

Biostatistics Assignment 1

Analysis of Metropolitan Statistical Area (MSA) data from the Behavioral Risk Factor Surveillance System (BRFSS), 2007

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Presentation Overview

- **Health-Related Quality of Life (HRQOL): concepts and measurement**
 - **CDC HRQOL Surveillance Program's Healthy Days Measures**
- **Geographic trends in unhealthy days**
- **Assignment overview: BRFSS MSA data analysis**

• Introduction and outline of the presentation.

• 3 primary components of presentation include an overview of QOL, HRQOL, and the CDC's Healthy Days Measures, relevant data resulting from use of the measures, and assignment instructions.

Measuring Health-Related Quality of Life (HRQOL)

- **Broad outcome measures designed to measure physical, emotional, and social dimensions of health** (*McDowell & Newell, 1996*).
- **No one definition of HRQOL is agreed upon, but generally assessed with generic measures (e.g., Short-Form 36) or disease-specific measures (e.g., Quality of Life in Epilepsy Scale-10** (*Ware & Sherbourne, 1992; Cramer et al., 1996*).
- **Quality of Life Instruments Database (QOLID): Online database of generic and disease-specific measures.** <http://www.proqolid.org>

- Introduce the concept of HRQOL and its measurement.
- There are varying definitions for HRQOL.
- There are many ways and scales with which to measure HRQOL depending on one's needs. Generally, each scale has its advantages and disadvantages that make it more or less advantageous to use depending on the scenario in question. See the provided link for a database of QOL scales.

What is Health-Related Quality of Life (HRQOL)?

- **For public health surveillance purposes, HRQOL was defined as...“an individual’s or group’s perceived physical and mental health over time.”**

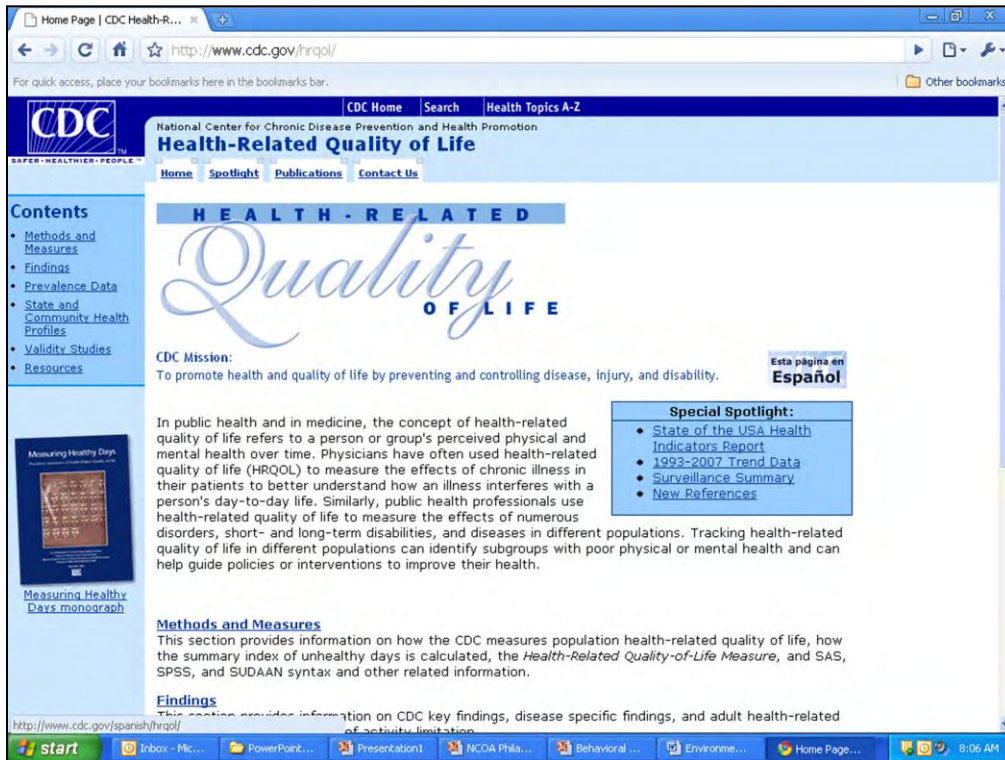
(Measuring Healthy Days, CDC 2000)

- <http://www.cdc.gov/hrqol>
- <http://www.cdc.gov/brfss>

•This slide presents a definition of HRQOL as defined by CDC.

