Math 480 Final Project

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This is a proposal for the final project

1 Overview

We all use numbers and data everyday, even sometimes we did not realize. Numbers and data have big in uence to our daily life. For example, we can use numbers and data to analyze what is the best time and the best way for people traval on the highway, what is the best location for people to choose for business, and predict how the price of one type of product goint to be and so on.2.2.

2 introduction

My project will use an input data and calculate and analyze based on the data we have. After calculation, the project will show the feedbacks such as the distributions, statistical information, and some analysis of data. There are two examples in my project to show how this project work

2.1 Two Examples

- Example 1:
  In this example, I will use the data of the accidents that happened on highway I5 as my basic data. Based on the data, the Project will graph the histgram distribution of number of injurys, number of accidents, and number of cars. The mean, variance, confidence interval, and prodicted time will be also shown under graph. Thus, by anaylzing the data and distribution, we can prodict that when and where the accidents will most likely to happen, and what is the reason for it.

- Example 2:
  In this example, assuming people want to start a new business of gas station in Sea-Tec area. Based on the research of how the gas stations distribute in this area and how the people lives and works in this area, the project will give you a suggestion of reasonable place to locate the gas

station. Also by analyzing the prices and local income. The project also give you a suggested price.

2.2 Notation

1. Formula for

$$y = A\alpha + B\beta + C\gamma + D\sigma$$

$\alpha \rightarrow \{Numbers of Gas Stations around\}$

$\beta \rightarrow \{Numbers of people lives around\}$

$\gamma \rightarrow \{Numbers of cars passing by per day\}$

$\sigma \rightarrow \{Rents of the place per month\}$

The letter A, B, C, D, are the precentage of the weight of each factors, in order to make the formula more reasonable

2. Price of the Gas
I am going to collect the data about each company's gas prices. Let the sample data size of companys' price is equal N, and let the mean of the price is $\bar{x}$. Based on the data we collect, we can easily calculate the Standard Diviation of the sample data, so we let the Standard Diviation is equal σ.
Price Confidence Interval when $\alpha = 0.05$:

$$\{\bar{x} - 1.96 * \frac{\sigma}{\sqrt{N}}, \bar{x} + 1.96 * \frac{\sigma}{\sqrt{N}}\}$$

$\bar{x} = \frac{Total prices}{N}$

$\sigma = \sqrt{\frac{1}{N} * \sum_{i=1}^{N} (x_i - \mu)^2}$

Thus, any price that will in the Price Confidence Interval is a reasonable price, for the start up gas station, it is better to make the price is slightly lower than the $\bar{x}$

3 Aim or Expecting results

In the project, I am hoping I can use the datas and my coding to calculate some statistical numbers and graph the distributions. So I can use the numbers and distributions to actually find the best location for people to start a new gas stations business.