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**IASSIST
2003**

Statistical Literacy Survey: Reading Tables & Graphs

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Subjects

Convenience survey of 191 subjects:

Q1. 36% have discomfort with formal statistics

Q3. 95% have quantitative occupations/majors.

Q4. 41% college students (20% are college teachers)

Q6. 29% were not native speakers of English.

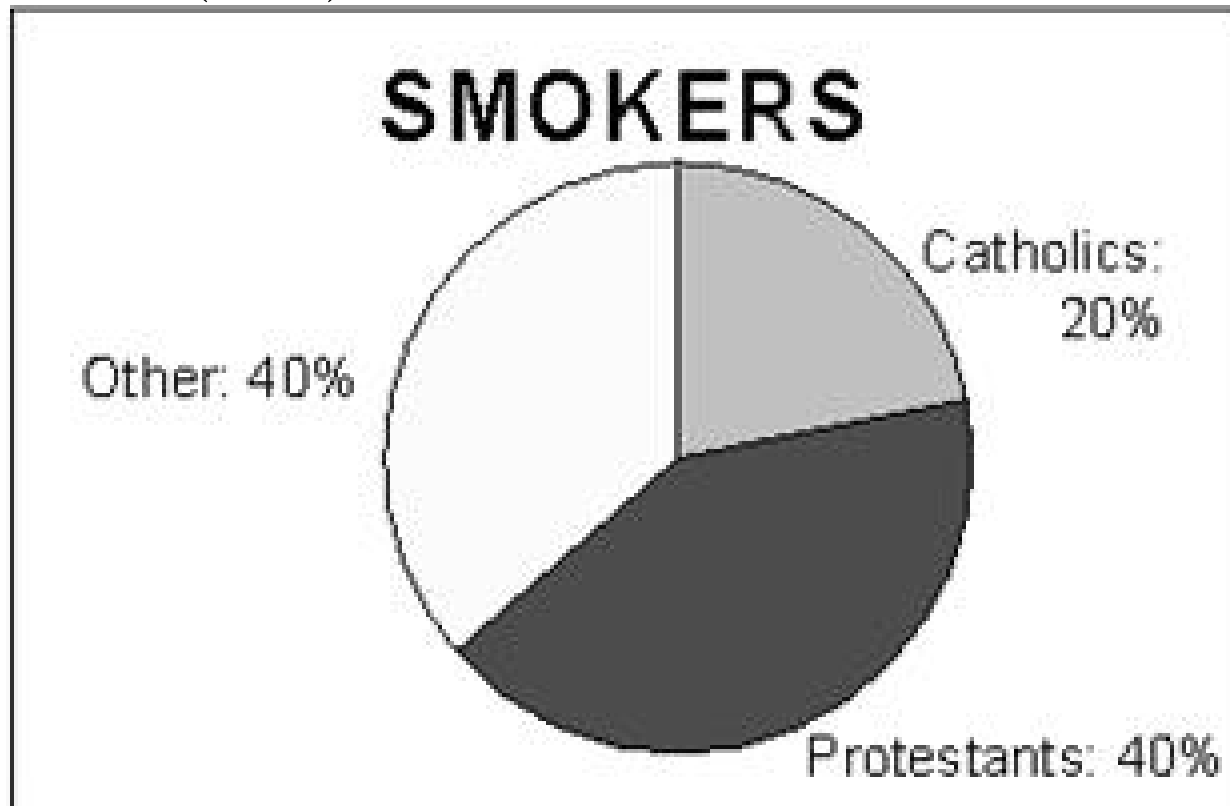
Q7: 39% had taken at least 2 courses in statistics
46% had not taken any course in statistics.

A unique sample!

