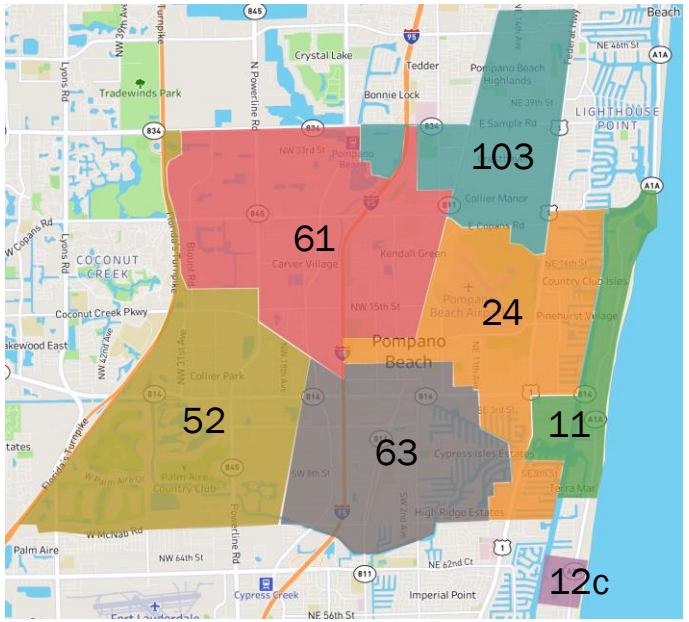


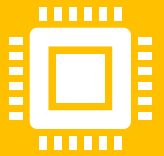
Fire Department Performance Brief Analysis

Denisse Disla, Data Analyst Applicant

Aim

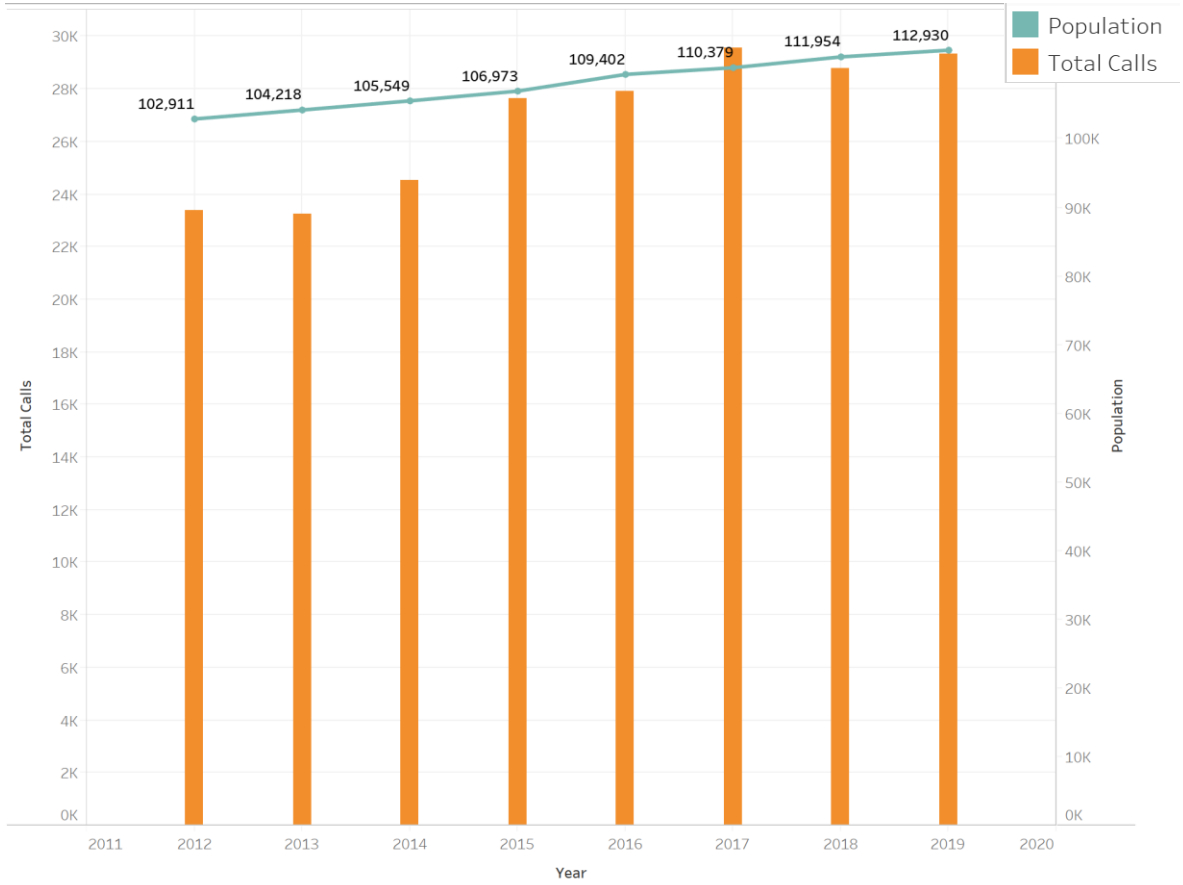
Visually *supplement* aggregated data offered on various performance briefs in hopes to extract insights.

Not intended as a stand alone performance brief, and therefore will not introduce the ‘who we are’ and ‘what we do’ sections.

