# Section 1: Basic info & Overview

Project title: Crime in Vancouver

Group number: Group 11

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Overview:

Safety is one of the most important factors to consider when moving into a new place. If we can understand the composition of crime in different areas, it is possible to respond to crime in a more targeted manner, thus enhancing security. To achieve this, we propose building a data visualization that visually allows relevant government officials (i.e., police) and ordinary people to explore crime datasets. Our app will show the overall distribution of crime in Vancouver and enable users to analyze and compare the trend among several neighborhoods by filtering the crime type, year, and neighborhood, as well as daytime and nighttime.
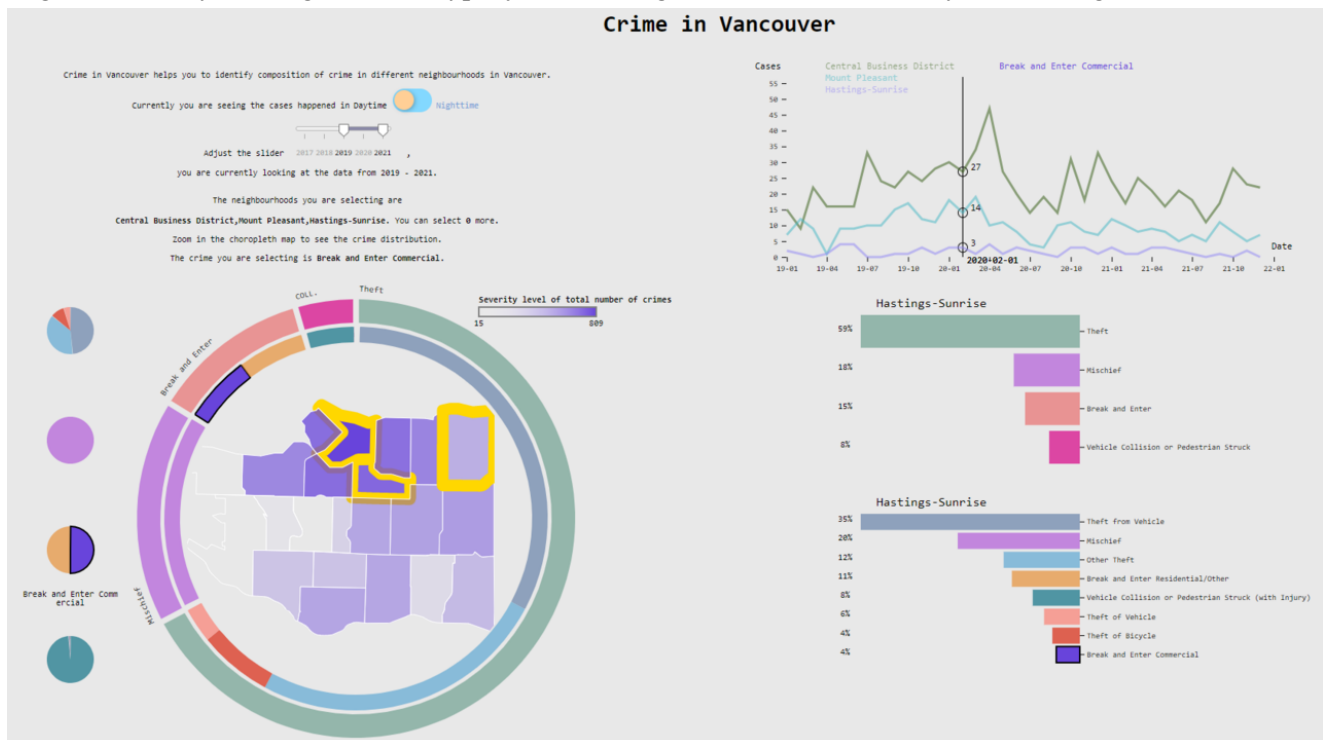
Section 2: Data

Link

Data Preprocessing steps

1. Shrink the size of dataset from 2015 - 2020 to 2017 - 2020
2. Combine the dataset of 2021 with the one above, rename the index of the combined one as CASE_ID
3. Removed rows whose NEIGHBORHOOD, and X and Y is 0.0 is missing values (NaN)
4. Removed rows whose NEIGHBORHOOD is Stanley Park and Musqueam, since these two neighborhoods are not in the geo dataset.
5. **[Transform: lat, long]** Convert X and Y, which are utm value to lat (latitude) and long (longitude)
6. Removed the useless columns HUNDRED_BLOCK, X, Y, MINUTE
7. **[Derived: TIME (day/night)]** Generate column TIME by the daytime (6:00-18:00, value: 'day') and nighttime (18:00-next day 6:00, value: night)

8. **[Aggregation: NumPerNeighbourhood_[2017, 2021]]** A grouping by neighborhood and a certain year will be generated to calculate the total number of crimes within each neighborhood and in that particular year.
9. **[Aggregation: NumPerNeighbourhood_all_yrs]** A grouping by neighborhoods across **5** years will be generated to calculate the total number of crimes within each neighborhood.
10. [**Aggregation**: newYearCount, Theft, Mischief, Break and Enter, Vehicle Collision or Pedestrian Struck, Theft from Vehicle, ..., Vehicle Collision or Pedestrian Struck (with Fatality)]
    We also do data aggregation in the code. Since we have a year slider and day and night toggle, we filter the data based on user selections. The combination of the filtered data is much complexer than the listed ones above.

