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

Implementation Plan

Date of record:

January 1, 2017, to December 1, 2019

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## I. Introduction

### 1.1 Overview and purpose

The purpose of this analysis is to create a Storm and Crime Data Report, shortened to SCDR, for the Miami Police department using historical data provided by the city starting from January 1, 2017, through December 1, 2019. The police department will utilize the report to anticipate, if possible, timeframes for when there will be an increase in criminal activity and combat it as needed. In addition to the analysis, a job aid will be created that will be utilized by new hires that outline the steps before analysis for the SCDR so that they can use it as a model for their future work and projects.

### 1.2 Define why you need data analysis

Data analysis is an essential tool that the Miami police department can use. By performing data analysis, the police department can better understand and analyze historical data to identify patterns and trends that are related to crime. As a result, the police department will be better at anticipating timeframes of when crimes may happen in the future and combatting these crimes. In addition, this information can be utilized to provide the public to help increase their security and safety.

Data analysis is a crucial tool for making data-driven and evidence-based decisions. In a field such as law enforcement, it's often the case that timely and accurate information can directly impact public safety. For example, with the development of the SCDR, the Miami police department will be better equipped to combat the increase in criminal activity during specific weather scenarios.

## II. Data Preparations

### 2.1 Name data sources

The various datasets being utilized for the analysis were provided by the city of Miami and included crime and storm event data between January 1, 2017, to December 1, 2019.

### 2.2 Filter through unnecessary data

The two primary datasets used for the analysis consisted of crimes that occurred during storm events and crimes that did not occur during storm events. When observing the datasets, the only information provided was the event's date and the total loss in money value. This makes the datasets simple and easy to manipulate if needed. In this case, all records we filled with no duplicates.

### 2.3 Define your parameters

Since the datasets that have been provided are simple, there are only a couple of parameters that are needed for the analysis. Therefore, the first parameter used for the research is the timeframe parameter. Since the entire data source is broken into two datasets, it is easy to distinguish between a crime that occurred during a storm event or not. Therefore, the following parameter that will be used will be the total loss during each of these crime events.

### 2.4 Identify measurement priorities

The simplicity of the datasets provided and the few parameters used during the analysis make it simple to determine the measurements' priorities. The focus of the research will be whether the crime occurred during a storm. In addition, measuring the loss of money will help understand the crime's severity.

### 2.5 Ensure collected data fits the need

Overall, the collected data fits the need of the analysis. This is determined by understanding the datasets provided. For example, the datasets provided insight into criminal activity that occurred over two years and the net loss for each crime. In addition, the datasets provided us with whether the criminal activity occurred during a storm event.

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## III. Data Analysis

### 3.1 Identify scripts used

The screenshot that can be found below shows the R script used for the analysis

Graphical user interface, text, application, email

Description automatically generated

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

The R script above is reading the data on crime losses, creating a time series object, and generating a plot to compare the cumulative loss in USD for crimes that occurred during storm events and crimes that occurred during non-storm events.

## IV. Drawing Conclusions

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

Chart, line chart

Description automatically generated

The above line graph showcases an increase in criminal activity when there is a storm event compared to when no storm occurs. Therefore, the overall monetary loss is much more significant during a storm. In addition, over the two years, a vital crime activity has occurred during storm events, which has led to a direct increase in monetary loss. For instance, in December 2017, the financial loss was approximately $15k. However, by December 2019, the total economic loss was roughly $50k. With that said, it can be seen over the two years, the total monetary loss from crimes that occurred during a non-storm event has increased, just not as rapidly.

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

As stated before, this analysis aimed to determine whether there is a correlation between storm events and criminal activity. Based on the information provided during the investigation in the last section, there is a correlation between criminal activity and storm events. The Line graph in the above passage clearly shows cases of an increase in the monetary loss that occurred from criminal activity during storm events compared to non-storm events. The total financial loss through the two years that occurs during a storm event is nearly double compared to the complete monetary loss during a non-storm event.

### 4.3 Report potential new findings

Based on the information provided, it's clear there is a correlation between criminal activity and storm events. In addition, there was a rapid increase in the total monetary loss from the start of 2017 to the end of 2019. Unlike the slight dips in the total financial loss for criminal activity during non-storm events, there have been no dips from 2017 to 2019. By the end of 2023, the total monetary loss for illegal activity during a storm event could be over $100k.