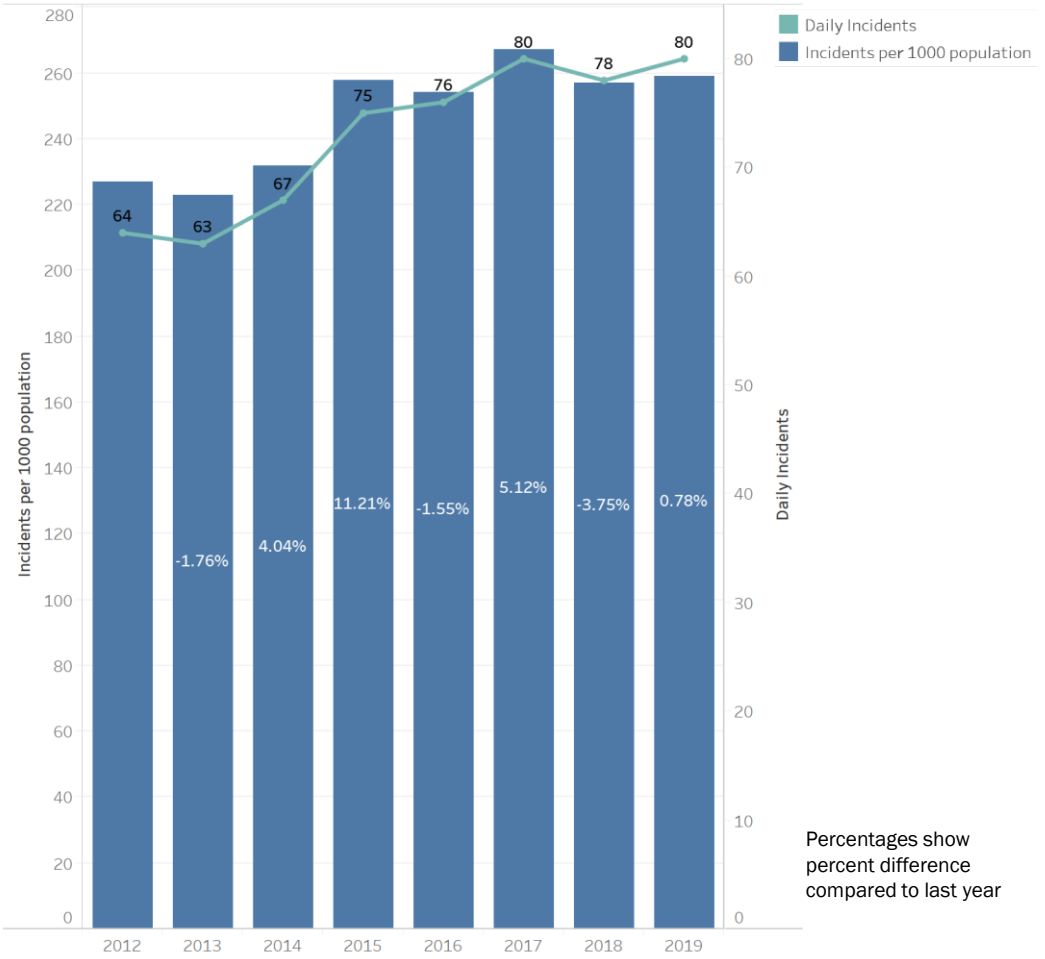


Software used: Python, Tableau and Excel

Total calls throughout years compared to population growth



Incidents per capita compared to daily incidents throughout years

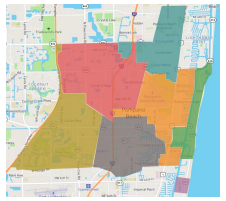


Percentages show percent difference compared to last year

Key Insights

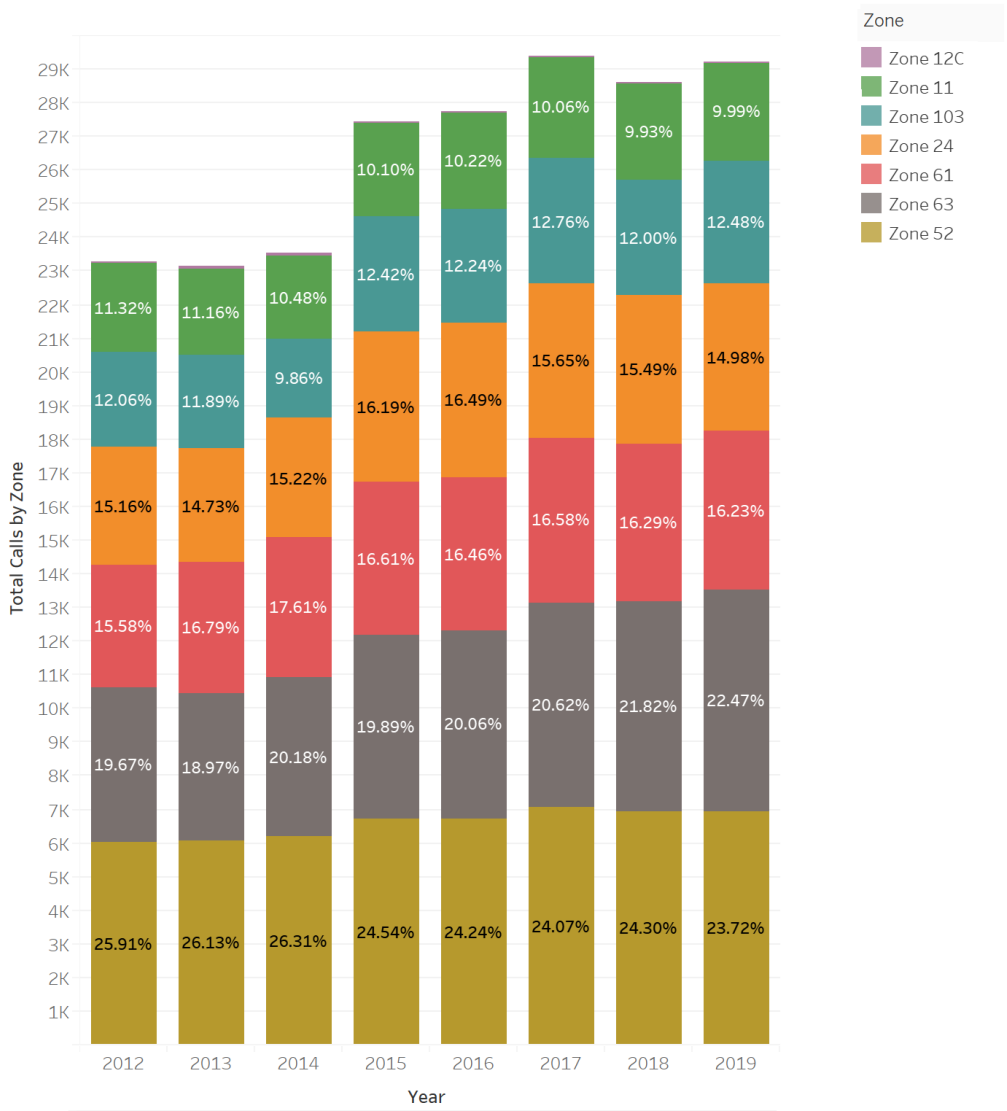
- There doesn't seem to be a direct relationship between total number of calls/incidents and population
- 2015 saw a big increase in total number of incidents, with an overall 11.21% increase compared to 2014
- Average daily incidents since 2015 range between 75 and 80
- Average growth rate since 2015 has been 2.36% per year

