**College Prep Stats**

**Final Project**

**Project Description:** This is a group project of maximum 3 students. You will be completing a Chi-Square Test of Goodness of Fit and Independence based on data sets provided. You only need to choose **ONE** of the optional task groups to run the test. Assume those data sets meet the requirement of the corresponding tests. Make sure that your work is neat, organized, and easy to understand. The following should be clearly communicated for each (**Keep 4 decimal places**):

* Names all Typed (10 pts) • Significance Level (0.05 for all testings) (10 pts)
* Format (10 pts) • Test Statistic with all work shown (10 pts)
* Data Table for Each Claim (10 pts) • P-Value with (10 pts)
* Claim (10 pts) • Conclusion stated mathematically (10 pts)
* Hypotheses (10 pts) • Conclusion stated in simple language (10 pts)

The significance level is 0.05 for all the tests.

**All written aspects should be typed. (Total 180 Points)**

**Option #1**

Task #1

The global market share distribution for cell phone sales reported from cell phone dealers is listed below.

|  |  |  |
| --- | --- | --- |
| **Cell Phone Manufacturers** | **Market Share Distribution** | **Number of Cell Phones Sold as Reported from Cell Phone Dealers** |
| **Samsung** | **31.49%** | **3268498** |
| **Apple** | **22.35%** | **2201495** |
| **Huawei** | **16.56%** | **1399567** |
| **Xiaomi** | **7.49%** | **678936** |
| **Oppo** | **4.40%** | **406116** |
| **LG** | **3.89%** | **386952** |
| **Motorola**  | **3.78%** | **377825** |
| **Mobicel**  | **3.24%** | **301104** |
| **Lenovo** | **2.88%** | **283561** |
| **Other** | **3.92%** | **383092** |
| **Total** | **100.00%** | **9687146** |

Test the claim that the reported sales data from cell phone dealers fits the market share distribution for the cell phone manufacturers.

Task #2

A large group of people were surveyed about their opinion of red-light photo enforced cameras. The participants had to give their age and their opinion about these cameras.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Age** | **For** | **Against** | **No opinion** | **Total** |
| **21 - 40** | 25 | 20 | 5 | 50 |
| **41 - 60** | 20 | 35 | 20 | 75 |
| **Over 60** | 55 | 15 | 5 | 75 |
| **Total** | 100 | 70 | 30 | 200 |

Test the claim that age is independent of the opinion of red-light photo enforced cameras.

**Option #2**

Task #3

Researchers investigated the issue of race and equality of access to clinical trials. The table below shows the population distribution and the numbers of participants in clinical trials involving lung cancer (based on data from “*Participation in Cancer Clinical Trials*,” by Murphy, Krumholz, and Gross, Journal of the American Medical Association, Vol. 291, No. 22). Use a 0.01 significance level to

|  |  |  |
| --- | --- | --- |
| **Race/Ethnicity** | **Distribution of Population** | **Number in Lung Cancer Clinical Trials** |
| **White/Non-Hispanic** | 75.6% | 3855 |
| **Hispanic** | 9.1% | 60 |
| **Black** | 10.8% | 316 |
| **Asian/Pacific Islander** | 3.8% | 54 |
| **American Indian /Alaskan Native** | 0.7% | 12 |

Test the claim that the distribution of clinical trial participants fits well with the population distribution.

Task #4

A large group of people were surveyed about their favorite movie genre. The participants had to give their age and choose their favorite genre from Action, Comedy, and Horror.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Age** | **Action** | **Comedy** | **Horror** | **Total** |
| **15-25 year olds** | 238 | 450 | 312 |   |
| **26-49 year olds** | 350 | 472 |   | 1000 |
| **50+ years old** | 320 |   | 190 | 1000 |
| **Total** |   |   |   |   |

Test the claim that age is independent of favorite movie genre.

This project report **MUST BE ALL TYPED**. Your testing report format should look like:

It is highly suggested that DO NOT CHANGE THE BLUE HIGHLIGHTED AREAS AND SPACING!!! After you finish the project, please UNCOLOR all the text with blue and delete all the text with yellow!!!

**College Prep Stats Final Project**

**Names: John Smith, Mary Hardy**

Task #1

The global market share distribution for cell phone sales reported from cell phone dealers is listed below.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Straight | 61 | 58 | 58 | 58 | 62 | 74 | 59 | 63 | 66 | 70 | 69 | 64 | 65 | 58 | 56 |
| Turn | 60 | 58 | 59 | 51 | 61 | 72 | 59 | 64 | 65 | 72 | 67 | 64 | 63 | 57 | 56 |

**Claim 1** *A higher percentage of the cars that are parked in front of the school are blue as opposed to the back parking lot.*

**Hypotheses** H0:

H1:

**Significance Level** *α* = 0.05

**Test Statistic with all work shown**

 **(you will lose at least 3 points for NOT using the “Equation Editor” to type the test statistic formula!!!)**

T-Test

**(you will lose at least 3 points for NOT providing the “Calculator Command”!!!)**

**P-Value** *P-Value = 0.4121 > 0.05*

**(you will lose 3 points for NOT comparing the significance level IMMEDIATELY after you get P-Value!!!)**

**Conclusion stated mathematically** *(Fail to) Reject H0*

**Conclusion stated in simple language** *There is sufficient evidence support (to warrant rejection of) the claim that the “Harry Potter” is easier to read than “War and Peace”*