

Project: Blood-Lead Level

Name _____

In a study of the effects of exposure to lead on the psychological and neurological well-being of children, a group of children who lived near a lead smelter in El Paso, Texas, were identified and their blood levels of lead were measured. An exposed group of 19 children were identified who had blood-lead levels of at least 40 mg/ml. This group of children is defined by group variable leadtype and was coded as 2. A control group of 63 children were also identified who had blood-lead levels less than 40 mg/ml, and is identified by the variable leadtype and was coded as 1. All children lived close to the lead smelter. Two important outcome variables were (1) the number of finger-wrist taps in the dominant hand (a measure of neurological function) and (2) the Wechsler full-scale IQ score. The data is saved in SPSS format [leadtest.sav](http://gchang.people.yasu.edu/stat/leadtest.sav). (Web address for this data file is: <http://gchang.people.yasu.edu/stat/leadtest.sav>) It can be downloaded from Dr. Chang's web site in Data Directory Link.

Variable Description

id	Identification number
area	Area where the children lived 1 = 0 to 1 mile from smelter 2 = 1 to 2.5 miles from smelter 3 = 2.5 to 4.1 miles from smelter
age	Age, 1011 mean 10 years 11 months
sex	Sex 1=Male, 0=Female
iqf	Full Scale of IQ test score
leadtype	Blood lead level group 0 = below 40 mg/ml 1 = greater or equal to 40 mg/ml
fwtr	Finger-wrist tapping test right hand
fwtl	Finger-wrist tapping test left hand
maxfwtr	Larger of fwtr and fwtl as a proxy for the number of taps from the dominant hand
leadlevl	Blood lead level in mg/ml

Use SPSS to answer the questions on the next page. When p-value is asked always use the larger of the two from the normality test.

After you finished the questions in next page, use the following space to give a brief summary of your opinion on whether there is a significant relation between children's blood lead level and the number of taps from children's dominant hand that were observed in this study.

1) Find the overall mean, median and sample standard deviation of IQ scores for children in this data set.
 Sample Mean = _____ Sample Standard Deviation = _____
 Sample Median = _____

2) Does the distribution of the IQ scores for these children symmetrical belled-shape? (Circle the correct answer) Yes No

3) Perform a normality test of the IQ variable and report the larger p-value among the two p-values for the normality test. P-value = _____

4) Does the p-value above suggest that the data follows very close to a normal distribution? (Circle the correct answer) Yes No

5) Report the percentage distribution of the children's lead level in their blood according to **leadtype** variable?

Lead Level	Relative Frequency
Low	_____ %
High	_____ %

6) Report the percentage distribution of where children's according to **area** variable.

Area	Relative Frequency
0 to 1 mile from the smelter	_____ %
1 to 2.5 mile from the smelter	_____ %
2.5 to 4.1 mile from the smelter	_____ %

7) Report the median and the mean for "number of taps from the dominant hand" and also the sample standard deviation for the number of taps from the dominant hand.

Sample Mean = _____ Sample Standard Deviation = _____
 Sample Median = _____

8) Report the median and the mean for "number of taps from the dominant hand for those who lived 0 to 1 mile from the smelter," and also the sample standard deviation?

Sample Mean = _____ Sample Standard Deviation = _____
 Sample Median = _____

9) Does the number of taps from the dominant hand for those who lived 0 to 1 mile from the smelter follow a normal distribution? P-value = _____
 (Circle the correct answer) Yes No

10) Report the median and mean for "number of taps from the dominant hand for those who lived 2.5 to 4.1 mile from the smelter," and also the sample standard deviation?

Sample Mean = _____ Sample Standard Deviation = _____
 Sample Median = _____

11) Does the number of taps from the dominant hand for those who lived 2.5 to 4.1 mile from the smelter follow a normal distribution? P-value = _____
 (Circle the correct answer) Yes No