Zone Analysis



Distribution of Incidents throughout FD Zones

Number of Incidents by Zone throughout Years
(displays percent of total incidents for each Zone by Year)



Key Insights

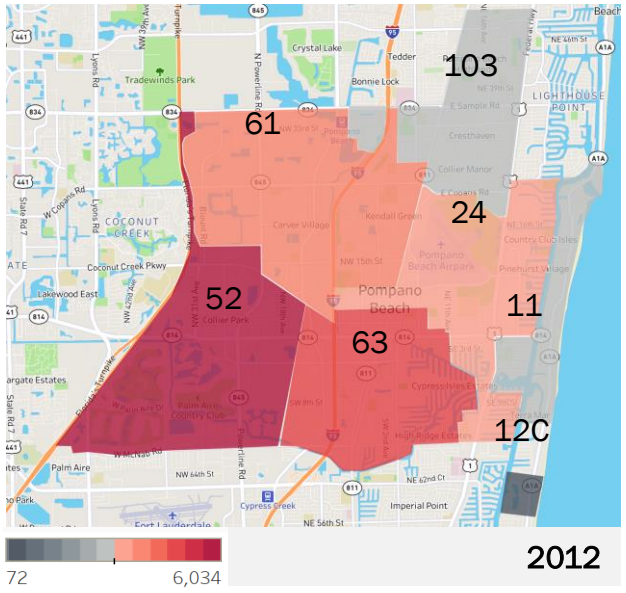
- Overall increase of total incidents throughout the years
- Biggest increase in total number of incidents was in 2015
- Zone 52 is consistently the most demanding zone accounting for a quarter of annual incidents.
  - However, its percent of total has declined slightly in recent years, whereas Zone 63 has been increasing
- Almost half of the 2019 incidents are centered in Southwest/Southcentral Pompano Beach (Zone 52+63)
- Zone 12C barely contributes to incidents