Reading a Pie Chart

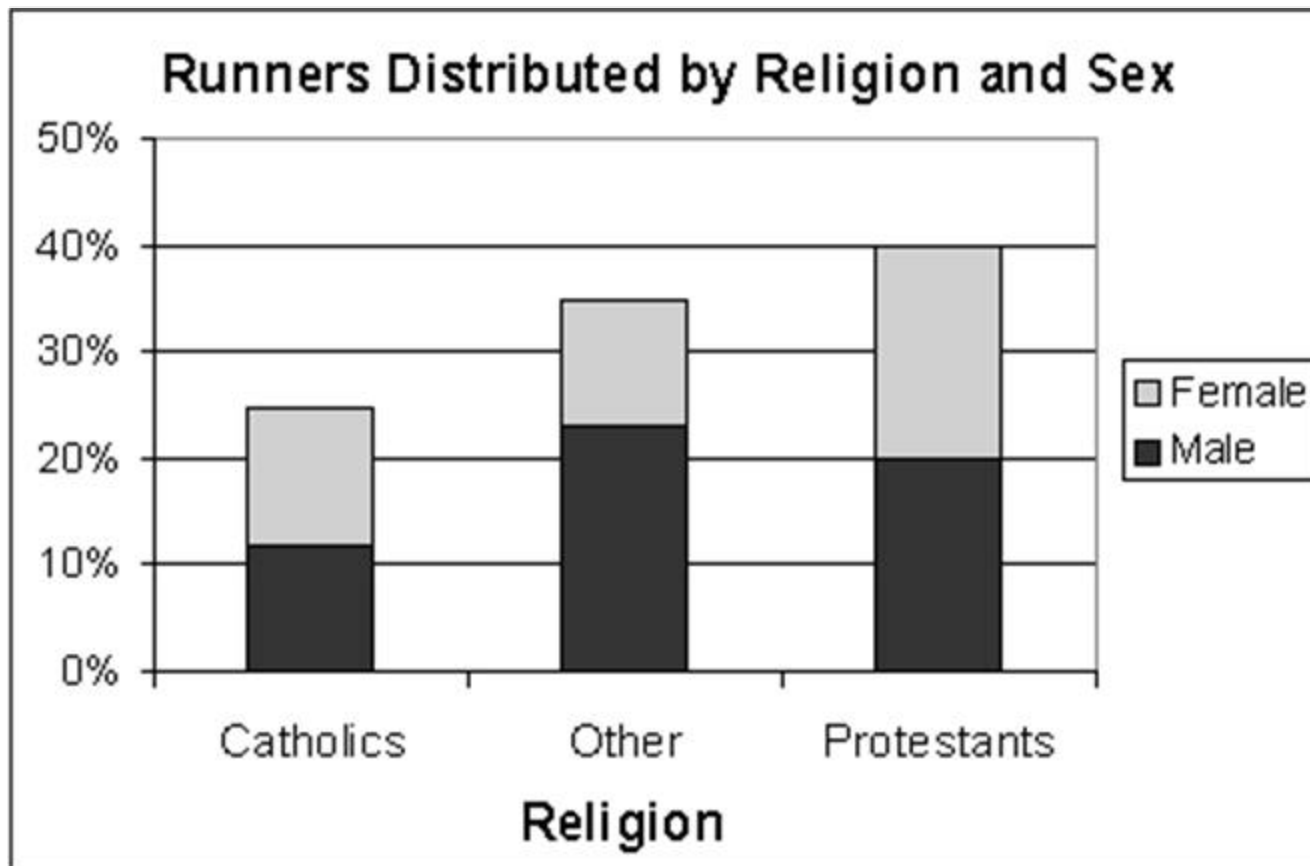
90% said “20% of smokers are Catholics”

47% said “Protestants (40%) are twice as likely to be smokers as are Catholics (20%)”



