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Reading and Interpreting Crime Statistics

Suggested Grade Levels: 7 and up

Possible Subject Area(s): Social Studies

Math Skills: reading and interpreting data (graphing data optional); figuring rates and rates of change; rounding decimals; expressing and calculating percents

Overview: Students will learn to interpret crime statistics, including the Crime Index (total number of crimes reported in seven categories) and violent and property crime. They will examine crime status at specific points in time and across given periods of time.

Student Activities: Reading and Interpreting Crime Statistics

I.   Use the crime statistics in the following table to answer the questions below.

Year	Population	Crime Index (Total)	Violent Crime	Property Crime
1979	220,099,000	12,249,500	1,208,030	11,041,500
1980	225,349,264	13,408,300	1,344,520	12,063,700
1981	229,146,000	13,423,800	1,361,820	12,061,900
1982	231,534,000	12,974,400	1,322,390	11,652,000
1983	233,981,000	12,108,600	1,258,090	10,850,500
1984	236,158,000	11,881,800	1,273,280	10,608,500
1985	238,740,000	12,431,400	1,328,770	11,102,600
1986	241,077,000	13,211,900	1,489,170	11,722,700
1987	243,400,000	13,508,700	1,484,000	12,024,700
1988	245,807,000	13,923,100	1,566,220	12,356,900
1989	248,239,000	14,251,400	1,646,040	12,605,400
1990	248,709,873	14,475,600	1,820,130	12,655,500
1991	252,177,000	14,872,900	1,911,770	12,961,100
1992	255,082,000	14,438,200	1,932,270	12,505,900
1993	257,908,000	14,144,800	1,926,020	12,218,800
1994	260,341,000	13,989,500	1,857,670	12,131,900
1995	262,755,000	13,862,700	1,798,790	12,063,900
1996	265,284,000	13,493,900	1,688,540	11,805,300
1997	267,637,000	13,194,600	1,636,100	11,558,500
1998	270,296,000	12,485,700	1,533,890	10,951,800
1999	272,691,000	11,635,100	1,430,690	10,204,500

Table title: **Crime in the U.S., 1979-99**

1. Crime statistics listed in the table give the number of reported offenses. In general, about how many times more property crimes than violent crimes are reported each year?

2. The Crime Index column represents the total number of reported crimes, both violent and property. Why doesn't the sum of figures in the violent- and property-crime columns equal the Crime Index column total?

3. Did property crime get better or worse in the 1990s?

4. The crime rate is the number of reported offenses per 100,000 U.S. inhabitants. What was the 1985 crime rate for the Crime Index total, violent crime, and property crime (each to the nearest tenth)?

5. Suppose that in 1981 a reporter stated that serious crime (violent and property) had increased since the previous year, but a White House spokesperson announced that the crime rate had improved in the same time frame. Who is right?

6. The property crime rate was 4,940.3 in 1987 and 5,027.1 in 1988. The percent change in this rate was +1.8. Explain how this figure was calculated. Describe in general how to find this rate.

7. Find the percent change for the Crime Index rate from 1985 to 1995 (between those two years only).

8. Use the crime-rate information in the table below to answer the following two items. (Figures in the table were determined from actual rather than rounded data.)
   A. What crime-rate trend do you see for the 1990s?
   B. Predict the 2000 figures for the table and explain how you arrived at your answers.

Crime Rates in the 1990s		
Year	Crime Index Rate	% Change from Previous Year
1990	5,820.3	+1.4
1991	5,897.8	+1.3
1992	5,660.2	-4.0
1993	5,484.4	-3.0
1994	5,373.5	-2.0
1995	5,275.9	-1.8
1996	5,086.6	-3.6
1997	4,930.0	-3.1
1998	4,619.3	-6.3
1999	4,266.8	-7.6

II. *Answer the following crime statistics questions.*

1. In 1999, the motor vehicle theft rate (rate per 100,000 population) was 343.0 in the Northeast and 505.8 in the West. If two cities of population one million, one in the Northeast and one in the West, each had had the average vehicle theft rate for its region, how many more thefts would have occurred in the Western compared with the Northeastern city for that year?

2. In 1999, 16 fewer law enforcement officers were killed as a result of accidents occurring while performing their official duties than had occurred the previous year. This was a 19.8% decrease in this particular death rate. How many law enforcement officers were killed this way in 1998? 1999?

3. Go to the movingvan.com web site's "Compare Crime Statistics" page at http://www.movingvan.com/tools/CrimeTool.cfm. Suppose your parents have an equivalent job offer in both San Francisco, CA, and Indianapolis, IN. They have investigated most information that matters to them except for crime statistics. Because they still can't make a decision, they decide to let you investigate the crime statistics to make the final decision. Which city do you choose, and why?

4. If the most recent murder rate for a city of population 47,500 was 6.7%, how many people committed murder in the city that year?

5. How significant is a murder rate increase of 67% from one year to the next?

6. What factors might cause a decline in the crime rate?

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Information for the Teacher

Crime is classified into two major categories. Violent crime consists of murder, forcible rape, robbery, and aggravated assault. Property crime consists of burglary, motor vehicle theft, and larceny-theft. The FBI's 2000 data reported in its Uniform Crime Reports (www.fbi.gov) show that one violent crime occurs every 22.1 seconds (murder every 33.9 minutes, forcible rape every 5.8 minutes, robbery every 1.3 minutes, aggravated assault every 34.6 seconds), and one property crime occurs every 3.1 seconds (burglary every 15.4 seconds, motor vehicle theft every 27.1 seconds, and larceny-theft every 4.5 seconds). The teacher may want to explore these facts, which are not included in the student activities in this module.

