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Communicating Data Science Results
Assignment 1 - Crime Analytics: Visualization of Incident Reports
12/14/2015

Finding

Larceny/Theft was by far the most common category of crime incident reported in San Francisco during the summer of 2014. Larceny/Theft crimes were reported to occur most often at 6 pm on every day other than Saturday, where the crime incidents peaked later in the evening.

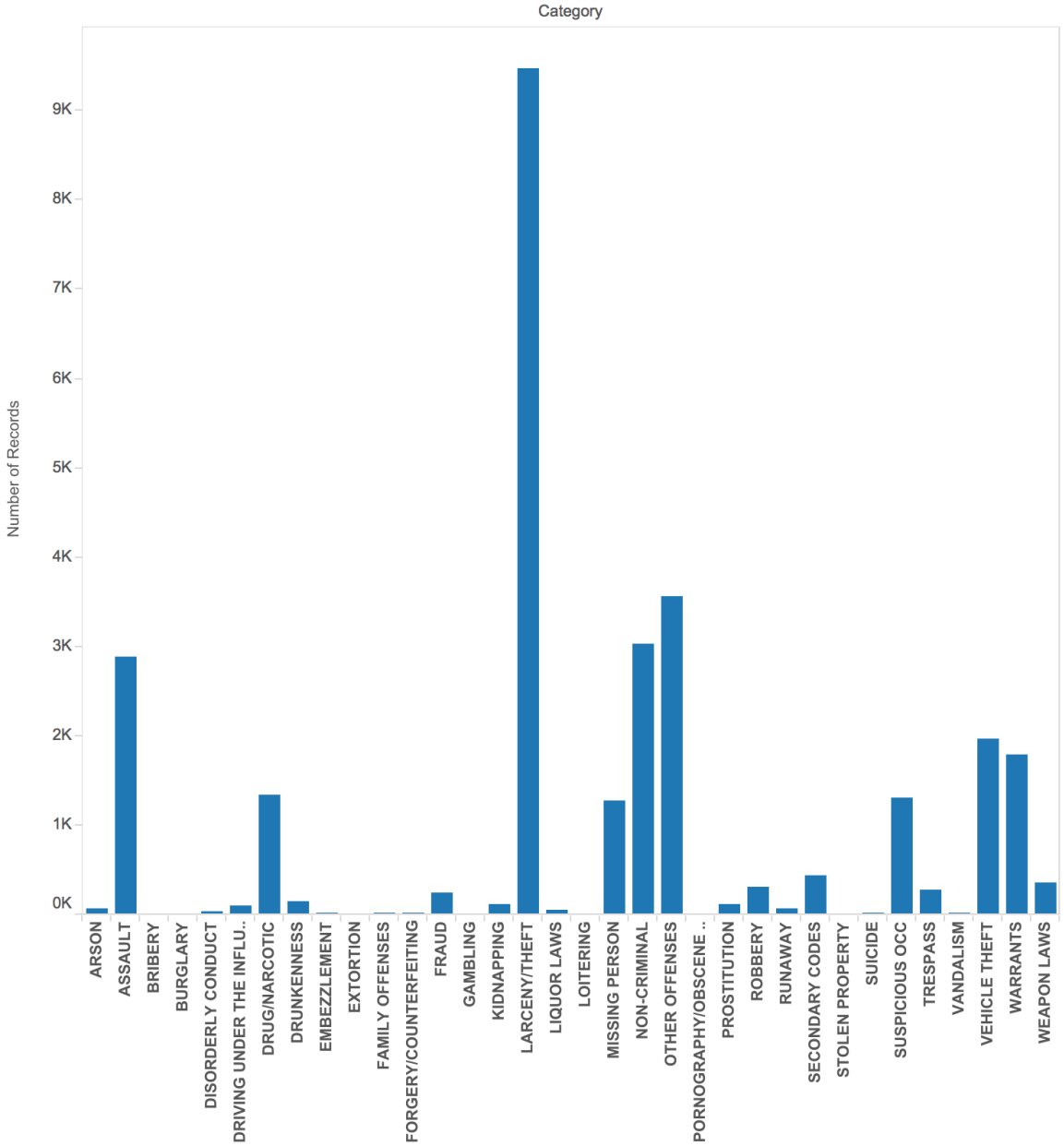
Tools Used

I used Tableau Desktop for the analysis of the data and production of visualizations.

Analysis

As I examined the crime incident data for San Francisco during the summer of 2014, I started by creating a simple bar chart of the frequencies of crime incidents by category:

Sheet 6



Sum of Number of Records for each Category.

Immediately I was drawn to the magnitude of the bar for the Larceny/Theft category. Larceny/Theft incidents were reported more than twice as often as the next most frequent crime incident category.