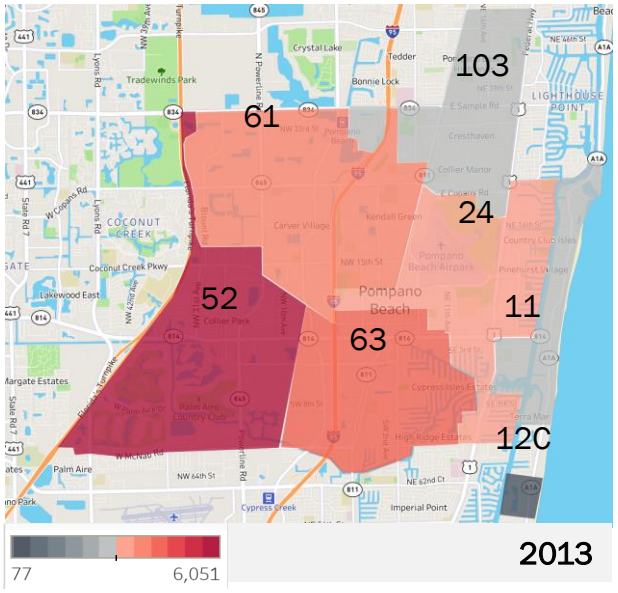
Growth

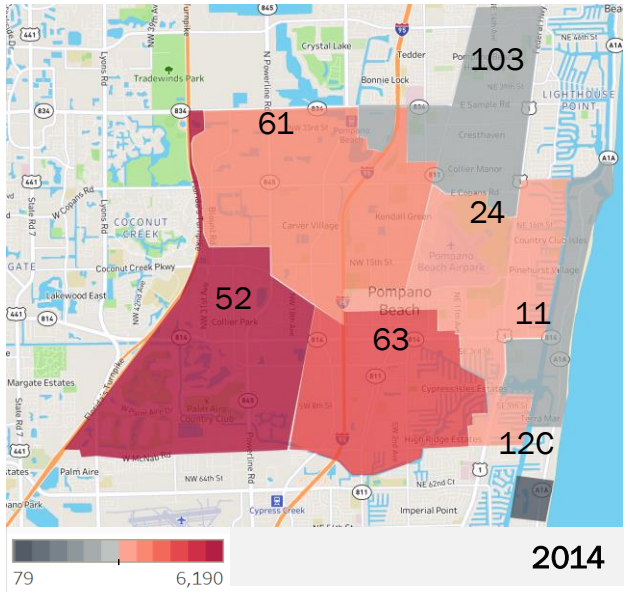
- Growth rate for Zones 52, 11 and 12c are relatively stable across time
- Zone 103 is the most variable (and thus least predictable) zone.
  It is also the zone that saw the highest increase in incidents in 2015, with a 47% increase compared to 2014
  Zone 63 has been consistently growing, with an average growth rate of 4.75% per year since 2016

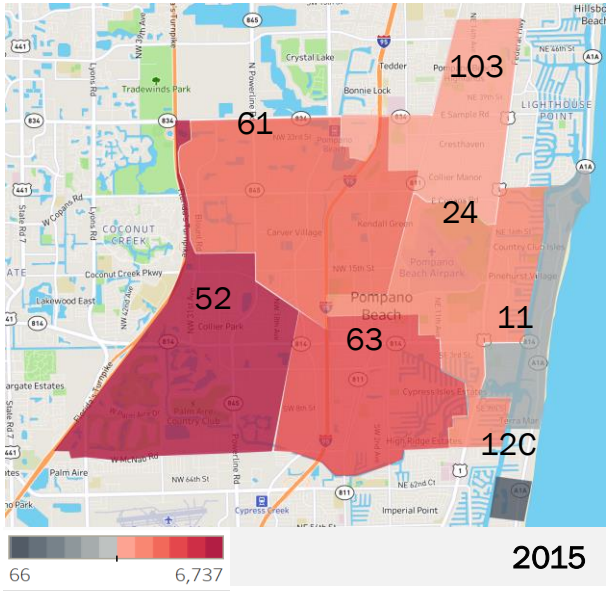
Incident Volume by Zone throughout Years

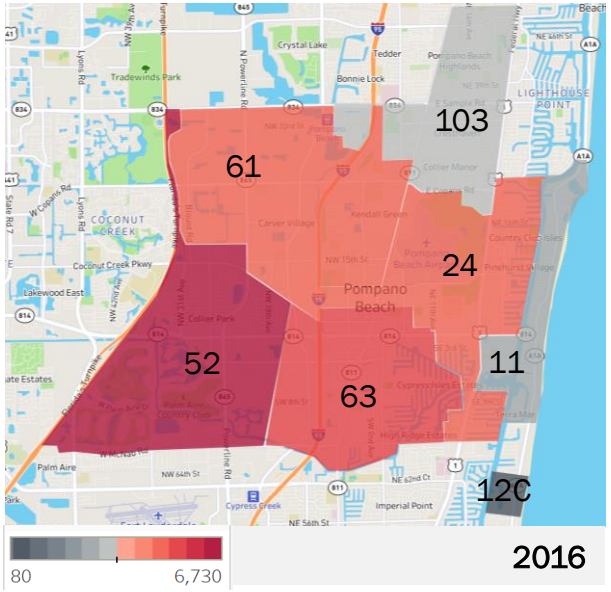
(darker red indicates higher volume)

