University of Waterloo W. H. Cherry

MEASURING: *Do lefties live as long as righties? Debate rages on*

EM9314: The Toronto Star, February 15, 1993, page B1

Do lefties live as long as righties? Debate rages on

By Dan Hurley
SPECIAL TO THE STAR

On the one hand, a new study insists left-handed people live just as long as right-handed people.

On the other hand, the author of a 1991 study, which found lefties die nine years sooner on average than righties, will present another study this week to back up his original claim.

About the only thing both sides agree on is that there tend to be a lot more left-handed children than left-handed seniors. Explaining the disappearing lefties is the subject of scientific debate. The ultimate answer is likely to be of great interest to left-handed people, including U.S. president Bill Clinton, ex-president George Bush and former presidential candidate Ross Perot.

The lead author of the pro-leftie study, published in the *American Journal of Public Health*, says lefties do not die younger than righties.

The only reason there are fewer lefties among the aged, Dr. Marcel Salive of the National Institute on Aging in Bethesda, Md., says, is because social pressures once forced natural lefties to become righties, leaving fewer lefties at death than at birth.

Not true, says Stanley Coren, professor of psychology at the University of British Columbia in Vancouver.

Coren's study of 10,000 people in Vancouver found there was no change in the percentages of lefties among young and old during a 12-year period. That proves that changes in social pressures can't explain the dwindling presence of lefties among the elderly, he says.

Instead, Coren cites studies showing lefties are more prone to serious injuries and death due to accidents as evidence they are more likely to die earlier.

"It is beginning to look as though the accident link, which would cause a decrease in the longevity of left-handers, is being confirmed", Coren says.

Salive's study, however, showed no difference in death rates among 3,774 Boston right-handed and left-handed adults aged 65 and older. During a six-year period, 32.2 per cent of the righties died, compared with 33.8 per cent of the lefties, a difference researchers said probably was due to chance.

Salive also studied U.S. death rates using Census Bureau figures, and concluded that although lefties on average died 14 years sooner than righties, the difference was due to the larger number of lefties among the young than among the old, which tilted their average death rate toward a younger age.

He also found that the percentage of deaths due to injuries in lefties was more than twice that of righties, but he again attributed the difference to the lefties' younger age on average. Younger people tend to have higher rates of injuries than older people, he says.

About 13 per cent of people in their 20s are lefties, compared with only about 1 per cent of people in their 90s, Salive's study noted.

MEDICAL TRIBUNE NEWS SERVICE.

REFERENCE: Salive, M.E., Guralnik, J.M. and R.J. Glynn: Left-handedness and mortality. *Amer. J. Public Health* **83**(#2): 265-267 (1993) [DC Library call number: PER RA421.A41]

1. The article EM9314 reprinted above involves *measuring*; briefly describe the response variate and the focal (explanatory) variate to be measured to answer the Question: *Do lefties live as long as righties?*
   - Would each of these variates be considered to be *continuous* or *discrete*? Explain briefly.

2. What does the article EM9314 indicate about the measuring *instrument* used to obtain the values for each variate?
   - In addition to the measuring *instruments*, name the other components of a measuring process generically; then, to the extent possible from the limited information provided, identify these components for the two measuring processes in the context of the article EM9314.

3. Discuss concisely factors relevant to:
   - the inaccuracy, ● the imprecision, of the two measuring processes.
   - What discussion of such factors is there in the article EM9314? Comment briefly.

4. Compare and contrast how a value, for righties and for lefties, for a population attribute of the response variate 'age at death', was obtained in the investigation by:
   - Dr. Salive of 3,774 Bostonians;
   - Dr. Salive using Census Bureau figures;
   - Prof. Coren of 10,000 people in Vancouver.

   Explain briefly which investigation you consider would have provided an answer with the *least* severe limitations.

5. Suggest reason(s) why the investigations mentioned in the article EM9314, by Dr. Salive and Prof. Coren, obtained *different* answers to the Question: *Do lefties live as long as righties?*.

The article EM9314 reprinted above in this Highlight #36 is also used in Chapter 11 in the STAT 231 Course Materials.

(*continued overleaf*)

MEASURING: ***Kids don't know their geography***

EM9019a: USA TODAY, February 9, 1990, pages 1A, 4D and 1D

Kids don't know their geography

By Dennis Kelly
USA TODAY

U.S. high school seniors have little trouble identifying the nations that make the nightly news, but have otherwise "feeble geography skills," says a report out Wednesday.

The first National Assessment of Educaion-al Progress on geography calls the deficien-cies a "serious" concern.

"Unless we place a new emphasis on geo-graphy, we'll pass on to children the steward-ship of a world they literally do not know," says Secretary of Education Lauro F. Cava-zos. The test of 3,000 students found:

- 87 percent identified Canada on a world map; 85 percent found the Soviet Union.

But only 37 percent located Southeast Asia. And 16 percent mistakenly thought the Pana-ma Canal saves sailing time between New York and London.

- Students have some map-reading skills, but only 58 percent knew the difference be-tween longitude and latitude.
- 79 percent understood the basic way to control acid rain was to reduce pollution. But only 41 percent recognized that nuclear winter – a global dust cloud caused by wide-spread nuclear explosions, which then screens out sunlight – would affect the environment.

The findings "shouldn't surprise anyone be-cause geography is simply not being taught in many school districts," says Gilbert Gros-venor of the National Geographic Society.

Says Ina V. S. Mullis of the Educatonal Test-ing Service: "In addition to asking parents if they know where their children are, we might begin asking children if they *themselves* know where they are."