In order to look at the frequency of incident categories in a different way, I constructed a crosstab of the crime categories against the hour of day with a heatmap and detailed representation of the associated incident frequencies:

CategoryDayOfWeekCrosstab

Category

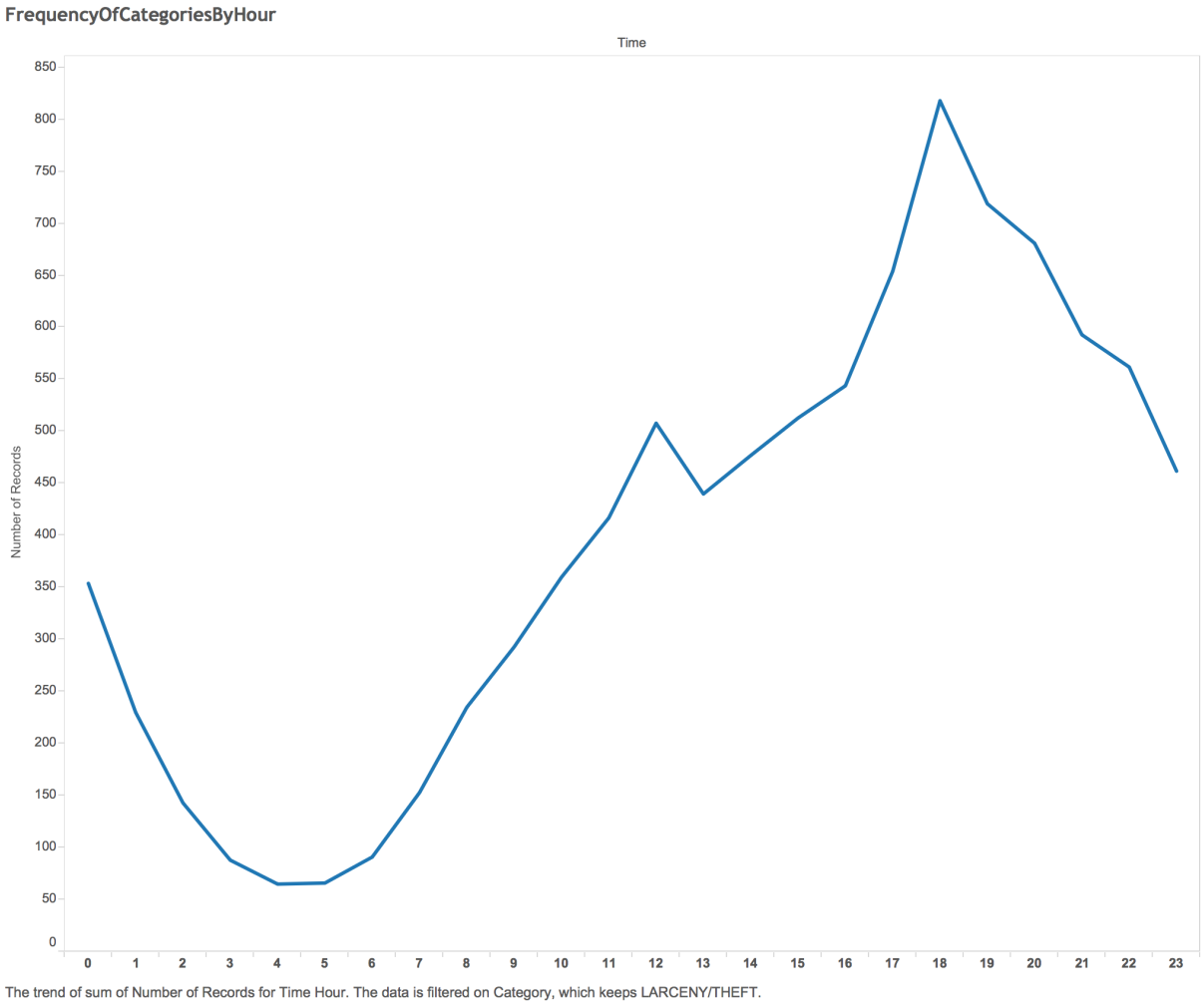
Hour of Time	ARSON	ASSAULT	BRIBERY	BURGLA..	DISORDERLY CONDUCT	DRIVING UNDER THE INFL..	DRUG/NA..	DRUNKE..	EMBEZZL..	EXTORTI..	FAMILY OFFENSES	FORGER..	FRAUD	GAMBLIN..	KIDNAPPI..	LARCEN..	LIQUOR LAWS	LOITERIN..	MISSING PERSON	NON-CRI..	OTHER OFFENSES	PORNOGRAPHY/OBSCENE MAT	PROSTIT..	ROBBERY	RU
0	5	169			3	9	56	9				4	25		7	354	1		39	144	262		4	18	
1	2	115	1	1	2	17	30	11		1			10		6	230	3		23	72	106		7	20	
2	1	126			1	8	31	10		1			10		2	143	1		14	59	89		7	19	
3	5	68		2	1	5	24	6					2		4	88	2		5	36	54		2	10	
4	4	39				3	3	2							1	65			10	21	23			7	
5	3	52				1	8	1		1			2		4	66			11	28	45			6	
6	2	47			1	2	9						4		5	91			13	42	59			7	
7		70				1	25	4					7		4	153	2		43	75	81			5	
8	5	90		1	1		27	2			1	1	9		2	235			76	135	135		1	10	
9		103			2	1	62	1	3				6		6	293			62	139	134			10	
10	2	114		1		2	47	4	1	1	1		9		7	360			101	183	129	1	2	6	
11	4	117			2		79	3		1		3	11		3	417	3		110	166	159		2	9	
12	4	154			1		68	5	1	1		1	33		8	508	1	1	119	217	267		4	21	
13		112		1	1		94	3			1	1	15	1	4	440	1	1	52	189	170		2	10	
14		125			2		82	2	1				11		4	477			83	150	161			10	
15		135			3		99	7			3	1	13		5	513	4		79	180	212		15	7	
16		155			1	6	105	8	1		1	3	11		6	544			87	217	189		10	10	
17	5	182			3	3	117	10	1			1	13		5	654	4		53	192	263		5	15	
18	2	138			2	2	97	11				1	16		4	818	4		52	151	207		2	16	
19	3	130			1	7	62	6		1			10		6	719		1	48	149	183		9	15	
20	2	164				5	85	12			1	1	5		1	681	2		41	122	150		7	16	
21		153			1	7	26	10	1			1	7		4	593	7		57	134	146		4	18	
22	9	178			2	10	51	15			1		4		13	562	2		52	115	165		12	21	
23	5	146			1	11	58	5	1		1		9		6	462	5		36	107	178		17	22	