Attribute Table [updated ones are highlighted]

Attr. name	Attr. type	Cardinality for categorical attr.	Range for quantitative attr.
CASE_ID	categorical	161532	
TYPE	categorical	9	
GENERAL_TYPE	categorical	4	
YEAR	ordered		[2017, 2021]
MONTH	ordered		[1, 12]
DAY	ordered		[1, 31]
HOUR	ordered		[0, 23]
TIME	categorical	2	
NEIGHBOURHOOD	categorical	22	
lat	quantitative		[49.201201, 49.294553]
long	quantitative		[-123.224021, -123.023393]
NumPerNeighbourhood_all_yrs	quantitative		[1583, 48677]
NumPerNeighbourhood_2017	quantitative		[347, 9950]
NumPerNeighbourhood_2018	quantitative		[292, 10839]
NumPerNeighbourhood_2019	quantitative		[295, 12362]
NumPerNeighbourhood_2020	quantitative		[316, 7690]
NumPerNeighbourhood_2021	quantitative		[273, 7836]
newYearCount	quantitative		[12, 48677]
Theft	quantitative		[49, 22503]
Mischief	quantitative		[16, 4628]
Break and Enter	quantitative		[12, 1702]
Vehicle Collision or Pedestrian	quantitative		[5, 623]

Struck			
Theft from Vehicle	quantitative		[25, 12051]
Other Theft	quantitative		[1, 8397]
Theft of Bicycle	quantitative		[2, 1693]
Theft of Vehicle	quantitative		[1, 362]
Break and Enter Residential/Other	quantitative		[10, 398]
Break and Enter Commercial	quantitative		[2, 1304]
Vehicle Collision or Pedestrian Struck (with Injury)	quantitative		[5, 616]
Vehicle Collision or Pedestrian Struck (with Fatality)	quantitative		[1, 7]

Section 3: Goals and Tasks

1. {Discover overview}
    a. A police officer wants to **discover overall crimes** across neighborhoods in all years (ordered attribute [YEAR: 2017, 2021]) to write a report of the security situation in Vancouver.
2. {Lookup values}
    a. A police officer also wants to **lookup** the severe level (quantitative attribute [NumPerNeighbourhood_all_yrs: 1583, 48677]) of **a specific crime type** (categorical attribute [TYPE: 9]) across all neighborhoods to make detailed analysis in the report.
3. {Discover trend}
    a. A journalist wants to **discover** the **trend** of each crime type across certain year ranges (ordered attribute [YEAR: 2017, 2021]).
4. {Discover distribution and proportion}
    a. Since there are 9 crime types (categorical attribute [TYPE: 9]) which are categorized into 4 general crime types (categorical attribute [GENERAL_TYPE: 4]), the journalist also wants to **discover** the **proportion** of each sub-crime types within the corresponding general crime type.
    b. The new immigrant owns a luxury car and has children. Therefore, they would like to **discover** crime **distribution** (geographical data of quantitative[lat: 49.201201, 49.294553] and [long: -123.224021, -123.023393]) within a specific neighborhood (categorical attribute [NEIGHBOURHOOD: 22]) for finding a parking lot nearby, and the playground for children. This is helpful for their specific needs.
5. {Compare groups}
    a. A new immigrant has several neighborhoods in mind that wants to live in. They want to **compare** the total number of crimes (quantitative attribute [NumPerNeighbourhood_all_yrs: 1583, 48677]) within these **neighborhoods** (categorical attribute [NEIGHBOURHOOD: 22]) to help them make the final decision.