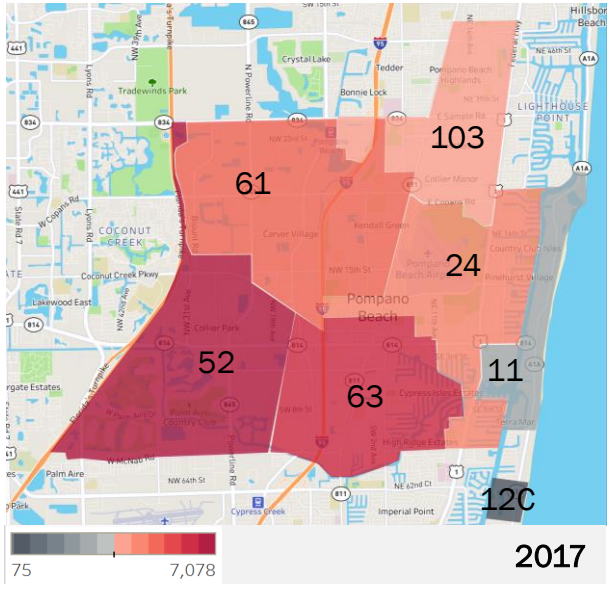


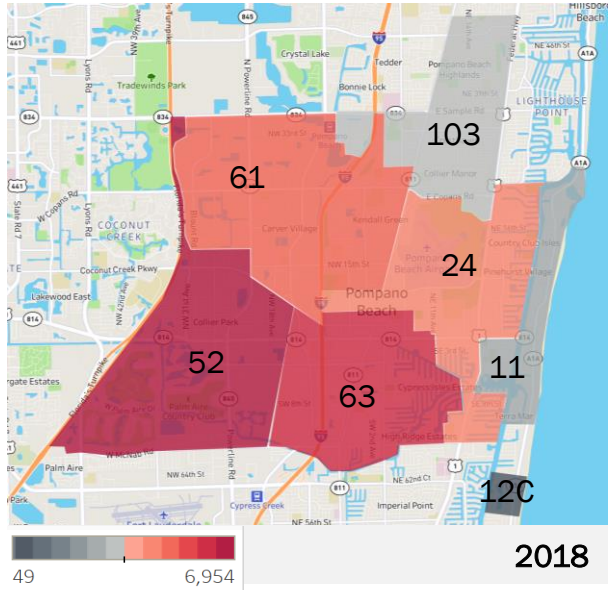


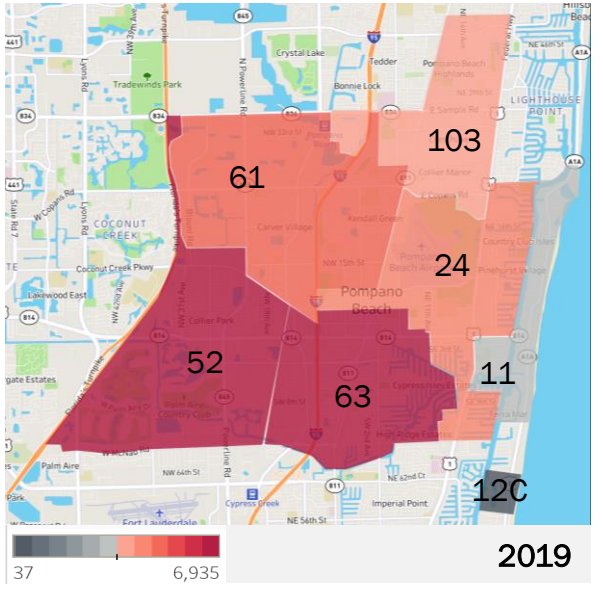






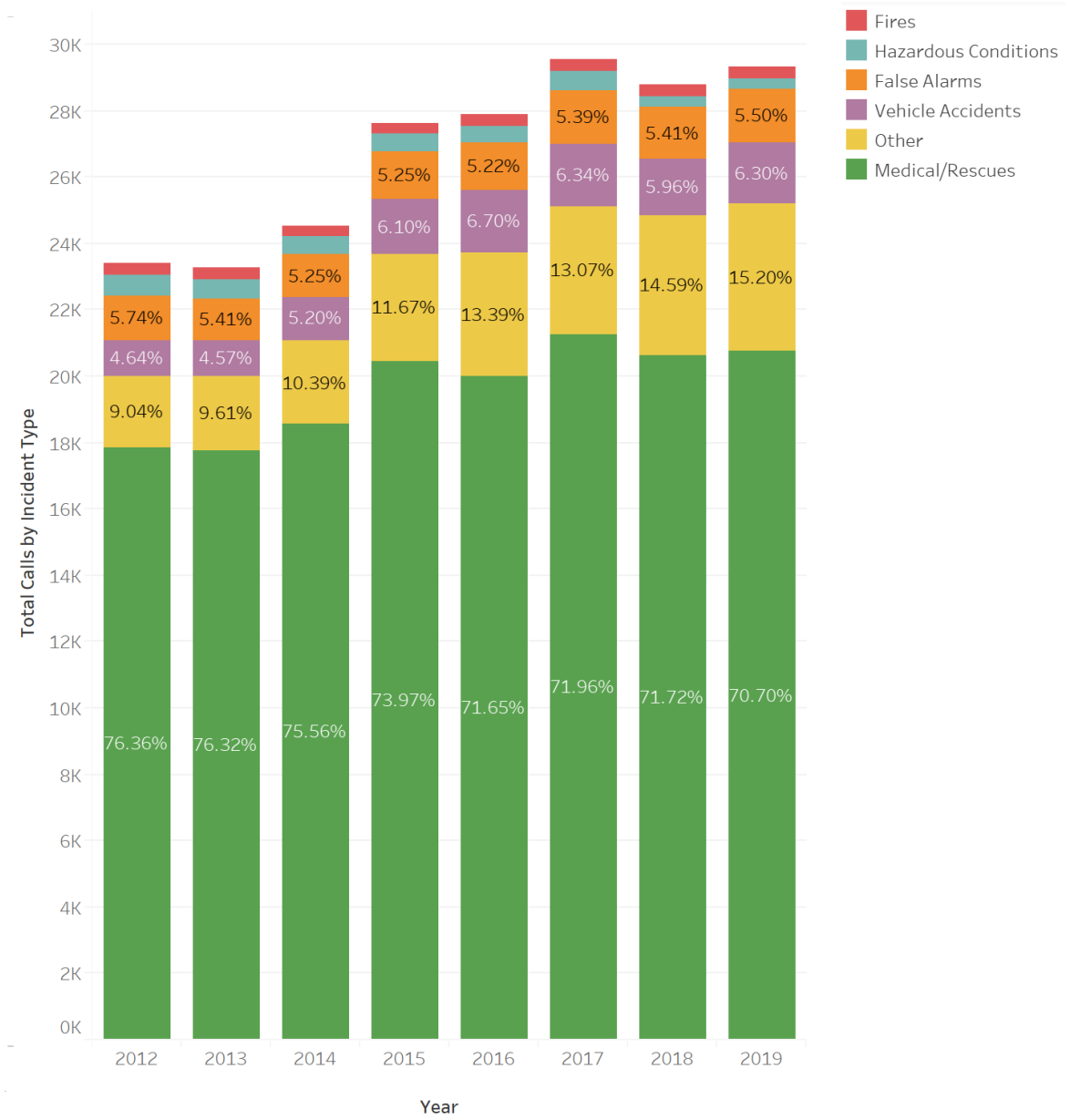






Calls by Incident Type Analysis

Total Calls by Incident Type throughout Years
(displays percent of total incidents for each Incident Type by Year)



Call volume based on Incident Type

Key Insights

- Medical/Rescues consistently account for around three quarters of all incidents
- Incidents labelled ‘Other’ are contributing more and more to the total number of incidents each year. Good to classify further to understand trends, and better train workforce
- Fires constitute a small amount of total incidents per year
- Important to take into consideration distribution of incident type when planning educational sessions, to tailor based on what incidents are affecting population the most
- Would be interesting to see how population demographics influence distribution of incident type between various cities