Sum of Number of Records (color) broken down by Category vs. Time Hour.

For readability sake within this document only the most relevant portions are shown. Here, as in the last visualization, we see the magnitude of Larceny/Theft in relation to other crimes. We also now see that these incident reports are most frequent between the hours of 5pm to 8pm.

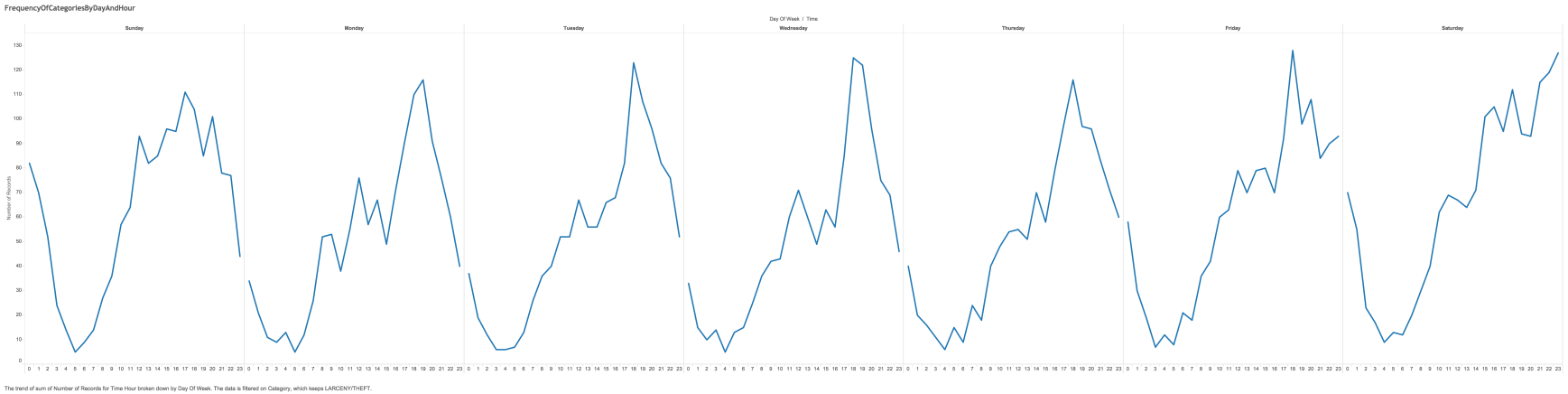
Given that Larceny/Theft is by far the most reported crime incident category, I decided to focus my analysis more deeply on this category alone.

Next, I created a time-series graph to look at the frequency of Larceny/Theft incidents by hour:



This graph shows a high “peak” in incidents at 6 pm.

Next it is worth asking whether this pattern is consistent on different days of the week. To answer this question, I created another time series graph, this time breaking it up by day of the week:



And here we can see that while the pattern of a 6pm "peak" in these incidents mostly holds, Saturday differs in that the frequency of its Larceny/Theft crimes continues to climb all the way to midnight.

Based on this analysis we can conclude that:

- Larceny/Theft was by far the most common category of crime incident reported in San Francisco during the summer of 2014, and
- Larceny/Theft crimes were reported to occur most often at 6 pm on every day other than Saturday, where the crime incidents peaked later in the evening.