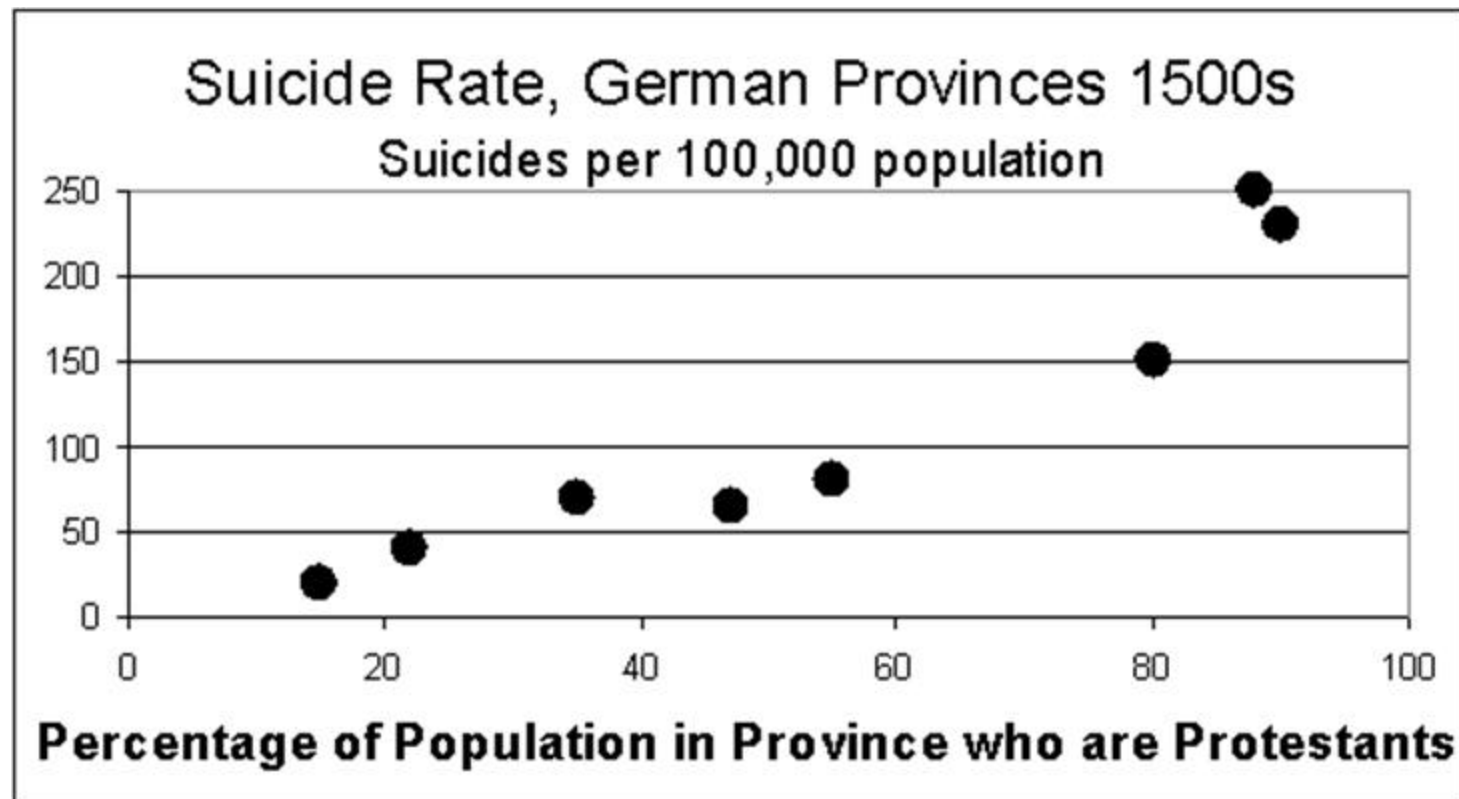
Reading A Bar Chart

50% said “20% of Protestant Males are runners.”



Reading a Scatter Plot

53% said “Protestants are more likely to commit suicide than non-Protestants [are].”



Reading 100% Tables

30% said, “**25% of females are black.**”

48% said, “**Whites are two times as likely to be female than are blacks.**”

	SEX		
RACE	Male	Female	TOTAL
Black	75%	25%	100%
White	50%	50%	100%
Other	40%	60%	100%
TOTAL	50%	50%	100%

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Reading Percentages in a Two-Way Half Table

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39% said “**20% of runners are female smokers.**”

39% said “**20% of females are runners who smoke**”

PERCENTAGE WHO ARE RUNNERS			
	Non-smoker	Smoker	Total
Female	50%	20%	40%
Male	25%	10%	20%
Total	37%	15%	30%

Reading Half Tables of Percentages

42% said “In 1996 in the US,
6% of low-weight births were in California (CA).”

