Student ID Number:_____
PBAF 527 Quiz I **January 21**

Ground rules:

- DO NOT WRITE YOUR NAME ON THE QUIZ. If you're worried about losing the first page, write your student number on each page.
- You can use your notes or books, but you may not communicate with other people about this quiz nor the material covered by it.
- In order to receive as much credit as possible, please show all of your work. Showing that you understand the question and know how to set up the solution correctly is more important than arriving at the exact answer.
- Read each question carefully and answer all parts of each question.
- Good luck!

After each decennial census, the U.S. Census Bureau publishes briefs summarizing the census data for that decade. The following information and questions come from the report on the age of U.S. residents in 2000.[1] In 2000, the Census Bureau counted 281.4 million people in the United States. The Census Bureau reported that the median age of the U.S. population was 35.3 years of age. From these data, I estimated that the mean age for someone in the U.S. was 35.9 years.

1. Interpret the median age of the U.S. population in 2000 for a non-technical audience. (5 points)

Half the people in the United States in 2000 were less than 35.3 years and half were more.

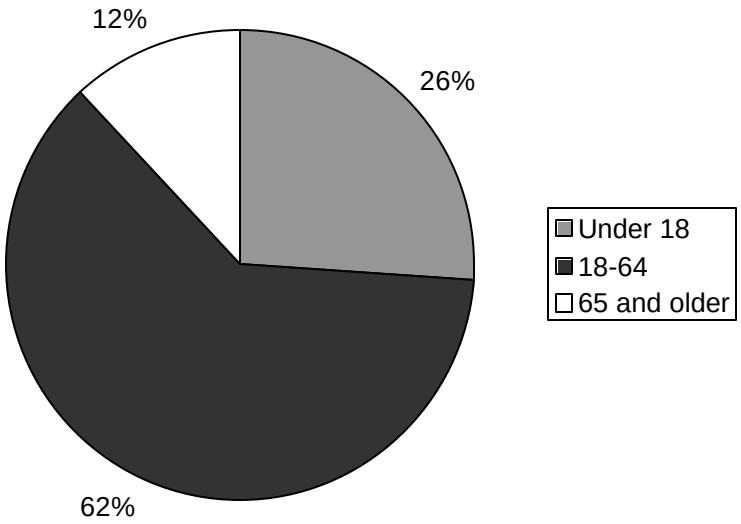
2. The Census reports only the median age for the U.S. population, not the mean. Why would the census bureau report prefer median age of the population as a measure of central tendency rather than the mean? (10 points)

The median is a better measure of central tendency when you have data that are skewed—it can give you a better idea of where the middle of the data are, as it is not sensitive to extreme values.

[1] Meyer, Julie. 2001. *Age: 2000*. Census 2000 Brief, Report No.C2KBR/01-12. Washington, DC: U.S. Census Bureau. Available at: http://www.census.gov/prod/2001pubs/c2kbr01-12.pdf

Figure 1

Age Distribution of the U.S. Population



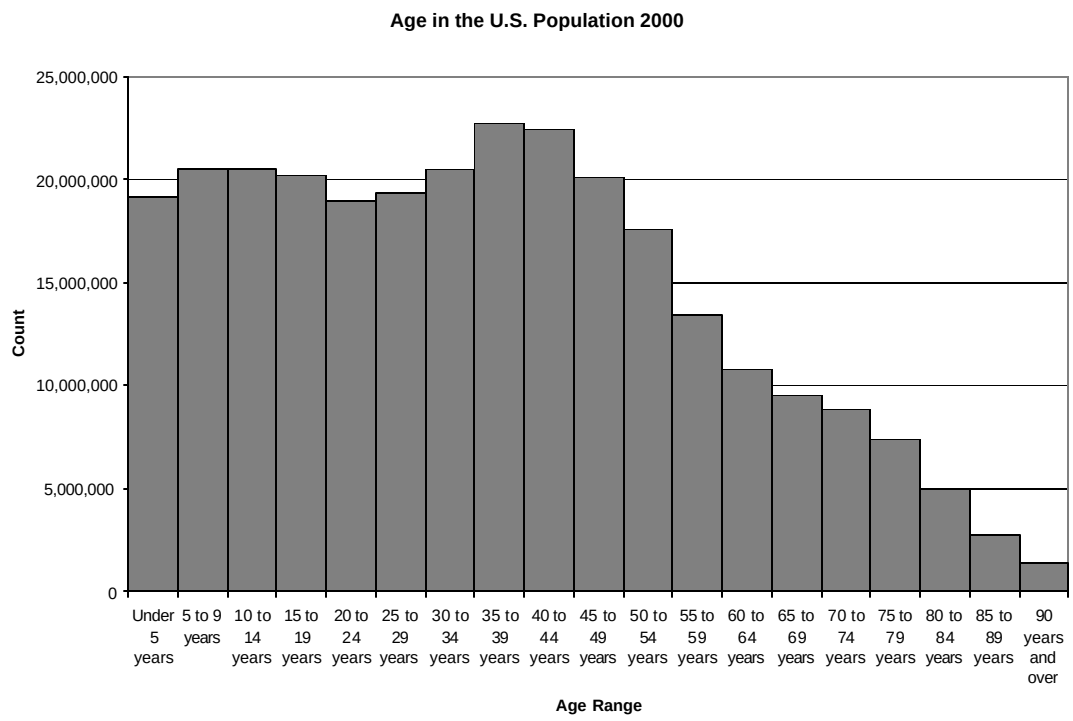
3. What kind of information does Figure 1 present? Interpret the chart for a non-technical audience. (10 points)

Figure 1 is a pie chart showing relative frequencies. According to Figure 1, the majority of people in the U.S. are adults of working age, between the ages of 18 and 64. Another 12 percent are seniors age 65 and older, while more than a quarter (26%) of the U.S population was under age 18.

4. Roughly how many people were ages 65 or older in the U.S. in 2000? Make sure to interpret your answer. (10 points)

.12*281.4 million=33.8 million. About 33.8 million people were age 65 or older in 2000.

Figure 2



Source: U.S. Census Bureau, U.S. Census 2000 Summary File 1 (SF 1) 100-Percent Data

5. What sort of graph is figure 2? (5 points)

A histogram.

6. Describe the distribution of the age of the U.S. population, including the shape of the distribution and its range. (10 points)

There are two modes, one between 5 and 14 years and the other between 35 and 44 years. The distribution has a right tail, with extreme ages over 90 years. The range of the distribution is about 100 years. The distribution is not symmetric.

7. Suppose the 75th percentile for age in the U.S. was 50 years. Interpret this for a non-technical audience. (5 points)

75% of the people in the U.S. are age 50 or less.

8. My husband's grandmother was 94 years old in 2000. Calculate the z-score associated with her age. Use what you know about interpreting the standard deviation and distributions to say whether she is an outlier. (10 points)

$$z = \frac{x - m}{s} = \frac{94 - 35.9}{22} = 2.64$$

The z-score associated with Nana's age in 2000 is 2.62. She's within 3 standard deviations, so I wouldn't say she's an outlier. For any distribution, 8/9s of the data will fall within 3 standard deviations. So, although she is quite old, she's not out of the ballpark.

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