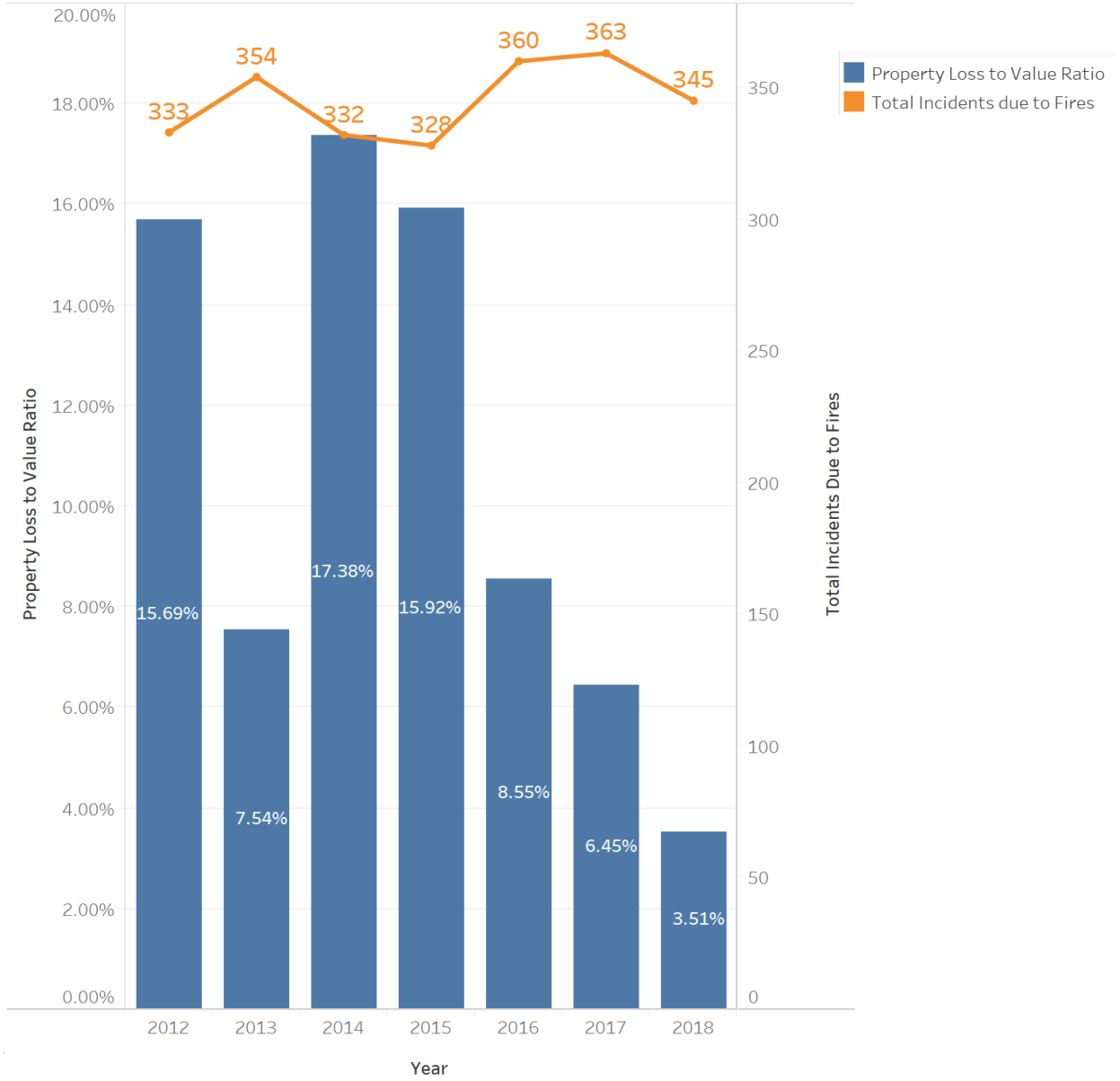
Fires

Analysis of incidents volume and property loss to value ratio

Key Insights

- The 3 years with the least amount of fire incidents (2012, 2014, and 2015) were also the years that a higher amount of property was lost due to fire, compared to its value
- Property loss to value ratio has been declining in recent years (despite higher occurrences of fires), suggesting strong effectiveness at combating fires

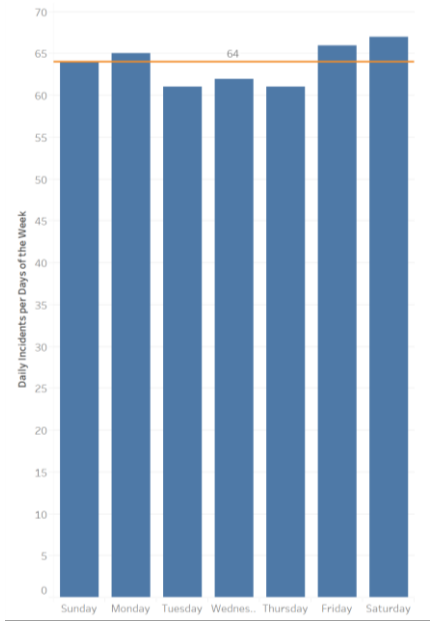
Note: Values obtained from Chart 1: Fire loss vs Property Value Saved from Performance Brief 2019, 1QTR. report



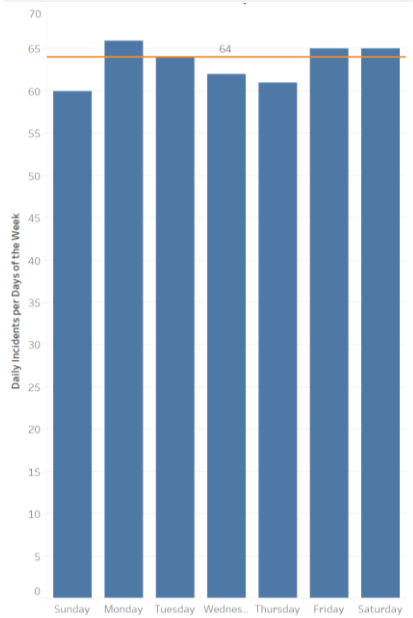
Fire Property	2012	2013	2014	2015	2016	2017	2018
Fire Loss	3,663,318	1,451,764	2,890,942	4,525,290	3,241,810	2,957,858	3,004,864
	15.69%	7.54%	17.38%	15.92%	8.55%	6.45%	3.51%
Property Saved	19,685,149	17,791,837	13,742,026	23,897,061	34,660,724	42,909,927	82,543,955
	84.31%	92.46%	82.62%	84.08%	91.45%	93.55%	96.49%
Grand Total	23,348,467	19,243,601	16,632,968	28,422,351	37,902,534	45,867,785	85,548,819
	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%