•Links: 1st link is to the CDC’s HRQOL Surveillance Program homepage;

2nd link is to the CDC BRFSS homepage. The Healthy Days Measures are administered as part of the annual BRFSS.



- This is CDC's HRQOL Surveillance Program's homepage.
- Use this slide just to familiarize the class with the website and what it contains. Note the definition of HRQOL in the main paragraph.

Core Healthy Days Measures

1. Would you say that in **general** your **health** is excellent, very good, good, fair, or poor?
2. Now thinking about your physical health, which includes physical illness and injury, for how many **days during the past 30 days** was your **physical health not good**?
3. Now thinking about your mental health, which includes stress, depression, and problems with emotions, for how many days during the past 30 days was your **mental health not good**?
4. During the past 30 days, for about how many days did **poor physical or mental health keep you from doing your usual activities**, such as self-care, work, or recreation?

•These are the 4 core Healthy Days measures (HRQOL-4) used in the Behavioral Risk Factor Surveillance System (BRFSS) and the National Health and Nutrition Examination Survey (NHANES).

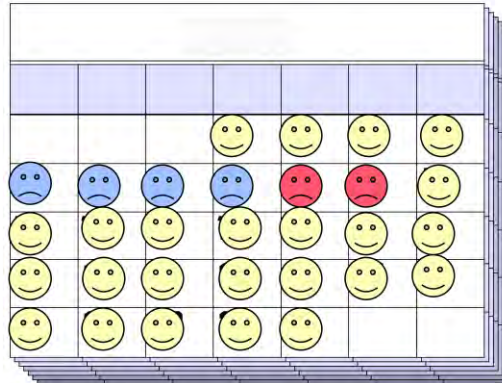
•While there are other Healthy Days measures that are sometimes included in these surveys (Activity Limitations module (4 questions), Healthy Days Symptoms module (5 questions)) (see http://www.cdc.gov/hrqol/hrqol14_measure.htm), these are 4 core questions that are most widely used.

Unhealthy Days = days in the past 30 days when both physical and mental health were not good