EM9019b:

Test of geographical savvy

By Dennis Kelly
USA TODAY

Want to see how well you would do on the geography test that was given to 3,000 U.S. high school seniors?

Here are some sample questions that appeared on the test given to students for the National Assessment of Educational Progress, the federally mandated check on student knowledge.

The test measured not only students' ability to locate countries and cities on a map, but also their understanding of cultural and physical geography.

1. Which of the following is the north-to-south sequence of major cities on the West Coast of the United States?
A. Los Angeles, San Francisco, Seattle, Portland.
B. Portland, Los Angeles, Seattle, San Francisco.
C. San Francisco, Portland, Seattle, Los Angeles.
D. Seattle, Portland, San Francisco, Los Angeles.

2. Large parts of the American Midwest were covered almost en-tirely by forests 150 years ago. Today the forest areas are much smaller. Which of the following is most responsible for this change?
A. A decrease in average temperature.
B. An increase in average precipitation.
C. An increase in the number of forest fires.
D. The growth of farming.

3. As one goes from the centre of an inland metropolitan area to the countryside, what happens to the temperature?
A. It increases.
B. It decreases.
C. It changes unpredictably.
D. It remains the same.

4. The spread of an idea from one part of the world to another is called:
A. External migration.
B. Integration.
C. Industrialization.
D. Cultural diffusion.

5. The Hawaiian Islands first came into being as a result of:
A. The separation of land fragments from Asia.
B. The formation of coral reefs.
C. Volcanic eruptions.
D. Undersea erosion.

6. Which of the following, combined with the Earth's revolution around the sun, causes the seasons?
A. The frequency of sunspot occurrences.
B. The gravitational pull of the moon.
C. The intensity of light emitted by the sun.
D. The tilt of the Earth's axis.

7. The construction of the Panama Canal shortened the sailing time between New York and:
A. London.
B. Port-au-Prince.
C. Rio de Janeiro.
D. San Francisco.

1 The main article EM9019a reprinted above involves *measuring*; briefly describe the (response) variate being measured.
- Would this variate be considered to be *continuous* or *discrete*? Explain briefly.

2 What is the measuring *instrument* used to obtain the values of this variate?
- Describe briefly the matters that need to be considered in the *construction* of this instrument; present your discussion in point form and indicate for each point whether it is relevant to the *accuracy* or the *precision* of the measuring process.
- In addition to the measuring *instrument*, name the other components of the measuring process generically; then identify them in the context of the article EM9019a.

3 Identify the relevant paragraph(s) of the article EM9019a reprinted above that are concerned with factor(s) which affect the *inaccuracy* of the measuring process?
- What are the implications of your answer? Explain briefly.

(*continued*)

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MEASURING: *Kids don't know their geography* (continued 1)

4 Describe briefly the target population in the investigation described in the article EM9019a reprinted on the facing page HL36.2.
- How do the 3,000 students mentioned at the end of the third paragraph of the article relate to this population?
- How does the *size* (*i.e.*, 3,000) of this group of students affect:
  - the inaccuracy, – the imprecision, of the:
    ○ *estimating* process; ○ *measuring* process? Explain briefly.

5 To the extent allowed by the limited information in the article EM9019a reprinted on the facing page HL36.2, identify the:
- study population,
- respondent population,
- non-respondent population,
- sample, for the investigation.
  - Explain briefly how information that is *missing* from the article on these four groups of elements affects the reader's ability to assess limitations on the Answer obtained.

6 Check how many of the seven questions given in the second article EM9019b on the facing page HL36.2 *you* can answer correctly. The *answers* are given in the inverted box below the article EM9019c at the right; the number in brackets ( ) after each answer is the percentage of students in the sample survey who answered the question correctly.

7 In the article EM9019c reprinted at the right, briefly describe the population attribute that is an answer to the Question.
- Are its possible values on a *continuous* or *discrete* scale? Explain briefly.

8 If possible, show how the overall grade of B-minus, given in the title of the article EM9019c at the right, is derived from the information presented in the article; if you can*not* do so, explain what additional information you need and how you would use it.

The three articles EM9019 reprinted on the facing page HL36.2 and at the right in this Highlight #36 are also used in Figure 2.14 in the STAT 220 Course Materials.

The article EM8906, *Ignorance on Parade*, used in Figure 1.4 of the STAT 220 Course Materials and in Statistical Highlight #93, pursues a theme related to that of the articles EM9019.

2018-04-20

EM9019c:

Educators give schools a B-minus

By Dan Sperling
USA TODAY

U.S. school administrators give public schools an average of B-minus, says a new survey.

In the survey of 385 school administrators by Allstate Insurance Co. and the American Association of School Administrators, 68 percent gave the public education system a grade of "B," 2.3 percent "C," 7 percent "A" and 2 percent "D."

Other findings:

● 73 percent said public education is better now than a decade ago; 9 percent, about the same; 8 percent, worse now.

● 51 percent rated U.S. public schools as better than England's; 70 percent, better than the Soviet Union's; 36 percent better than Japan's.

● Among problems cited: lack of parent involvement (81 percent), poor student motivation (75 percent), cuts in state or local budgets (67 percent) and undermotivated teachers (62 percent).

"There will probably never be a time when we can say our schools are perfect, because they have to serve the diverse needs of a democracy such as ours," says Gary Marx, of the administrators group.

ANSWERS: 1D(64); 2D(65); 3B(49); 4D(41); 5C(71); 6D(68); 7D(50)

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