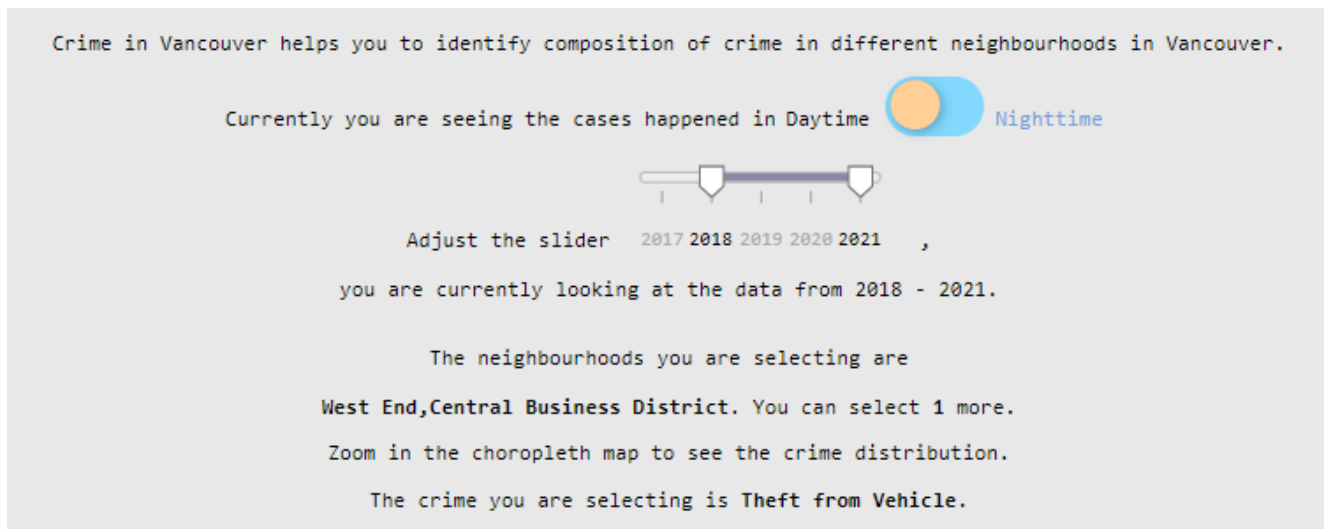# Section 4: Visualization design explanation and justification

Components:

selectable / filterable data:
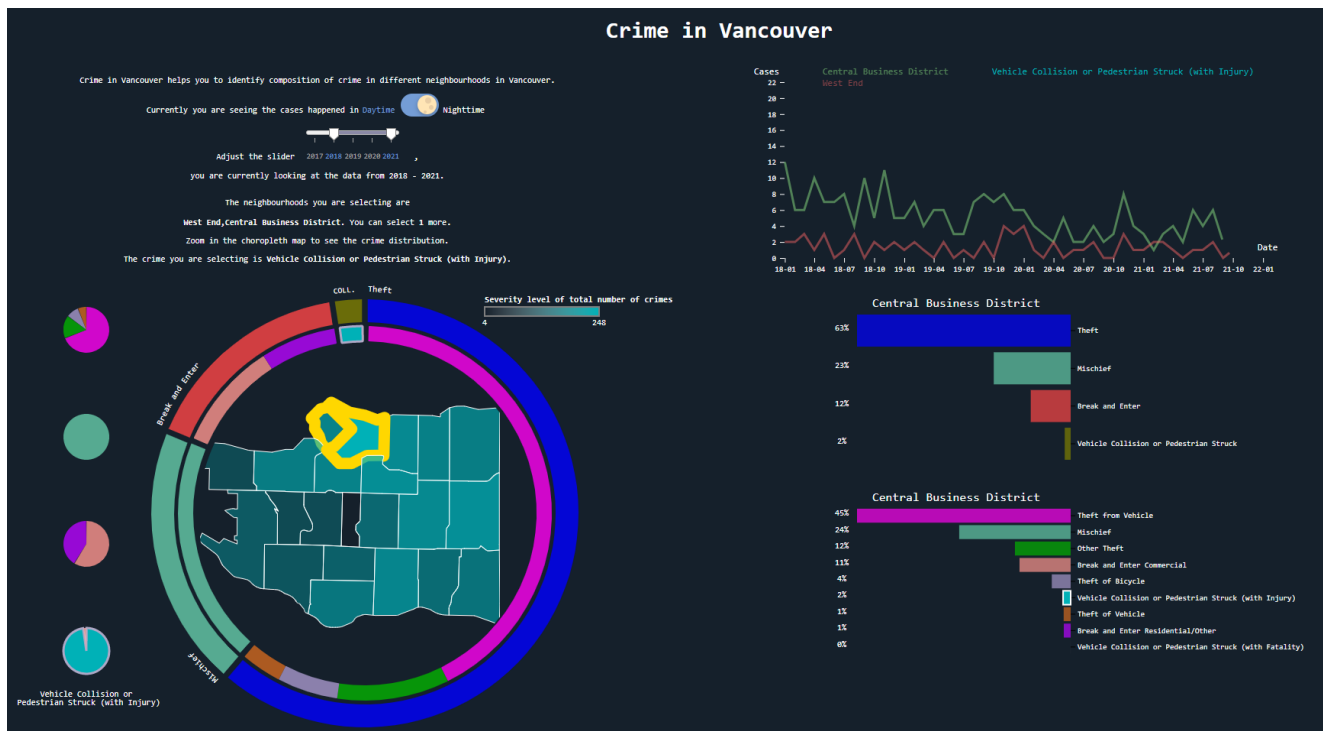
1. year
   a. array: [start year, end year]
   b. horizontal slider with a widget for range selection
2. neighborhood
   a. array: [name 1, name 2, name 3]
   b. selected by clicking on the choropleth map
3. crime type
   a. string
   b. filtered by the segmented donut embraced the choropleth map, can only select one crime at a time
4. Day / Night
   a. boolean
   b. filtered by the toggle

widgets:

1. horizontal slider: year slider
   a. Default year will be set to "all year"
   b. Users move the widgets along the slider to select different years, and the corresponding data for the selected year will reflect on the choropleth map, line chart and bar chart.

