**1.1.**

**Course name:** TBANLT 510 A Business Analytics

**Quarter:** Autumn 2019

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**Date:** 12/2/2019

**Title of the Project:** Drug Poisoning Mortality in the United States, 1999-2017

**Vertical Industry:** Health and Human Services

**Business Process:** “CDC, Center for Disease and Control Prevention, conducts critical science and provides health information that protects United States nation against expensive and dangerous health threats.” (cdc,gov)

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| I certify that I have completed this assignment within the Academic Integrity guidelines presented in the UW General Catalog. Further, I certify that I do not have any knowledge of any other individual(s) violating these guidelines. |

1.2. Table of Contents

1.3. Executive Summary

CDC, Center for Disease Control and Prevention is one of the major components of the Department of Health and Human Services in the United States. CDC’s mission is “to protect America from health, safety and security threats, both foreign and in the U.S.” (2). Its vision is it increase the health security in every possible detail. CDC conducts critical science to provide health information to protect human race against expensive and dangerous health threats.

In the unites States, non-linear upward trends in drug overdose death rates have been observed in the recent years. Although lot of rules and regulations are in charge for therapeutic drug monitoring, there has been usage of synthetic opioids and heroin in the place of methadone. CDC observed that the mortality rate because of the usage of synthetic opioids instead of methadone has increased by 18% per year from the year 1999 to 2013 and by 71% from the year 2013 to 2017.

All the available records from the year 1999 to 2017 were collected to closely analyze the demographical, behavioral and statistical patterns. Although, not much of the data was available from 1999 to 2003, data was populated using model-based analysis to generate estimates of drug overdosage. Data was divided into two excel sheets. One with the state level data and the other with the country level data.

Tableau was used as the data visualization and analysis tool. State level data and country level data were combined with the required attributes to measure death rate/mortality rate by age, sex, race, origin and year as the demographical analysis. Yearly patterns attributed to age groups and sex as behavioral analysis. State and county details were considered as a part of geographical analysis.

Dashboard and Story board visualizations were generated to understand the yearly patterns and make data driven decisions on the drug overdosage. For executive team of CDC to be able to understand the risks and opportunities involved in the analysis of drug mortality rates and better predict the optimal amount of drug usage which is of high significance to nation’s wellbeing, the dashboards and story boards created were highly efficient and user friendly.

The tutorial below is designed to help the users of Tableau visualizations to understand the movement of thoughts and details involved in the data.

1.4. Background

The high mortality rates due to drug overdosage in recent years in the United States which is of a national significance to CDC, Center for Disease Control and Prevention (Department of Health and Human Services, United States) is driven to investigate the causes of the high death rates. The understanding of specific patterns in the usage of drugs like synthetic opioids is important for CDC to advise optimal usage of such drugs and those with similar chemical properties.

1.5. Learning Objectives of the tutorial

* To understand the geographical patterns in the drug overdosage.
* To understand the demographical patterns in the mortality rate due to drug overdosage.
* To understand the yearly patterns in the mortality rate by drug overdosage.

1.6. Methods and Description of Data

The data was obtained from CDC website. The links are

1. Drug Poisoning Mortality by State, United States - <https://data.cdc.gov/NCHS/NCHS-Drug-Poisoning-Mortality-by-State-United-Stat/44rk-q6r2>
2. Drug Poisoning Mortality by County, United States - <https://data.cdc.gov/NCHS/NCHS-Drug-Poisoning-Mortality-by-County-United-Sta/rpvx-m2md>

The data consists of the drug overdosage death records from across all states in the United States further classified into counties. The data available was in Microsoft Excel (\*. xlxs) format. There were two excel files. The first one was, the mortality rate by state in the United States with 19 columns and approximately 3,000. The second one was the Mortality rate by County in the United States with 9 columns and approximately 47,000 records. Both the data sheets together had the details: State, County, Year, Sex, Age group, race and Hispanic Origin, Number of deaths and Population. There were very negligible null values. The data was formatted with high usability rating. The data also had statistical details like Standard Deviation, Lower and Upper Confidence Limit, Age adjusted rate and Crude rate.

1.7. Data Prep

The data available was ready for analysis except that they were in two different excel sheets. Hence, there was no necessary cleaning to be done. The data sheets were uploaded to Tableau and merged by using Outer Join by considering State as the primary key connecting the data files.

1.8. Deliverable 1 – Dashboard

Link to Tableau Public Dashboard: <https://public.tableau.com/profile/sonika.shivani.vijaykumar#!/vizhome/DrugMortalityRateAnalysis_Vijaykumar_SonikaShivani/DrugMortalityRate?publish=yes>

A screenshot of a cell phone

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1.8.1. Scenario

I’m the Data Analyst at CDC and my Manager just informed me that the Chief Business Executive from New-York is visiting the office and he needs a quick overview of the demographical analysis to be able to understand the trends in mortality rates.

1.8.2. Purposes/Questions/Applications

The purpose of the dashboard is to understand the demographical patterns in the mosrtality rates across the country, the United States. Asking questions like whether Non-Hispanic Whites in contrast to Hispanic and Non-Hispanic Blacks contribute to the highest number of deaths by looking at the state with highest number of deaths by poisoning. What if the Non-Hispanic Whites are the highest number of deaths in the state that has highest number of deaths?

1.8.3. Procedure

In the dashboard designed, if hovered over the

1.9. Deliverable 2 - Storyboard

1.9.1. Scenario

1.9.2. Purposes/Questions/Applications

1.9.3. Procedure

1.10. – Results/Insights/Conclusions

1.11. Measuring reader’s learning

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| Learning Objectives | Activities/Tasks | How would you measure the reader’s learning |
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1.12. Limitations

1.13. References

* Centers for Disease Control and Prevention. <https://www.cdc.gov/nchs/data-visualization/drug-poisoning-mortality/>. Published April 29, 2019. Accessed December 3, 2019. (1)
* Centers for Disease Control and Prevention. [https://www.cdc.gov/about/organization/](https://www.cdc.gov/about/organization/P). Published May 13,2019. Accessed December 3,2019. (2)