*Module 2, Week 2, Paper and Pencil Assignment 4*

1. You have the following random samples containing information on caloric intake per day (measured in thousands) and dieting status for individuals living in the United States and Canada.

|  |  |  |  |
| --- | --- | --- | --- |
| U.S. citizen caloric intake per day | Currently on a diet | Canadian citizen caloric intake per day | Currently on a diet |
| 4 | Yes | 2 | No |
| 3.1 | No | 2.1 | No |
| 2.8 | No | 1.8 | No |
| 2.2 | No | 3.3 | Yes |
| 4.4 | Yes | 3.1 | No |
| 3.3 | Yes | 2.5 | No |
| 1.9 | No | 2.9 | No |
| 4.6 | Yes | 2.2 | No |
| 3.5 | Yes | 1.9 | No |
| 2.5 | No | 1.7 | No |
| 2.9 | No | 3.8 | Yes |
| 2 | No | 2.3 | No |
| 3.5 | Yes | 2.6 | Yes |
| 2.1 | No | 2.9 | Yes |
| 3.4 | Yes | 3.0 | Yes |
| 2.3 | No | 1.9 | No |

The samples have the following standard deviations:

= 0.845 = 0.614

1. Test the hypothesis that there is a difference in mean caloric intake between U.S. and Canadian citizens. Use a 5% level of significance.
2. Test the hypothesis that there is a difference in the proportion of people on a diet between U.S. and Canadian citizens. Use a 5% level of significance.

2. The following table shows the expected and observed distribution of job satisfaction in a random sample of 100 full-time workers.

|  |  |  |
| --- | --- | --- |
| Job Satisfaction | Expected | Observed |
| Very unsatisfied | 5 | 12 |
| Somewhat unsatisfied | 15 | 20 |
| Neutral | 30 | 28 |
| Somewhat satisfied | 30 | 20 |
| Very satisfied | 20 | 20 |

1. Conduct a hypothesis test to determine if the observed distribution of consumer confidence fits the expected distribution. Use a 5% level of significance.

3. The following table is a cross-tabulation of marital status and location of residence.

|  |  |  |  |
| --- | --- | --- | --- |
|  | Married | Not Married | Total |
| Urban | 65 | 42 | 107 |
| Rural | 49 | 39 | 88 |
| Total | 114 | 81 | 195 |

1. Conduct a hypothesis test to determine if marital status and location of residence are independent random variables. Use a 5% level of significance.

4. The following table shows frequencies of highest educational attainment by region.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | No HS degree | HS degree only | Some college | Bachelor’s degree | Post-graduate degree |
| North | 9 | 25 | 14 | 31 | 8 |
| South | 11 | 26 | 12 | 35 | 10 |

1. Test the hypothesis that the two distributions (i.e. the one for north and the one for south) differ from one another. Use a 5% level of significance.

5. You have the following random sample of the number of daily deliveries for Domino’s, Pizza Hut, and Papa John’s.

|  |  |  |
| --- | --- | --- |
| Domino’s | Pizza Hut | Papa John’s |
| 162 | 180 | 76 |
| 123 | 139 | 90 |
| 141 | 110 | 142 |
| 91 | 107 | 104 |
| 181 | 98 | 82 |
| 177 | 87 | 70 |
| 128 | 120 | 101 |
| 144 | 112 | 136 |
| 138 | 132 | 99 |
| 152 | 94 | 92 |
| 119 | 127 | 132 |

1. Test the hypothesis that mean number of deliveries differs across the three restaurants. Use a 5% level of significance.
2. What is the difference between ANOVA with two categories and a two-sample t-test for differences in means?