‘Day of Week’ Analysis

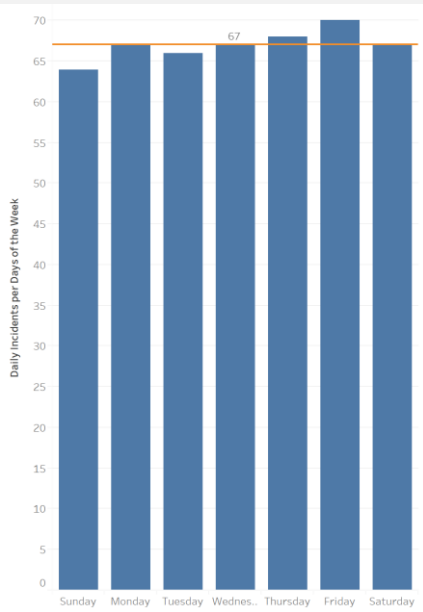
2012



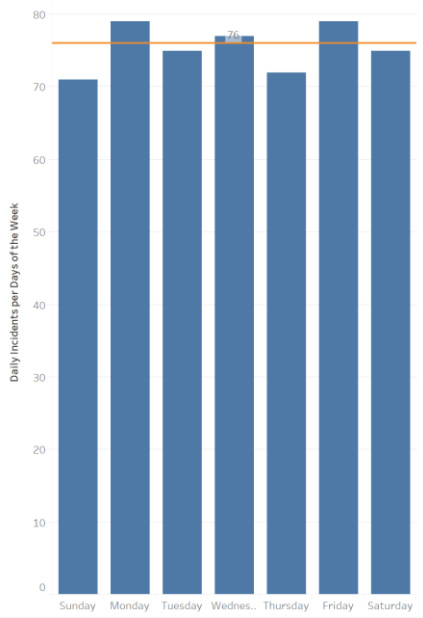
2013



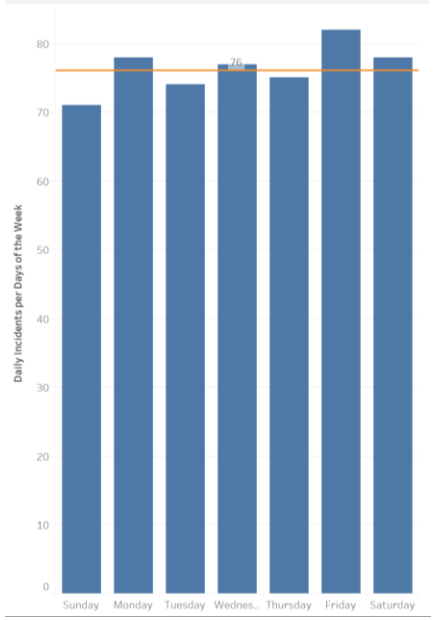
2014



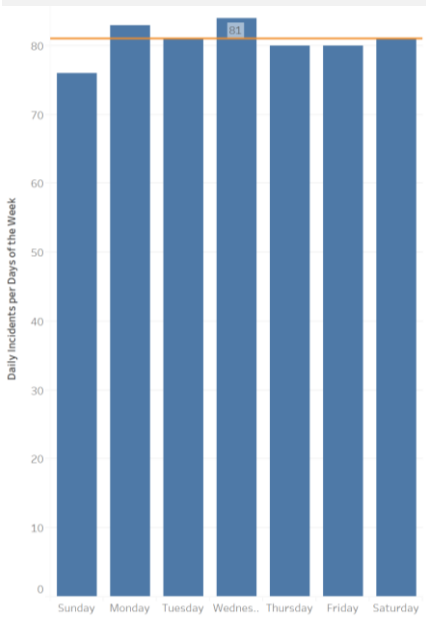
2015



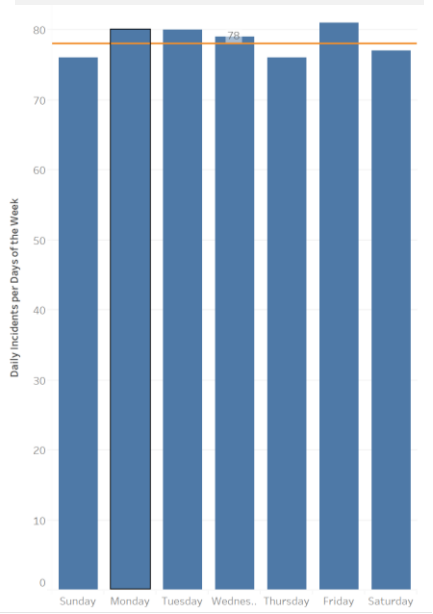
2016



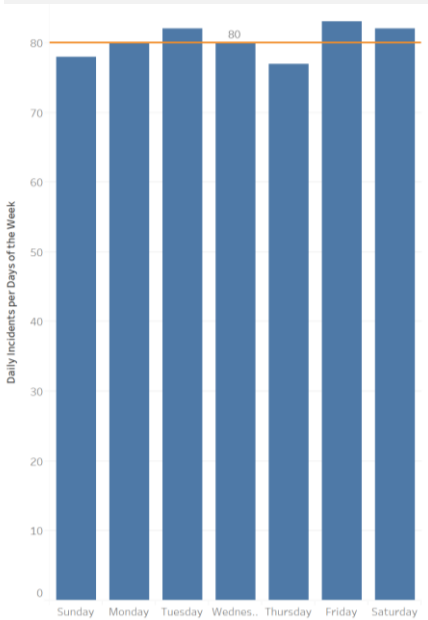
2017



2018



2019



Are incidents evenly distributed across the week?

- Chi Square tests for each year showed that incidents significantly varied widely based on day of the week

- Orange line shows how many incidents were expected that particular year, you can see which days had more or less incidents than expected

= Important to consider when scheduling workforce in order to reduce overtime, worker fatigue, etc.

Are incidents evenly distributed across the week?

Table displays the total number of years (out of 8) that a particular weekday had a higher, exact, or lower number of incidents than expected if incidents were evenly distributed across the week

- Mondays and Fridays are consistently busier than expected if all weekdays had the same number of incidents
- Sundays and Thursdays are consistently less busy than expected if all weekdays had the same number of incidents

	Over Expectation	Exact	Under Expectation	Total
Sunday		1	7	8
Monday	6	2		8
Tuesday	2	2	4	8
Wednesday	4	2	2	8
Thursday	1		7	8
Friday	7		1	8
Saturday	4	2	2	8

Fire Departments and Data Analytics

- NFORS Analytics provides real time data analytics to undercover trends, improve operational efficiency and reduce risk and loss

- Integrates directly to CAD or Records Management System for automatic extraction of operational data

- Goes beyond call volume, including a private history for firefighters to track risk, fatigue, etc.