The crime rate is the number of reported offenses per 100,000 U.S. inhabitants. This is a general index in that it does not account for crimes that go unreported or for reported crimes that may be false claims. (Likewise, the murder rate is the number of reported murders per 100,000 U.S. inhabitants, and so forth.)

For #6 in Section I, note that students might need help expressing percents as they appear on their calculators as percent change (e.g., 0.02468 as a 2.5 percent change). This might be addressed in advance if it is something students might not otherwise know.

For #8B in Section I, students might be asked to create a line graph of the Crime Index rate figures for the 1990s before making their predictions. Different students might use different increments for numbers placed along the vertical axis (assuming that is where they place the reported crime numbers), in—for example—pairs or small groups, so that they may discuss and compare the differential impression this creates.

For #3 in Section II, students might also compare two cities of their choice.

As a culminating activity, the teacher might have students evaluate a provided media piece (e.g., one found in the newspaper or on the Web, or one that students select individually). An example may be found at http://www.news-press.com/special_sections/Census/stories/crime1128.html.

Answers to Problems and Questions

I. Problems Using 1979-1999 Crime Statistics Table

1. About seven to nine times more, with the factor tending to decrease with advancing years.

2. Due to rounding error. (All three sets of figures are rounded numbers.)

3. It tended to get better. Students might claim this because the actual number of reported cases declined across this period of time. Even better reasoning would be attention to the fact that the crime rate improved (proportional comparison of reported incidents to population).

4. The 1985 crime rate was 5,207.1 for the Crime Index total, 556.6 for violent crime, and 4,650.5 for property crime. To find these figures, first divide the 1985 population by 100,000, and then divide the relevant crime category figure by the result of the first calculation (2,387.4). (Crime rates for these problems are based on rounded and not actual figures.)

5. Both. The total number of reported crimes (Crime Index) rose from 13,408,300 in 1980 to 13,423,800 in 1981. However, the crime rate decreased from 5,950.0 in 1980 to 5858.1 in 1981. This would be a good time to discuss how the media and others may honestly report the figures that support a particular point of view. Students might discuss which manner of reporting this fact aligns more with what they think the public would want to know.

6. Take the difference of 4,940.3 and 5,027.1, divide the result (86.8) by 4,940.3, and multiply by 100. (Students might need help understanding why the resulting calculation may be expressed as +1.8, which represents a percent change.) General procedure: Subtract the crime rates for the two years being compared. Divide the absolute value of this difference by the first year. Multiply the resulting figure by 100, round it to the nearest tenth, and add a positive or negative sign to indicate whether the figures had increased or decreased from the first to second year. Or, use signed numbers from the start by subtracting the first year from the second year, dividing the resulting figure by the first year, and then multiplying by 100.

7. +1.3. (The crime rates were 5,207.1 for 1985 and 5,275.9 for 1995.)

8. A. Crime rates tended to decrease steadily throughout the decade after 1991.
   B. Beginning in 1991, crime rates decreased about 100-350 points each year, mainly 100-200 points, with larger decreases the final two years. Students might predict about a 200-point decrease, which would result in a Crime Index rate of 4,066.8 for 2000, a –4.7 percent change from 1999. Another option is for students to find the average annual percent change and apply it to the last year. (Students may want to check actual 2000 figures at http://www.fbi.gov/ucr/ucr.htm.) Students might also be asked to create a line graph of the Crime Index rate figures for the 1990s before making their predictions. (See suggestions in Information for the Teacher.)

II. *Miscellaneous Crime Statistics Questions*

1. 1628 more motor vehicle thefts. Multiply each rate by 10 to get the expected number for one million people, and then subtract the two figures (5058 West minus 3430 Northeast).

2. 81 were killed in 1998 and 65 in 1999. The 1998 figure is found by 19.8% of $x = 16$, which is found by computing $16 \div 0.198$, and the 1999 figure is found by subtracting 16 from the result. (Note that this is just one way law enforcement officers may be killed on the job.)

3. Some students might choose Indianapolis because the crime rate is lower. However, others might choose San Francisco because the more serious crimes against people are fewer there. Actual numbers for reported crime may be compared reasonably because the two cities' populations are similar (accessed by clicking on the "Learn more about this city" link for each city). (Students might also be asked to compare two cities of their choice, as noted in "Information for the Teacher.)

4. It isn't possible to tell. The number of murders is not related to the number of people who commit murder. It is not a one-to-one relationship, because one person may commit multiple murders.

5. In terms of actual numbers, this would be a very significant increase for the nation or for a city with a large number of reported murders. However, in a small town or city with, say, three murders one year and five the next, the 67% rate of increase might be considered to be anomalous. The small numbers in the latter case are subject to larger (i.e., less stable) increases and decreases in terms of percents.

6. Examples: a decrease in the actual number of crimes; a decrease in the number of detected crimes; a decrease in the public's willingness to report crime (you may wish to discuss what might influence this); an increase in police law enforcement activity.

Sources and References
McGeveran Jr., William A. (Ed.). (2002). *The World Almanac and Book of Facts 2002*. New York: World Almanac Books.
Uniform Crime Reports, Federal Bureau of Investigation: http://www.fbi.gov/ucr/00cius.htm

<u>Selected Resources</u>
Federal Bureau of Investigation's Uniform Crime Reports: http://www.fbi.gov/ucr/ucr.htm
McGeveran Jr., William A. (Ed.). (2002). *The World Almanac and Book of Facts 2002*. New
York: World Almanac Books.
movingvan.com web site's "Compare Crime Statistics":
http://www.movingvan.com/tools/CrimeTool.cfm
U.S. Department of Justice, Bureau of Justice Statistics: http://www.ojp.usdoj.gov/bjs/