2. toggle: switching between daytime and nighttime mode

Crime in Vancouver helps you to identify composition of crime in different neighbourhoods in Vancouver.

Currently you are seeing the cases happened in Daytime   Nighttime

Adjust the slider   2017 2018 2019 2020 2021   ,

you are currently looking at the data from 2018 - 2021.

The neighbourhoods you are selecting are

West End,Central Business District. You can select 1 more.

Zoom in the choropleth map to see the crime distribution.

The crime you are selecting is Theft from Vehicle.

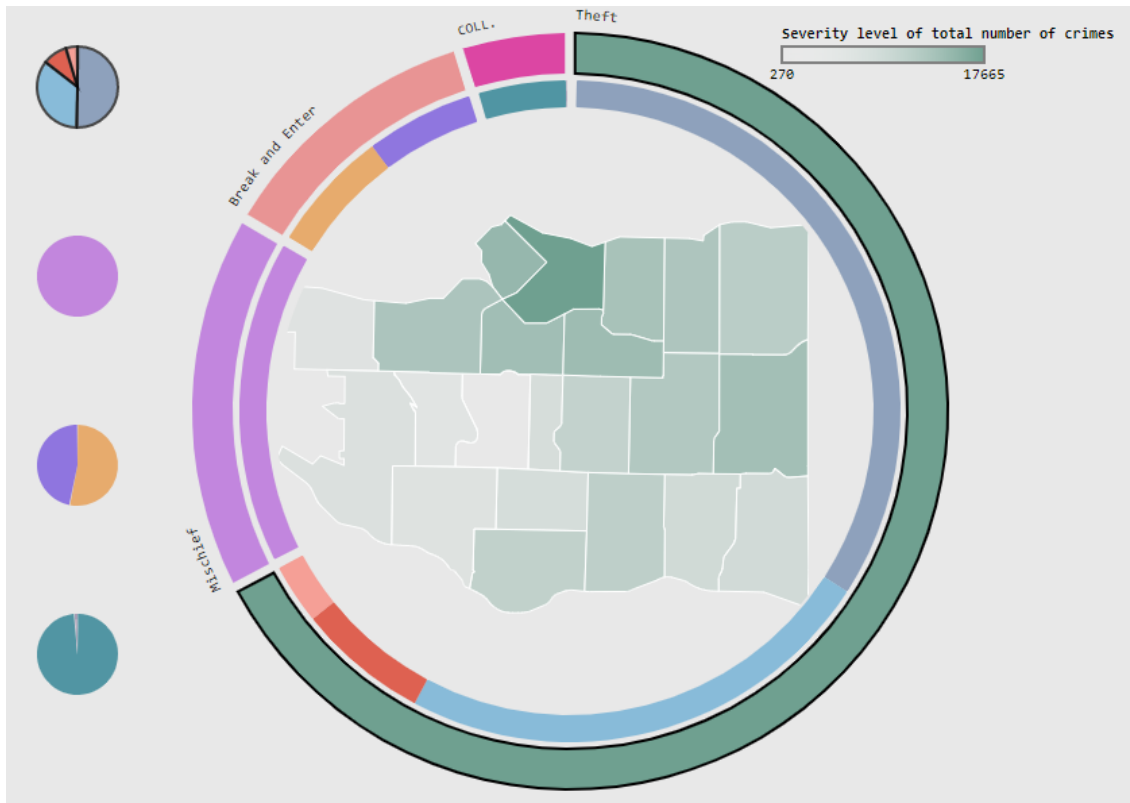*Screenshot for the legend, including day and night toggle, and year slider*

