***Storm and Climate Data Record (SCDR)***

Implementation Plan

Date of record:

Jan 1, 2017 to Dec 1, 2019

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## I. Introduction

### 1.1 Overview and purpose

The city of Miami police department has requested a Storm and Crime Data Report (SCDR) explaining the correlation between storms and crimes during January 1, 2017 through December 1, 2019. This SCDR will help the police department predict when and where crimes may occur during a storm, and they will be able to use that data to examine the monetary costs incurred. The police department can use this data to better reinforce the areas that are predicted to have crimes occur to hopefully prevent the crimes and loss.

### 1.2 Define why you need data analysis

Data analysis is imperative to making informed decisions. Being able to look at data and determine any trends will help answer important questions and enable smarter decision-making. In this case, data analysis is important when making predictions because historical data can be analyzed to make future assumptions. By analyzing this historical data of crimes during storms and no storms, the Miami police department can see if there is a trend during certain storm types to be able to predict certain crime types and their general location.

## II. Data Preparations

### 2.1 Name data sources

The data sources for this analysis came directly from the Miami police department. The data sources include the CSV files crimeStormQ.csv and crimenostormQ.csv.

### 2.2 Filter through unnecessary data

The data sets provided for this analysis do not include any unnecessary data. The data set provided previously includes the ID, date, Crime ID, Crime Activity, Storm ID, Storm Activity, Zone ID, Zone, and City. The data sets provided most recently include the date and monetary loss incurred.

### 2.3 Define your parameters

My parameters for this analysis include date, crime activity, storm activity, and monetary loss.

### 2.4 Identify measurement priorities

The measurement priority in this analysis is the loss incurred. We want to measure this compared to storm or no storm, along with the location and date.

### 2.5 Ensure collected data fits the need

The collected data mostly fits the need of the analysis. To determine the loss incurred during crimes during storms vs. no storms, we need the date, crime type, storm type, and loss amount. We have all of that data for 2019, but we only have the loss data for 2017 and 2018, we do not have the storm and crime data for those years.

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## III. Data Analysis

### 3.1 Identify scripts used

I used the following scripts to install and load the needed packages, import the data, and create a time series graph:

install.packages("tframe");

install.packages("tfplot");

library("tframe");

library("tfplot");

setwd("C:/Users/Public/Desktop/DAT-375")

crimestormdataQ <- read.csv("crimeStormQ.csv")

print(crimestormdataQ)

crimenostormdataQ <- read.csv("crimenostormQ.csv")

print(crimenostormdataQ)

z<-ts(cumsum(crimestormdataQ$Loss)/1000,start=c(2017,1), frequency=12)

x<-ts(cumsum(crimenostormdataQ$Loss)/1000,start=c(2017,1), frequency=12)

tfplot(z,x,

ylab="Victim Loss in K$",

xlab="By Month by Year",

title="Victim Loss From Crimes for Jan 2017 - Dec 2019",

subtitle = "Cumulative Loss in Thousands of Dollars",

legend=c("Crimes During Storms (black)", "Crimes When No Storms (red)"),

source="Source: DAT Data")

### 3.2 Run the scripts to analyze the data and validate the output

After running the above script, I can use the time series graph to determine when the highest monetary loss is. You can see the trend associated with crimes during storms and no storms and the amount of cumulative monetary loss for the time period of Jan 2017 through Dec 2019.

## IV. Drawing Conclusions

### 4.1 Present the results of the analysis to stakeholders

Chart, histogram

Description automatically generated

Chart, bar chart

Description automatically generatedChart, bar chart

Description automatically generated

The time series graph shows that there has been a rise in crime during both storms and no storms as time progresses. The time series shows higher values as we approach 2019 than it does in 2017. We can also see that the higher monetary loss is during crimes that occur during storms. Both data sets show a steady increase in crimes and loss. It does appear that the monetary loss data is recorded monthly, so more analysis will need to be done to narrow down the exact storm and crime events that occurred during the month to determine the factors that produced the greatest loss. After importing my two data sets into Tableau, you can see the monetary loss by year in a bar chart form. You can see that the total value of loss was higher during storms than no storms. You can also see that during storms, 2018 had the highest value of loss while during no storms, 2019 had the highest value.

### 4.2 Determine whether the problem was addressed, including any challenges and limitations

We are able to analyze the findings for the year 2019, but the only data we have for 2017 and 2018 is the loss data. We do not have any storm, crime, or location data for the previous years. In order to analyze our historical data, we will need to obtain the data sets that contain the data for 2017 and 2018. Currently, we can analyze the losses incurred in only 2019 compared to the storm and crime data.

### 4.3 Report potential new findings

My analysis shows a larger rise in monetary losses when crimes occur during storms. We can use this data set to analyze the storm types and crime types that occur during these dates and use them to predict when certain types of crime may occur in the future. This can be used to help reduce losses by having a larger police presence in the area during certain storm types. We would need weather data to be able to predict when storms will occur, and we can compare that data with our results to predict when and where the crimes are predicted to occur. During hurricane season we can use this historical data to determine what areas have the most crime occur, and the Miami police department can use this data to provide more security in the area to hopefully fend off criminals.