STATE	PERCENT OF BIRTHS WITH LOW BIRTH WEIGHT ¹		
	1990	1995	1996
U.S.	7.0	7.3	7.4
AL.	8.4	9.0	9.3
AK.	4.8	5.3	5.5
AZ.	6.4	6.8	6.6
AR.	8.2	8.2	8.5
CA.	5.8	6.1	6.0

Reading Multiple Half-Tables of Percentages

54% said 10% of women having HIV test are 40-44.
59% said “**20% is two times more than 10%.**”

<i>Percent of Women, 15 to 44, Who Received Selected Medical Services</i>			
Age At Interview	HIV Test	Pregnancy Test	Pap Smear
15-19 years old	14.6	16.1	33.5
20-24 years old	20.0	27.4	68.7
25-29 years old	25.6	25.3	70.9
30-34 years old	18.5	17.4	69.5
35-39 years old	14.2	8.1	62.9
40-44 years old	10.0	4.3	62.7
Total	17.3	16.0	61.9

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Statistical Literacy Survey: Reading Tables of Rates

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42% said, “In 1995 for Alaskans who were in motor vehicle accidents, the death rate was 16.1 per 100,000”

No. 143. Death Rates, by Leading Cause--States (Top 5 and Bottom 5). Source: 1998 US Statistical Abstract [Deaths per 100,000 resident population estimated as of July 1.]

STATE 1995	Total	Heart disease	Cancer	Cerebro- vascular dis- eases	Accidents and adverse effects	Motor vehicle acci- dents	Chronic obstructive pulmonary diseases	Dia- betes mellitus	HIV	Suicide	Homicide
United States	880.0	280.7	204.9	60.1	35.5	16.5	39.2	22.6	(NA)	11.9	8.7
D.C.	1,244.2	302.4	267.2	66.8	34.8	12.3	24.2	39.5	117.8	7.0	56.8
West Virginia	1,107.0	378.9	259.4	67.9	40.4	21.2	60.0	32.8	0.0	15.1	5.5
Florida	1,081.3	351.6	263.5	69.9	38.1	19.8	52.9	26.0	30.8	15.3	8.8
Arkansas	1,075.1	339.8	244.7	91.5	48.8	26.3	45.0	22.4	6.8	14.5	11.6
Pennsylvania	1,059.2	359.7	250.7	68.6	35.3	13.1	43.9	28.2	11.5	12.1	6.5
Missouri	1,021.9	345.3	230.7	72.9	43.5	20.6	46.1	23.4	8.8	13.5	8.9
California	709.8	216.3	162.8	51.4	29.3	14.1	34.2	16.2	20.4	11.7	11.6
Colorado	667.6	172.1	145.9	42.7	39.8	18.6	42.3	14.3	10.9	17.5	5.7
Hawaii	643.1	196.0	156.4	51.5	27.6	12.0	20.4	14.2	10.4	12.0	4.9
Utah	560.6	148.1	108.6	39.9	32.4	17.2	24.1	21.3	4.8	14.8	3.9
Alaska	423.0	90.6	95.1	24.0	56.2	16.1	17.7	9.3	5.0	17.1	8.9

Respondents' Evaluations

78% said *tasks harder than expected.* Q64

90% said *“These tables and graphs are the kind I need and/or want to be able to read or understand.”* Q68

93% said *“College students should be able to read these kinds of tables and graphs.”* Q69

IASSIST Action: Give Institutional Support

Institutional support is needed on:

1. Teaching using empirical data as evidence
2. Using summary data (versus micro-data)
3. Using observational data with confounding
4. Reading tables of rates and percentages
5. Describing/comparing rates and percentages
6. Distinguishing association and causation
7. Taking associated factors into account