Screenshot for toggling nighttime mode
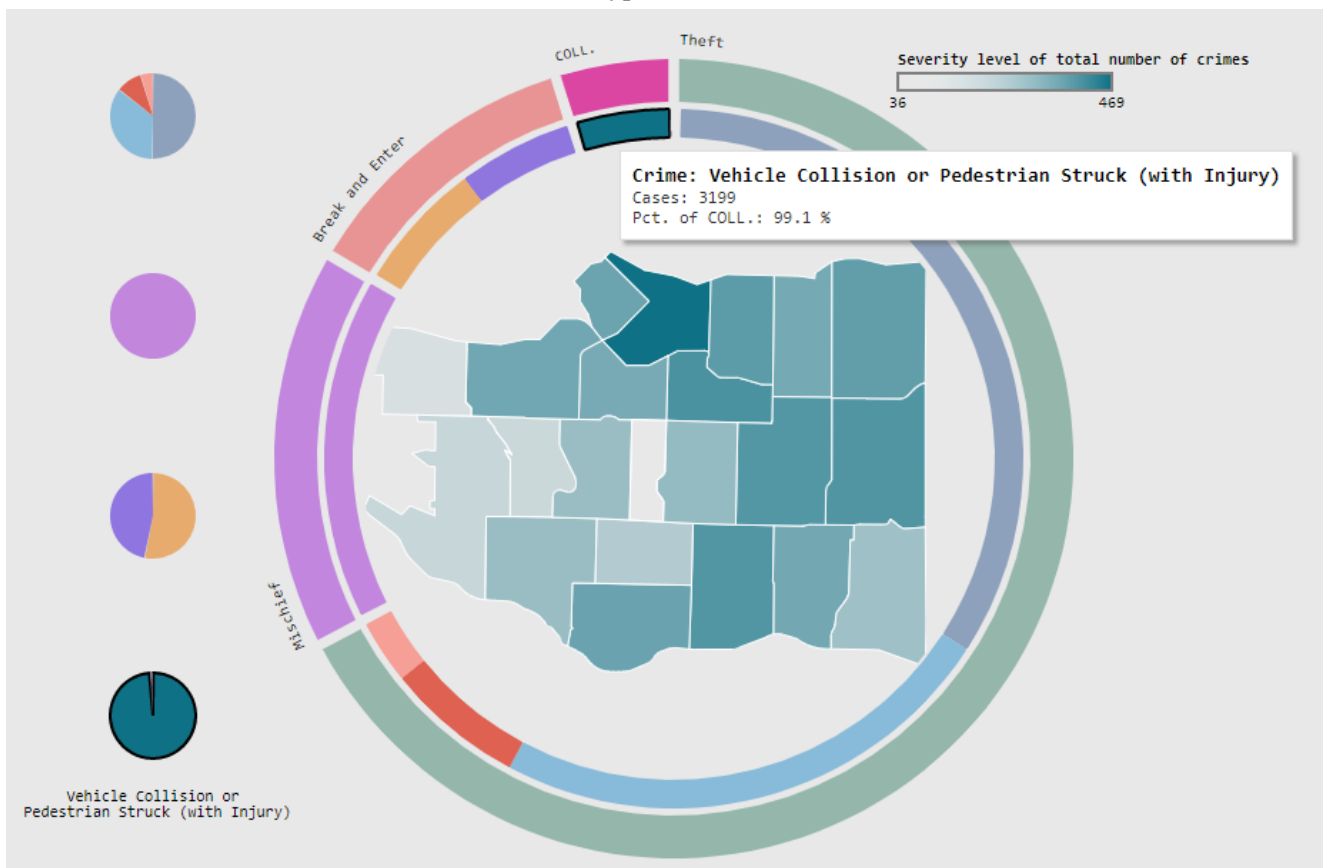
3. pie chart: select sub-crime type

4. donut chart:
   a. outer donut chart select general crime type

*Screenshot for pie chart and **outer** donut chart selection.*
Selecting an outer donut will pass off the certain general crime type.
In UI, it will highlight the arc as well as the corresponding pie.

b. inner donut chart select sub-crime type

*Screenshot for pie chart and **inner** donut chart selection.*
Selecting an inner donut will pass off the certain sub-crime type.

In UI, it will highlight the arc as well as the corresponding piece of pie.
Hovering on the inner donut will also show the details by a tooltip.

Analysis for Innovative View:

Innovative view: choropleth map + double-ring donut chart + pie chart

1. Choropleth Map

Derived data:
We've converted attribute X and Y of UTM values to lat/long, and replaced them with two new attributes lat: [49.201201, 49.294553], long: [-123.224021, -123.023393]

Mark:
- interlocking area encode neighborhoods
- point encode crime case

Channel
- spatial region (identity) encode the geometric position of each neighborhood(categorical)
- color saturation (magnitude) encode severe level of different crime type number in total (quantitative, more number of crime cases, more saturate color) across neighborhoods
- spatial position (magnitude) encode crime cases with different lat/long (quantitative)

