



PKAL Workshop – October 2008

ASSESSING STATISTICAL LITERACY @ AUGSBURG COLLEGE

STATISTICAL LITERACY @ AUGSBURG COLLEGE

- Statistical Literacy:
 - Ability to read, write and reason about numbers and statistics in everyday contexts including tables, pie charts, and bar graphs.
- Background:
 - Statistical Literacy for Managers Course
 - Management Information Systems Course
- Methodology:
 - Activity done as a pair for undergraduates (n = 13 pairs)
 - Activity done as individuals for MBA students (n = 11 students)
- Context:
 - Data Source: 2006 US Census Bureau Survey of Fishing, Hunting and Wildlife Watching.

READING TABLES OF COUNTS / PERCENTS

Fishing

Anglers and Days of Fishing (In millions)

	Anglers		Days	
	Number	Percent	Number	Percent
Total fishing	30.0	100	517	100
Freshwater, total	25.4	85	433	84
Freshwater, except				
Great Lakes	25.0	84	420	81
Great Lakes	1.4	5	18	3
Saltwater	7.7	26	86	17

Q: Write out a statement comparing the number of days spent Freshwater fishing vs. Saltwater fishing.

ASSESSING STATISTICAL LITERACY

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Results:
Undergrads: 5/13 Incorrect

Statement Types:
Ordinal Comparison = 6
Statement of Facts = 6
Simple Ratio = 1

Q: Write out a statement comparing the number of days spent Freshwater fishing vs. Saltwater fishing.

In other words: Compare the number 433 versus 86

READING TABLES OF COUNTS / PERCENTS

Anglers Pursuing Selected Fish by Type of Fishing (In millions)

Fish sought	Number of anglers	Percent
Anglers, total	30.0	100
Freshwater except Great Lakes	25.0	83
Black bass	10.0	33
Pantfish	7.5	25
Cattish/bullhead	7.0	23
Trout	6.8	23
Great Lakes	1.4	5
Walleye, sauger	0.5	2
Perch	0.5	2
Salmon	0.4	1
Lake trout	0.3	1
Saltwater	7.7	26
Flatfish (flounder, halibut)	2.1	7
Red drum (redfish)	1.8	6
Sea trout	1.5	5
Striped bass	1.4	5

Q: What percentage of Great Lakes anglers fished for perch?

READING TABLES OF COUNTS / PERCENTS

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Sea trout	1.5	5
Striped bass	1.4	5

Q: What percentage of Great Lakes anglers fished for perch?

Common Wrong Answer: 2%

Correct Answer: $.5 / 1.4 = 36\%$

Results:
Undergrads: 12/13 Incorrect
MBA's: 10 / 11 Incorrect

READING TABLES OF COUNTS / PERCENTS

Q: What % of Great Lakes anglers fished for perch?

Anglers Pursuing Selected Fish by Type of Fishing (in millions)		
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Salmon	0.4	1
Lake trout	0.3	1
Saltwater		
Flounder (southern halibut)	2.1	7
Red drum (redfish)	1.8	6
Sea trout	1.5	5
Striped bass	1.4	5

Commonly Wrong Answer: 2%

Correct Answer: $.5 / 1.4 = 36\%$

Two True Statements:

36% of all Great Lakes anglers fish for perch.

2% of all anglers fish the Great Lakes for perch.

READING / INTERPRETING PIE CHARTS

Percent of Anglers by Age Group

Q: What Percentage of Anglers are less than age 35?

Q: What Percentage of Anglers are between 35 and 54?

READING / INTERPRETING PIE CHARTS

Q: What Percentage of Anglers are less than age 35?

Results:
Answer: 28%

Undergrads: 0 / 13 Incorrect
MBA's: 1 / 11 Incorrect

Q: What Percentage of Anglers are between 35 & 54?

