Psyc 122 - Statistics

Practice Midterm #1

1) The table below presents the difference between the actual high temperature in Champaign/Urbana for the last week, and the predicted high temperatures by two local meteorologists - Judy Fraser (WCIA) and Jerome Richey (WICD).

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | Sun | Mon | Tues | Wed | Thurs | Fri | Sat |
| Judy’s Error | 0 | 13 | 0 | 19 | 17 | 14 | 0 |
| Jerome’s Error | 5 | 8 | 7 | 0 | 12 | 7 | 3 |

a) Find the mean, median, and mode and standard deviation for each meteorologist’s error. (1 pt each)

**Judy: Mean = 9; Median = 13; Mode = 0; SD = 8.64**

**Jerome: Mean = 6; Median = 7; Mode = 7; SD = 3.83**

b) In a statistical sense, who is the more **reliable** meteorologist? Explain. (3 pts)

**Jerome is the more reliable because his errors had less variability.**

2) According to my informal survey, on average, y’all eat 1.4 servings of fruit per day. For each of the situations described below, determine whether that value would be considered a parameter, or a statistic. Be sure to explain your answer. (3 pts each)

a) I call my mother on the phone and say, "Did you know that – on average – the **students in my stats class this semester** eat only 1.4 pieces of fruit per day?"

In this case, the value is a parameter because the population is my class and I have data for every member of the population.

b) Because of my ground-breaking fruit consumption research, I appear on the Today Show. I tell Savannah that, "According to my research, **the average college student** eats only 1.4 pieces of fruit per day." She replies, "How interesting! Is there no limit to your brilliance?"

In this case, the value is a statistic because I am trying to use the data from my class (sample) generalize to all college students (the population).

3) A study was conducted to determine if wealth influenced generosity. People were approached in a parking lot and asked to donate to a local charity. The amount they agreed to donate was recorded as was the make and model of their car. The values of the cars were then used to determine if there was a relationship between car value and donation amount. (4 pts each)

1. Was the design experimental or observational?

Observational; people were not randomly assigned to what kind of car they own.

1. What was the IV/predictor variable and how was it operationally defined?

Wealth; operationally defined as the value of one’s car

1. What was the DV and how was it operationally defined?

Generosity; operationally defined as the amount of the donation

1. Were the IV/predictor variable and DV discrete or continuous?

IV: continuous because it was the value of the car, not the make and model.

DV: continuous

1. What was the scale of measurement for both the IV/predictor variable and the DV?

Both were continuous and had real zero points, so they both were measured on ratio scales.

4) The number of slices of pepperoni on a Sibie’s pepperoni pizza has a mean of 25 and a variance of 4. Let’s assume that the distribution of pepperoni slices is normally distributed. According to the empirical rule, how many pepperoni pizzas will have between 21 and 29 slices of pepperoni? (3 pts)

If the variance is 4, then the standard deviation is, so 21 and 29 represent z-scores of -2 and +2, respectively. 95% of a normal distribution falls between

-2 and +2.

5) Find the value of z, such that the area between z and –1.58 =

a) .8858 (3 pts)

**.9429 (body -1.58) - .8858 = .0571.**

**.0571 = Tail(1.58). Therefore, the answer is 1.58**

b) .1323 (3 pts)

**.9429 - .1323 = .8106**

**.8106 = Tail -.88. Therefore, the answer is -.88**

c) .0522 (3 pts)

**.9429-.0522 = .8907**

**.8907 = Tail -1.23. Therefore, the answer is -1.23. or**

**.9429+.0522 = .9951 = Tail -2.58; Therefore, the answer is -2.58.**

**Either answer would be fine.**

6) The data below lists the number of assignments turned in late for each of the classes that I have taught at Amherst.

|  |  |
| --- | --- |
| # of late assignments | Frequency |
| 1 | 4 |
| 2 | 9 |
| 3 | 11 |
| 4 | 14 |
| 5 | 9 |
| 6 | 7 |
| 7 | 6 |

1. Find the mean, median, mode, variance, and standard deviation. The sum of x = 240; the sum of x2 = 1134.

n=4+9+11+14+9+7+6 = 60; M = sum(x) / n; M = 240/60 = 4

Median = 4

Mode = 4



1. Are the data positively-skewed, negatively-skewed or symmetrical?

Symmetrical; mean, median and mode are all the same.