David Freitag
CIS 9440 - Data Warehousing and Analytics
Final Project - Milestone #2
Group #2 (working individually)

Updated Key Performance Indicators (KPI's)
These KPI's have been organized by category.

City crime totals:
- Total city crimes over a time frame (day/week/month/year)
- Total city arrests over a time frame

Location based:
- Number of crimes by location over a time frame
- Number of arrests by location over a time frame

Ratio of crimes resulting in arrest:
- Total city arrests ratio over a time frame
- Arrests ratio by location over a time frame

Crime classification (code):
- Total number of crimes by code over a time frame
- Number of crimes by code by location over a time frame
- Arrests ratio by code (crime classification) over a time frame
- Arrests ratio by code by location over a time frame

Weather interactions:
- Total city crimes compared to temperature/precipitation over a time frame
- Number of crimes by code compared to temperature/precipitation over a time frame
- Arrest ratio compared to temperature/precipitation over a time frame
- Arrest ratio by code compared to temperature/precipitation over a time frame

Education interactions:
- Total crime compared to graduation rate over a yearly time frame
- Total arrests compared to graduation rate over a yearly time frame
- Number of crimes by location compared to graduation rate over a yearly time frame
- Number of arrests by location compared to graduation rate over a yearly time frame
- Number of crimes by code compared to graduation rate over a yearly time frame

Unemployment interactions:
- Total crime compared to unemployment rate over a time frame
- Total arrests compared to unemployment rate over a time frame
- Number of crimes by location compared to unemployment rate over a time frame
- Number of arrests by location compared to unemployment rate over a time frame
- Number of crimes by code compared to unemployment rate over a time frame

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How will stakeholders use these KPI's?

Stakeholders (i.e. the Chicago Police Department) will use these KPI's to predict when and where particular types of crime are likely to increase. For example, if unemployment or high school graduation rates change, this could affect the rate of crime in a particular part of the city, or the city as a whole. Additionally, the weather (temperature/precipitation) could affect the amount of crime occuring. The types of crimes committed could change as a result of unemployment, graduation rates, and weather as well, and the number of arrests likely to occur--as well as arrest numbers in specific locations--could be related to these factors.

Armed with information about how crime rates fluctuate due to social and environmental factors, the Chicago Police Department will be able to anticipate crime before it happens through identification of "high-need" locations and "high-need" time frames. This will allow the city to deploy police resources strategically in ways that will help to:

- Reduce crime by deterring potential offenders from engaging in criminal behavior through an increase in the number of officers deployed to a predicted "high-need" location before a crime surge occurs
- Decrease department costs by optimizing shift scheduling (the right amount of officers at the right times in the right places, resulting in lower overtime costs)

Updated Data Sources

Chicago Crime Data – 2001 to present

- https://console.cloud.google.com/marketplace/product/city-of-chicago-publicdata/chicago-crime

City of Chicago High School Graduation Data:

- https://www.illinoisreportcard.com/district.aspx?source=trends&source2=graduationrate&Districtid=15016299025

Local Area Unemployment Data (Chicago Unemployment Rate):

- https://www.bls.gov/lau/

Chicago Daily Summary Weather Data

- https://www.ncdc.noaa.gov/cdoweb/datasets/GHCND/locations/CITY:US170006/detail

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Kimball BUS Matrix

	Dimensions		
Business Processes (Facts)	Date	Location	Crime_Code
Crime_Incident	X	X	X
Chicago_Unemployment	X		
Graduation_Rate	X		
Weather	X		

Dimensional Model