**Revised First Year Seminar (FYS 11) QR/QL Assessment Instrument**

Level: first semester students at a community college; the students in my classes are English as a Second Language students

**Learning Goals**

#1: Students will learn how to interpret the relationship between pie graphs and tables with percentages (such as demographic data).

#2: Students will learn how to use the information obtained from pie graphs and tables to support an argument. (For example, is there evidence that a particular neighborhood is an ethnic enclave?)

#3: Students will develop greater confidence in their ability to interpret pie graphs and percentages, as shown by pre- and post-Likert-type rating scales.

[I have borrowed questions from different versions of the Lehman Quantitative Reasoning/Quantitative Literacy Assessment Instrument, and built on them in places.]

**Pre-Assessment**

[Learning Goal #3]

*Quantitative Reasoning or Quantitative Literacy may be thought of as “a ‘habit of mind,’ competency, and comfort in working with numerical data. Individuals with strong QL skills possess the ability to reason and solve quantitative problems from a wide array of authentic contexts and everyday life situations. They understand and can create sophisticated arguments supported by quantitative evidence, and they can clearly communicate those arguments in a variety of formats (using words, tables, graphs, mathematical equations, etc., as appropriate)” (Association of American Colleges and Universities 2010).*

**Instructions: For each of the following questions, please fill in one circle indicating your extent of agreement or disagreement ranging from 1 (disagree strongly) to 5 (agree strongly). If you don’t know an answer, please fill in the circle that says “Don’t Know or Not Applicable (DK or N/A).”**

a. I enjoy mathematics and quantitative reasoning.

b. I am good at mathematics and quantitative reasoning.

c. I prefer classes that do not have any mathematics or quantitative elements.

d. Mathematics and quantitative reasoning are important for my career goals.

e. Mathematical and quantitative skills help me make intelligent decisions about my life.

f. I am nervous about learning mathematics and quantitative skills.

g. Strong mathematics and quantitative skills help students to do well in other classes.

[Learning Goal #1]

**Please answer the following question based on the chart below.**



Source: 2000 United States Census.

1. Based on the pie chart above, what percent of the U.S. population was **non-white** in 2000?

 a. 12.3% b. 12.6% c. 24.9% d. 75.1%

**Please answer the following questions based on the table below.**

**The Demographic Characteristics of Full-time Lawyers Ages 25-64**

**Compared to Full-time Workers Ages 25-64, 2000**

 Race/Ethnicity

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | % Non-Latino White | % Black | % Asian | % Latino | % American Indian | % Other  |
| Lawyers | 90.3% | 3.7% | 2.4% | 2.7% | 0.1% | .8% |
| Full-time Workers | 73.4% | 11.9% | 4.1% | 9.8% | 0.8% | N/A |

N/A = Not Available

Source: United States Census, 2000

2. True False Lawyers are 86.6% more likely to be non-Latino white than black.

3. True False Altogether, 90.3% of non-Latino whites are lawyers.

4. True False The ratio of Asian to American Indian lawyers is approximately 24 to 1.

5. True False Approximately 1 in 10 lawyers is American Indian.

6. True False Compared to full-time workers, layers are disproportionately non-Latino white.

[Learning Goal #2]

**Please answer the following questions based on both graph and the table above.**

A famous law school was considering increasing the numbers of non-white students admitted to the school because so few lawyers are non-white. However, a politician argued that the percentage of non-white law-school students was small because the overall population of non-whites is also small.

7. Do you think the politician’s argument is correct. Why or why not?

[1 point if the student compares the percentage of lawyers to the percentage of full-time workers or to the percentages in the graph; 2 points if both are mentioned]

**Post-Assessment**

[Learning Goal #3]

*Quantitative Reasoning or Quantitative Literacy may be thought of as “a ‘habit of mind,’ competency, and comfort in working with numerical data. Individuals with strong QL skills possess the ability to reason and solve quantitative problems from a wide array of authentic contexts and everyday life situations. They understand and can create sophisticated arguments supported by quantitative evidence, and they can clearly communicate those arguments in a variety of formats (using words, tables, graphs, mathematical equations, etc., as appropriate)” (Association of American Colleges and Universities 2010).*

**Instructions: For each of the following questions, please fill in one circle indicating your extent of agreement or disagreement ranging from 1 (disagree strongly) to 5 (agree strongly). If you don’t know an answer, please fill in the circle that says “Don’t Know or Not Applicable (DK or N/A).”**

a. Strong mathematics and quantitative skills help students to do well in other classes.

b. Mathematics and quantitative reasoning are important for my career goals.

c. I enjoy mathematics and quantitative reasoning.

d. Mathematical and quantitative skills help me make intelligent decisions about my life.

e. I am good at mathematics and quantitative reasoning.

f. I prefer classes that do not have any mathematics or quantitative elements.

g. I am nervous about learning mathematics and quantitative skills.

[Learning Goal #1]

**Please answer the following question based on the chart below.**

**Please answer the following question based on the chart below.**



Source: 2000 United States Census.

1. Based on the pie chart above, what percent of the fulltime workers in the US were NOT non-Latino White in 2000?

 a. 5% b. 15% c. 22% d. 27%

**Please answer the following questions (true/false) based on the table below.**

**The Demographic Characteristics of Full-time Physicians Ages 25-64**

**Compared to Full-time Workers, 2000**

 Race/Ethnicity Gender

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | % Non-Latino White | % Black | % Asian | % Latino | % American Indian | % Other  |   | % Male | % Female |
| Physicians | 74.5% | 4.5% | 14.4% | 4.7% | 0.1% | 1.7% | Physicians | 75.1% | 24.9% |
| Full-time Workers | 73.4% | 11.9% | 4.1% | 9.8% | 0.8% | N/A | Full-time Workers | 57.7% | 42.3% |

N/A = Not Available.

Source: United States Census, 2000

2. True False About three quarters of physicians are male.

3. True False Altogether, 74.5% of non-Latino Whites are physicians.

4. True False The ratio of female to male physicians is approximately 1 to 3.

5. True False Approximately 1 in 10 full-time workers is American Indian.

6. True False Compared to full-time workers, physicians are disproportionately Asian.

[Learning Goal #2]

**Please answer the following questions based on both graph and the table above.**

A famous medical school was considering increasing the numbers of Black and Latino students admitted to the school because so few doctors are Black or Latino. However, a politician argued that the percentage of Black and Latino medical students was small because the overall population of Blacks and Latinos is also small.

7. Do you think the politician’s argument is correct. Why or why not?

[1 point if the student compares the percentage of lawyers to the percentage of full-time workers or to the percentages in the graph; 2 points if both are mentioned]