 = Physically unhealthy day

 = Mentally unhealthy day

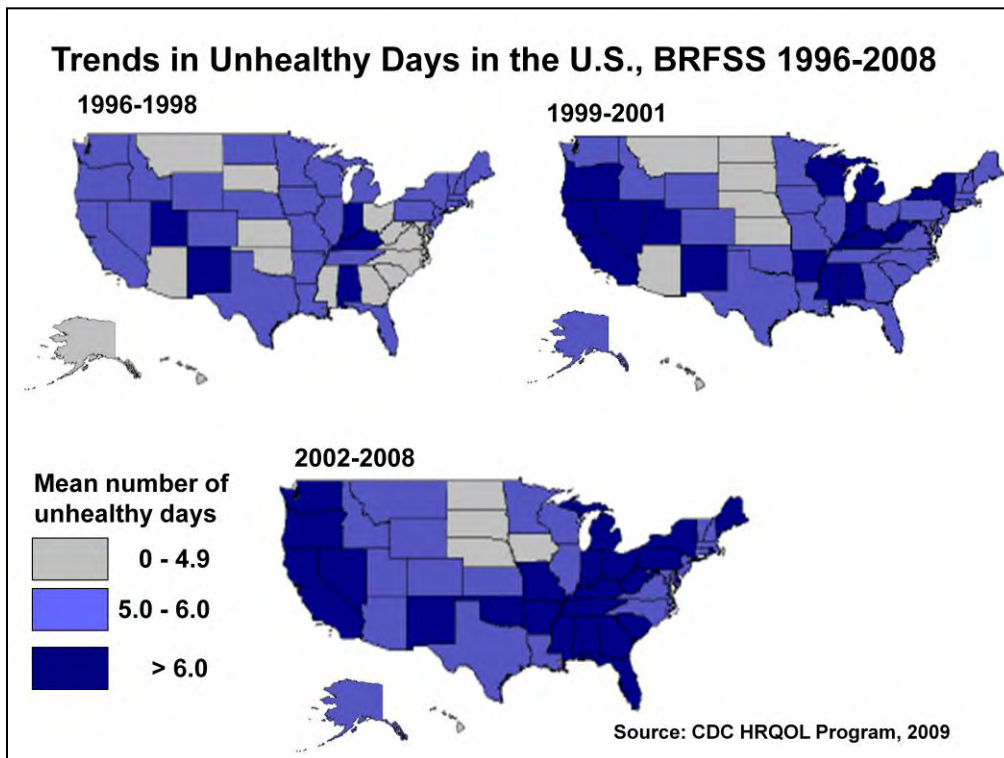
 = Healthy day



- This graphic provides an idea as to how physically, mentally, and overall unhealthy days are calculated from the questions on the previous slide.

- Unhealthy days are an estimate of the overall number of days during the previous 30 days when the respondent felt that either his or her physical or mental health was not good. To obtain this estimate, responses to questions 2 and 3 are combined to calculate a summary index of overall unhealthy days, with a logical maximum of 30 unhealthy days. For example, a person who reports four physically unhealthy days and two mentally unhealthy days is assigned a value of six unhealthy days, and someone who reports 30 physically unhealthy days and 30 mentally unhealthy days is assigned the maximum of 30 unhealthy days.

- The majority of individuals report substantially different numbers of physically unhealthy days versus mentally unhealthy days; for example, in the 1998 Behavioral Risk Factor Surveillance System (BRFSS), 67.8% of the 68,619 adults who reported any unhealthy days reported only physically unhealthy days or mentally unhealthy days.



- Shows state trends in mean number of unhealthy days over time.
- The maps indicate that, generally speaking, most states are displaying a trend of increasing number of unhealthy days in an average month over time.
- Relevance: map shows national patterns in mean number of unhealthy days which is a calculation students are required to perform on the MSA-level data as part of the assignment.

Assignment Instructions

1. Become familiar with the codebook and the variables included in the dataset.
2. Download and import the data file into the statistical software program to be used for the assignment. Use the program's help file for instructions on importing the data if needed. Data should be cleaned prior to analysis.
3. Examine the distribution of a few of the key variables (i.e., PHYSHLTH, MENTHLTH, POORHLTH, and UNHEALTH) in the dataset. Consider these distributions and what impact they may have on the statistical tests you might use.
4. Create race/ethnicity groups from the RACE2 variable according to the following groupings: White, Black, Hispanic, and all other race/ethnicity groups. A response of "don't know/not sure/refused" should be treated as missing.

•Instructions for the student assignment.

Instructions continued:

5. Calculate mean, median, SD, and 95% CI for each of the following variables by sex and race/ethnicity: PHYSHLTH, MENTHLTH, POORHLTH, and UNHEALTH.
6. Perform simple t-tests on PHYSHLTH, MENTHLTH, POORHLTH, and UNHEALTH variables according to sex.
7. Conduct separate, simple ANOVAs with post-hoc comparisons treating PHYSHLTH, MENTHLTH, POORHLTH, and UNHEALTH as dependent variables and race/ethnicity as an independent variable.
8. Print out statistical program code and output results.
9. Answer the following questions.

•Student instructions continued.

Questions:

- **What are the mean, median, SD, and 95% CI for males and females on the following variables: PHYSHLTH, MENTHLTH, POORHLTH, and UNHEALTH? For Whites, Blacks, Hispanics and all other race/ethnicities?**
- **Are there any statistically significant differences between males and females on the following variables: PHYSHLTH, MENTHLTH, POORHLTH, and UNHEALTH? Provide your determination and the relevant statistic(s) used to make the decision.**
- **Are there any statistically significant differences on each of the following variables according to race/ethnicity: PHYSHLTH, MENTHLTH, POORHLTH, and UNHEALTH? Provide your determination and the relevant statistic(s) used to make the decision.**

- Questions that students should answer by analyzing their MSA dataset.