Results:
Answer: 47%

Undergrads: 0 / 13 Incorrect
MBA's: 1 / 11 Incorrect

READING / INTERPRETING PIE CHARTS

Percent of Anglers by Age Group

Q: What percentage of 18 to 24 year olds are anglers?

ASSESSING STATISTICAL LITERACY

Q: What percentage of 18 to 24 year olds are anglers?

Results:
Answer: Can't Tell

Undergrads: 10/13 Incorrect
MBA's: 6 / 11 Incorrect

READING / INTERPRETING PIE CHARTS

Percent of Wildlife Watchers by Age

Q: What is the definition of a wildlife watcher in this pie chart?

Q: What percentage of 35 to 44 year olds are wildlife watchers?

Q: What percentage of wildlife watchers are between 35 & 44 yrs of age?

READING / INTERPRETING PIE CHARTS

Percent of Wildlife Watchers by Age

Age Group	Percentage
16 to 17	2%
18 to 24	5%
25 to 34	11%
35 to 44	21%
45 to 54	23%
55 to 64	19%
65 and older	19%

Q: What is the definition of a wildlife watcher in this pie chart?

Correct Answer: Can't Tell

Q: What % of 35 to 44 year olds are wildlife watchers?

Results:
Answer: Can't Tell
Undergrads: 6 / 13 Incorrect
MBA's: 6 / 11 Incorrect

Q: What % of wildlife watchers are between 35 & 44 yrs of age?

Results:
Answer: 21%
Undergrads: 5 / 13 Incorrect
MBA's: 3 / 11 Incorrect

READING / INTERPRETING BAR CHARTS

Percent of U.S. Population Who Wildlife Watched by Household Income

Household Income	Percentage
Less than \$20,000	23%
\$20,000 to \$34,999	27%
\$35,000 to \$49,999	36%
\$50,000 to \$74,999	40%
\$75,000 to \$99,999	40%
\$100,000 or more	43%

Q: What percentage of low income (<\$20k) households are wildlife watchers?

Q: What percentage of those under \$35k households are wildlife watchers?

READING / INTERPRETING BAR CHARTS

Percent of U.S. Population Who Wildlife Watched by Household Income

Household Income	Percentage
Less than \$20,000	23%
\$20,000 to \$34,999	27%
\$35,000 to \$49,999	36%
\$50,000 to \$74,999	40%
\$75,000 to \$99,999	40%
\$100,000 or more	43%

Q: What percentage of low income (<\$20k) households are wildlife watchers?

Results:
Answer: 23%
Undergrads: 0 / 12 Incorrect
MBA's: 2 / 11 Incorrect

Q: What percentage of those under \$35k households are wildlife watchers?

Results:
Answer: Can't Tell
Undergrads: 8 / 13 Incorrect
MBA's: 5 / 11 Incorrect

READING / INTERPRETING BAR CHARTS

Bird Watchers

Category	Number of Bird Watchers
Total	47.7 million
Around the home	41.8 million
Away from home	19.9 million

Q: How many bird watchers participate in that activity both around the home and away from home?

READING / INTERPRETING BAR CHARTS

Bird Watchers

Category	Number of Bird Watchers
Total	47.7 million
Around the home	41.8 million
Away from home	19.9 million

Q: How many bird watchers participate in that activity both around the home and away from home?

Results:
Answer: 14 million
Undergrads: 13 / 13 Incorrect
MBA's: 7 / 11 Incorrect

CONCLUSIONS / DISCUSSION

- ✘ This is not rocket science!
 - + Reading Tables, Pie Charts and Bar Graphs
 - + Writing Statements including #'s
 - + Interpreting Summary Data
- ✘ Test it out with your students!
 - + Link to Census Brochure:
 - ✘ www.census.gov/prod/2008pubs/fhw06-qfact.pdf
 - + Link to 10 item sample survey:
 - ✘ www.StatLit.org/pdf/2008IsaacsonQuestionsPKAL.pdf
 - + Questions / Comments?
 - + Email address: isaacson@augsborg.edu