Teaching Statistics Using the News Media

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Overview

- Background
- Using media to explain statistical concepts
- Evaluation
- Examples
- Challenges

2

Background

- Everyone is bombarded continuously with information 24 hours a day via several forms of communication such as the internet and social media.
- There is a need to teach statistical concepts and how to apply them to understand the real world
- Deemphasize regurgitation and manipulation of statistical methods

3

Background (cont.)

- Use of statistical thinking concepts
  - Schield states that "Statistical literacy is the ability to read and interpret summary statistics in the everyday media: in graphs, tables, statements, surveys and studies"
  - Help students critically evaluate media information in areas such as crime, health, science, and politics
    - Distinguish between information and propaganda

4

Background (cont.)

- Use of statistical thinking concepts
  - Media ideal vehicle to accomplish task because wide variety of topics that are more exciting to students than pure mathematics

5

Background (cont.)

- Teach
  - "Statistics in the News"
  - Non-quantitative majors such as criminal justice and journalism
- Large urban university
  - Diverse backgrounds
  - Wide age range
  - Mathematics anxiety

6

Background (cont.)

- Teacher
  - Articles from the text, news media and internet
- Students
  - Bring in articles from the news media and internet
  - Evaluate the articles in groups during class and individually as homework assignments

7

Media

- Forms
  - Internet
  - Journals
  - Newspapers
  - Magazines
  - Facebook
  - Twitter
  - Blogs

8

Evaluation

- Questions
  - Interest
  - Target population
  - Source of research and funding
  - Researchers and how select who studied
  - Measurements or questions given to subjects
    - Measurement error and variability
    - Sample size

9

Evaluation (cont.)

- Questions
  - Setting measurements taken
  - Differences in groups compared, factor of interest
  - Extent or size of any claimed effects

10

Study Finds No Statin, Cancer Link

- Reuters Health July 20, 2011
- Findings in Journal of the American College of Cardiology
- Users of cholesterol-lowering statins appear no more likely to develop cancer than non-users
  - Based on patients in "real world" as oppose to clinical trial participants
  - Used database with electronic records for about 11 million Americans

11

Study Finds no Statin, Cancer Link (cont.)

- 45, 857 statin users and each statin user matched with another patient who never used statins with similar characteristics
  - weight, age, cholesterol levels, medical conditions
- Men ≥45 women ≥55
- $\frac{1}{2}$ on statins no more likely to develop cancer than non-users over 5 years
- 11.4% of statins vs. 11.1 % non users
- no statistically significant difference in risk

12

Study Finds No Statin, Cancer Link (cont.)

- Contradicts widely publicized 2008 clinical trial report
  - Found heart patients on statin Vytorin had higher cancer risk than placebo
  - Researchers say likely chance

13

June 2011 Jobs Report

- *Job Growth Falters Badly, Clouding Hope for Recovery* (The New York Times Motoko Rich July 8, 2011)
- 18,000 new non-farm payroll jobs in June
  - Private 57,000 jobs, Public -39,000
  - Average of more than 200,000/month from February to April
- Separate survey (?) of households more people looking for jobs than in previous month.
  - 9.1% in May to 9.2% in June
- Federal Reserve see little improvement over last year's 2.9% growth rate

14

Graphs

- *Rachel Maddow Show: MSNBC July 8, 2011*
  - Chart showing over 500,000 government jobs lost since President Obama's Inauguration
  - Chart constructed by Steve Benen showing private job deterioration
- Additional Graphs
- Bureau of Labor Statistics

15

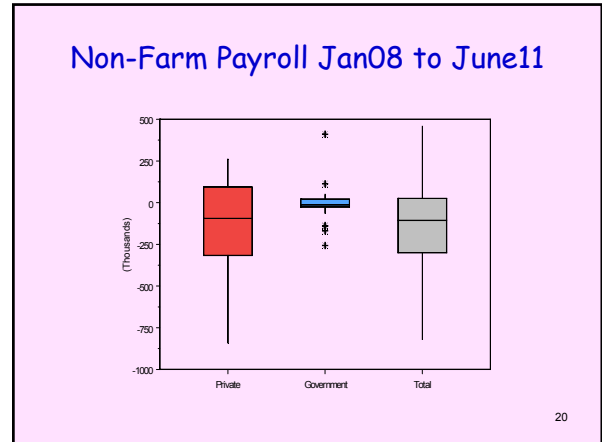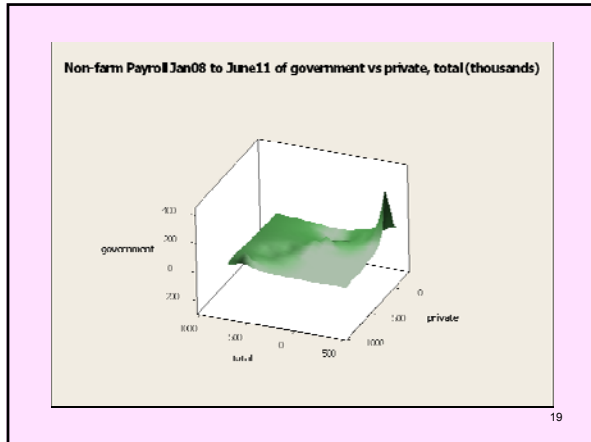## Over 500,000 Government Jobs Lost Since Obama's Inauguration

16

Change in Number of Private Sector Jobs Jan08 to Jun11

17

Change in Number of Jobs

18

Non-farm Payroll Jan08 to June11 of government vs private, total (thousands)

Non-Farm Payroll Jan08 to June11

Additional Questions and Observations

- Number of
  - layoffs versus new jobs by private sector
  - Private sector jobs lost since President Obama's inauguration
- Other graphs that may be helpful
- Mine data from the Bureau of Labor statistics
  - Limited space or finite time to present information in newspapers or other media

Challenges

- Finding enough interesting articles to evaluate that cover variety of subjects and use statistical concepts
- Engaging the students in discussions
- Getting all members of group to participate
- Limitations of internet and news media to present information due to limited space and/or time segment
  - Need to further research

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25

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26