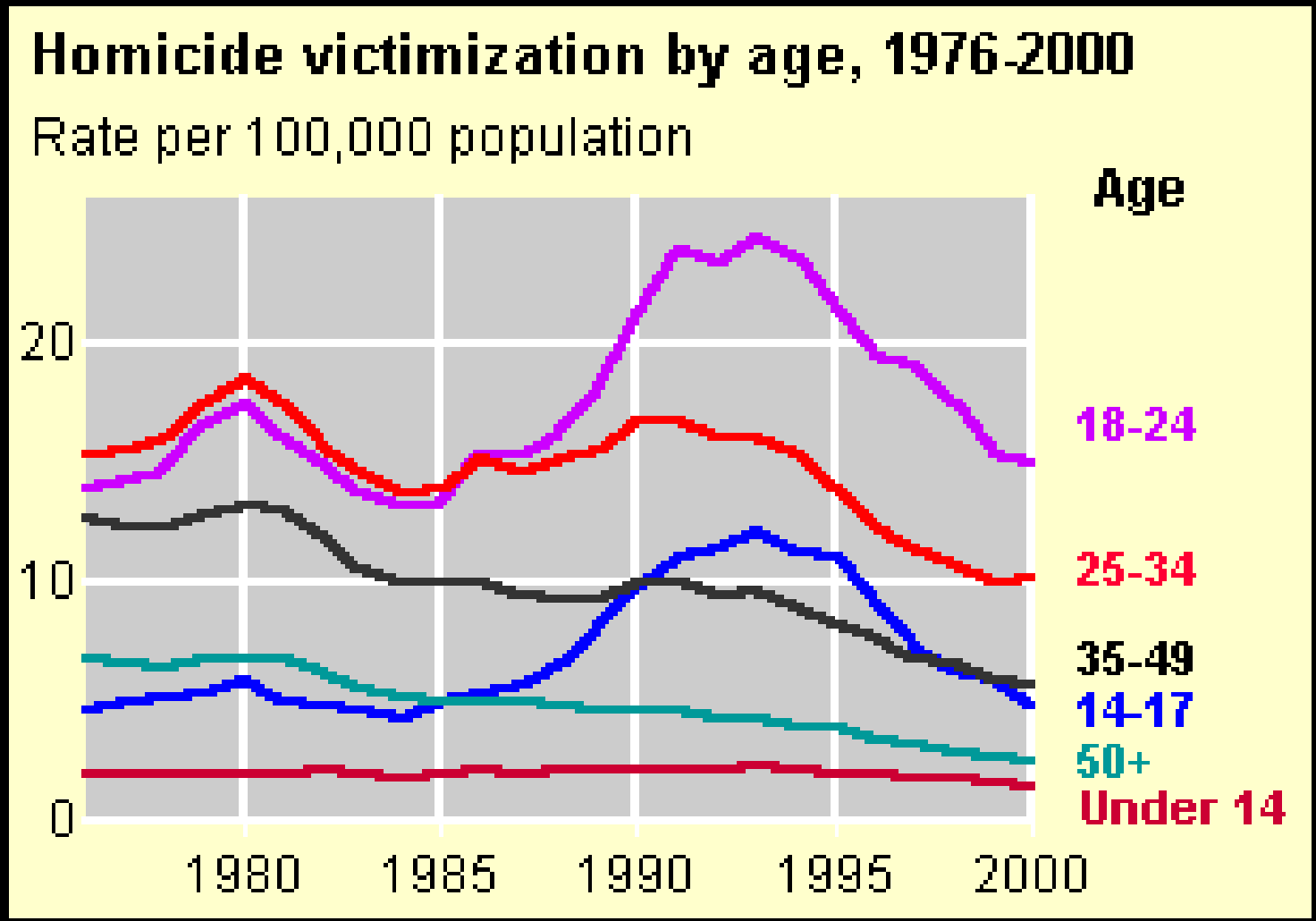
- Refers to a set of procedures and rules (not always mathematical or computa-tional) for summarizing data to allow us to draw inferences or conclusions from the data

- Statistics does not mean data

U.S. Homicide Victimization Rates per 100,000 Population by Age

(U.S. Bureau of Justice)

	<14	14-17	18-24	25-34	35-49	50+
1976:	1.8	4.5	13.8	15.4	12.6	6.5
1977:	1.9	4.9	14.3	15.5	12.3	6.6
1978:	1.9	5.1	14.6	16.1	12.2	6.3
1979:	1.7	5.3	14.8	15.9	12.1	6.2
.						
.						
.						
1999:	1.6	5.9	15.4	9.9	5.9	2.6
2000:	1.4	4.7	14.9	10.2	5.7	2.5


Homicide victimization by age, 1976-2000
Rate per 100,000 population
Age
20
10
0
1980
1985
1990
1995
2000
18-24
25-34
35-49
14-17
50+
Under 14

Statistics

- 2 overlapping areas
- Descriptive Statistics
- Inferential Statistics

Descriptive Statistics

- Describe data

  average values

  measures of variability

  repeatability or reliability

  strength of association

Inferential Statistics

- Refer to tools for making inferences or generalizations about data
- The ‘Detective’ work!
  - measurement and reliability
  - variability
  - sampling
  - probability

Population

- The entire collection of events in which you are interested

  Tail lengths of all cows

  Stress levels of all US adolescents

  Stress levels of students in this class

- Populations can range from a small set of numbers to an infinitely large set of numbers

Sample

- Subset of a population
- Set of actual observations

  random sample

  sample bias

  representativeness

  nonrandom sample

Parameters and Statistics

- Parameters refer to populations, and statistics to samples.
- When we draw a sample of observations, we compute statistics (e.g., average values) to summarize the data in the sample.
- The corresponding values in the population (e.g., population averages) are called parameters
- The primary purpose of inferential statistics is to draw inferences about populations (parameters) from statistics (characteristics of the sample).

Generalizations From Data

- Statistical inferences
- Logical inferences