a. **zoom out**: 22 neighborhoods (located by geographical location)
   i. <u>no crime selected</u>:
      Task & interaction: A user can get a general view of the severe level (the higher the number of crimes, the more serious) of all crime types across neighborhoods in all years (2017-2021). The severe level is quantitative values displaying [NumPerNeighbourhood_all_yrs: 1583, 48677] in different **saturations** of color gray by default. The use of saturation will enable users to get a general idea of which area experiences the most criminal cases and which area has less.
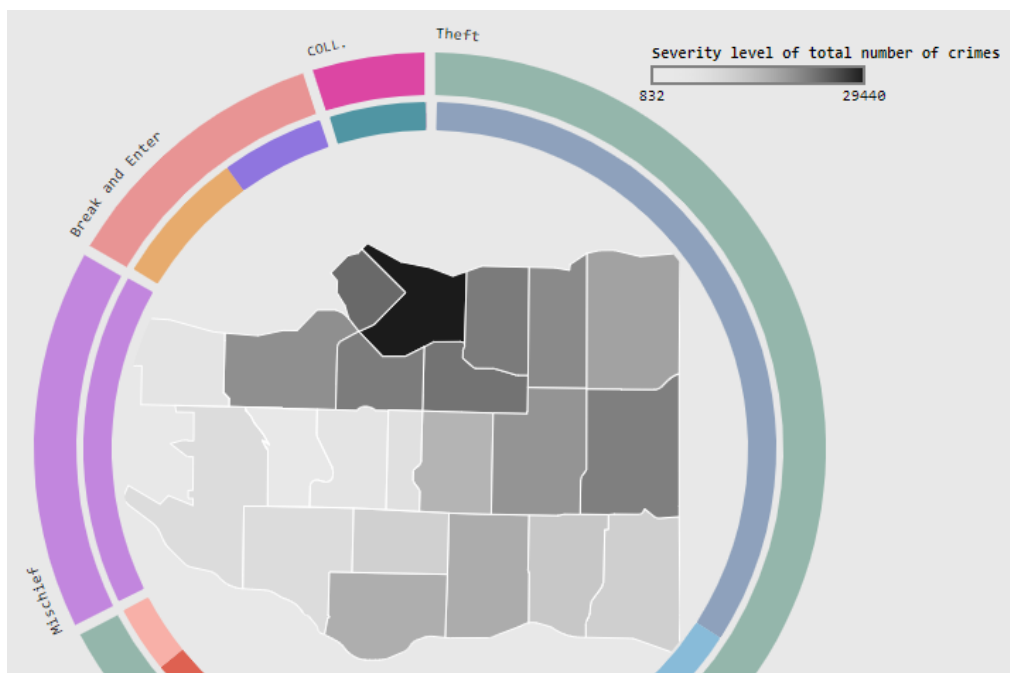
(tips: the values in the legend is different from [1583, 48677] is because these are the values for daytime cases)
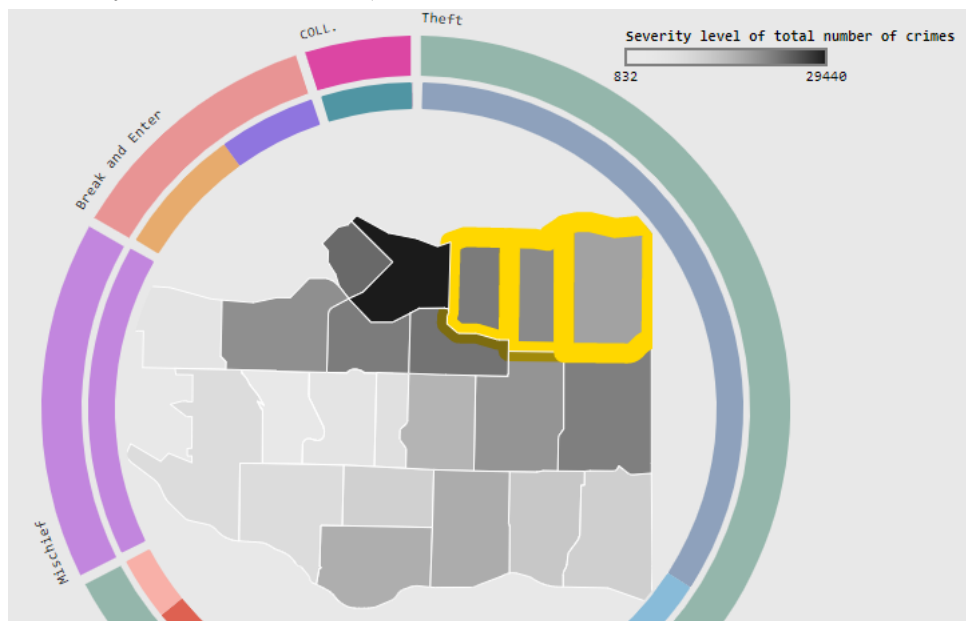
   ii. <u>select a crime</u>:

Task & interaction: If a user wants to see the severe level of a specific crime type across neighborhoods, they can achieve that by clicking on the arc of the crime type on the donut chart. Then the color on the map for neighborhoods will respond to the crime type corresponding to the crime color with different saturation. Again, the use of saturation will enable users to get a general idea of which area experiences the most crime cases of the selected crime type and which area has less. Also, the legend in the upper-right corner will show the concrete value range.
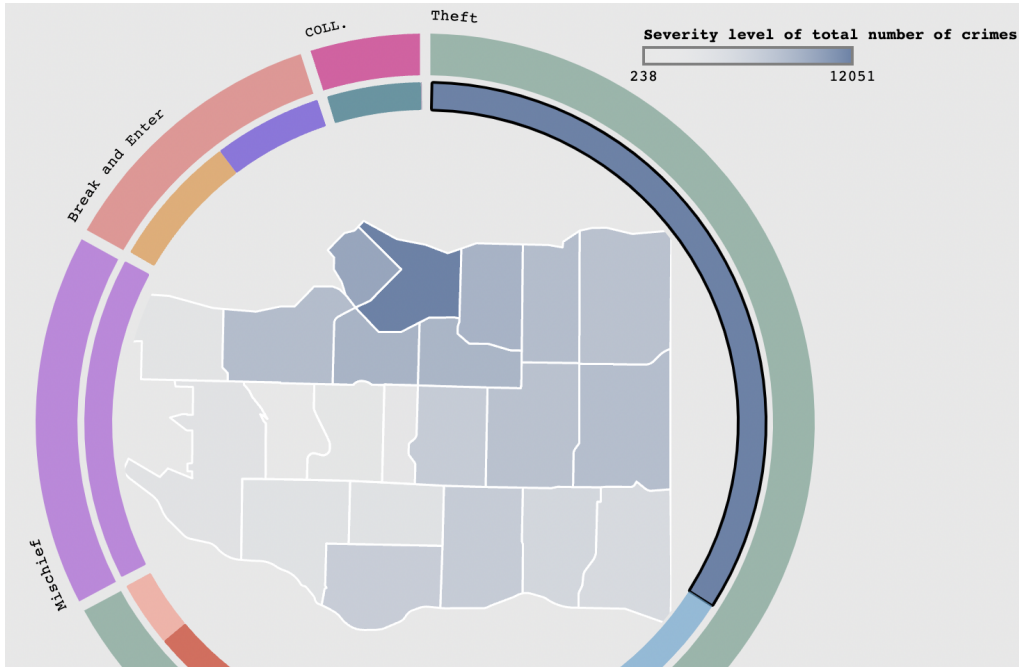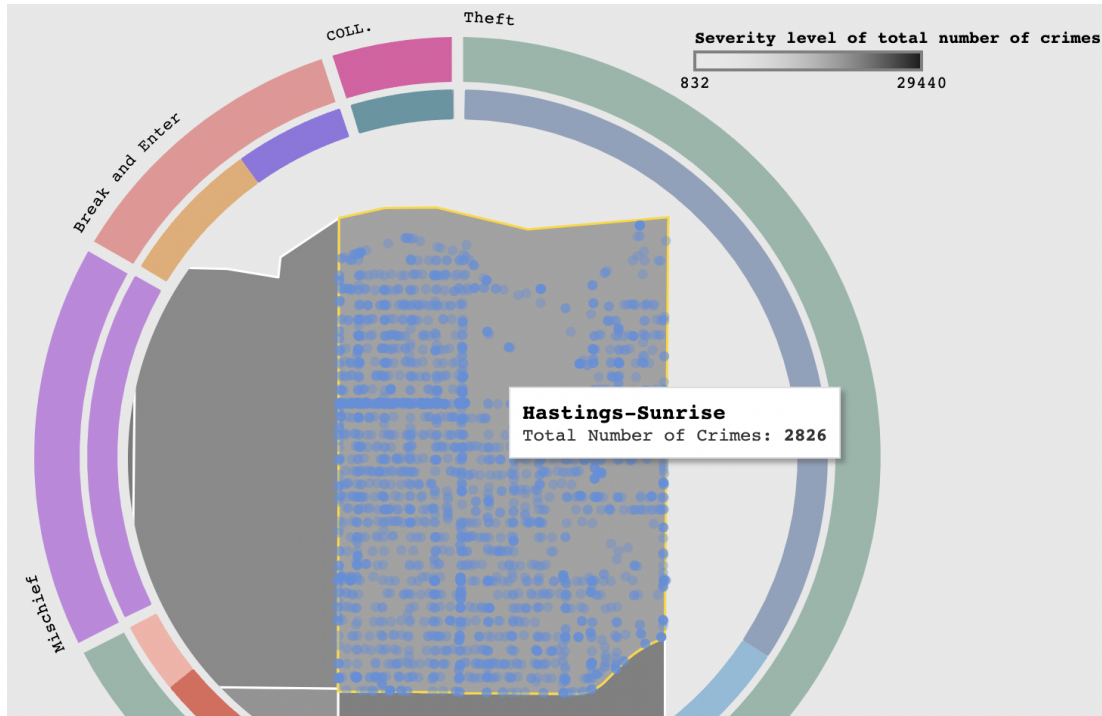

iii.   select a neighborhood:

Task & interaction: When zoomed out, a user can select up to **three** neighborhoods to display the corresponding information in the line chart. Since the line chart displays the total number of crimes in years (2017 - 2021 by default), the user can compare the trends of these 3 neighborhoods easily. The limitation of 3 is to maximize the readability across the lines and also helps the user to narrow down their selection (i.e., to limit their choice of neighborhoods that they would like to live in).


b. **zoom in**:

i.   don't select a crime:

Task & interaction: If a user would like to see the detailed crime distribution within a specific neighborhood, they can **zoom in** by placing the mouse on that specific neighborhood, then scroll up by mouse or fingers. Crime cases of all types will show up within that neighborhood. This gives the user a general view of which specific region in that chosen neighborhood has more crime types, also a pattern of the distribution (i.e., a circular distribution may indicate there is a playground or parking lot nearby, then the user can choose to avoid that area if they have expensive cars).

ii.   select a crime:

Task & interaction: After zooming in, a user can choose **one** sub-crime type at a time to further analyze the distribution of that particular type within a chosen neighborhood. For example, if a user drives an expensive car, they might want to avoid living in an area that has an intensive "vehicle collision" crime type.
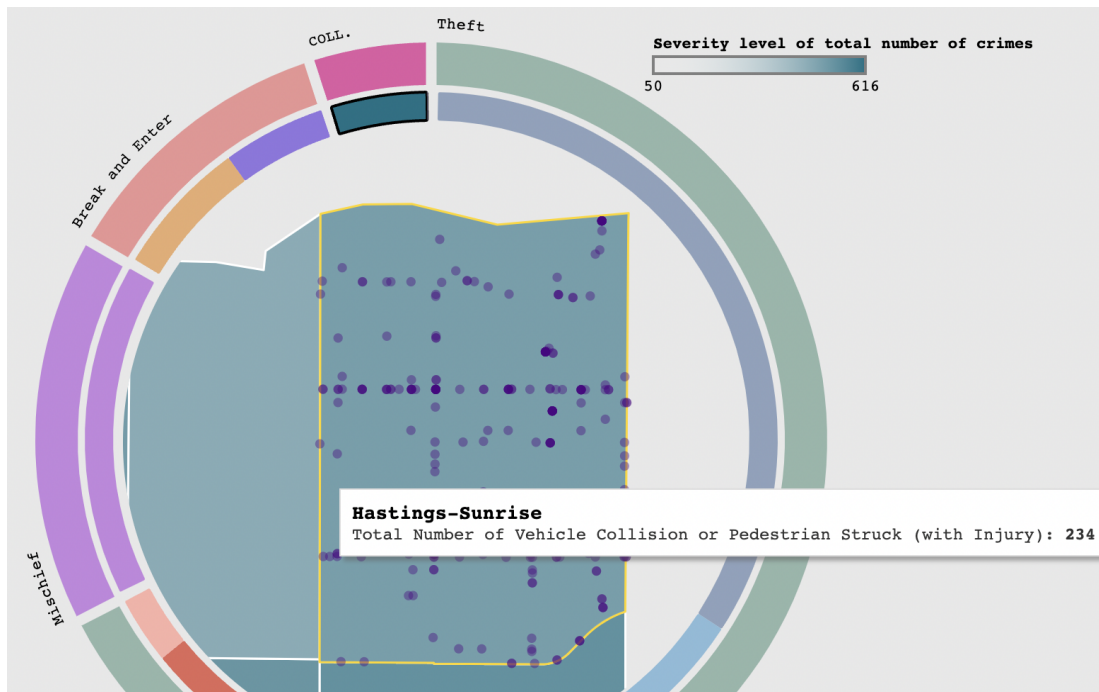
Derived Data:

    a. Aggregated crime types

Aggregated crime type	Sub-crime type(s)
Theft	Theft from Vehicle, Other Theft, Theft of Vehicle, Theft of Bicycle
Mischief	(no sub-crime type here)
Break and Enter	Break and Enter Commercial, Break and Enter Residential/Other
Vehicle Collision or Pedestrian Struck	Vehicle Collision or Pedestrian Struck (with Injury), Vehicle Collision or Pedestrian Struck (with Fatality)

    b. The percentage of each aggregated crime type to all crimes

Marks:

Interlocking area encode four general crime types

Channels:

- Angle encodes the number of a specific crime type
- Color hue (identity) encodes different types of aggregated crime type (categorical).

Task:

A user can see a rough part-to-whole relationship by the length of each segment to the whole circle. By selecting a segment in the donut chart, the application will filter the data with this general crime type. For example, by selecting the general type Theft segment, a user can see the **distribution** of **Theft** in Oakridge from 2017-2021 from the *choropleth map*, the **trend** of **Theft** in Oakridge from 2017-2021 from the *line chart*, and the **ranking** and **percentage** of **Theft** in Oakridge from 2017-2021 from the *bar chart*.
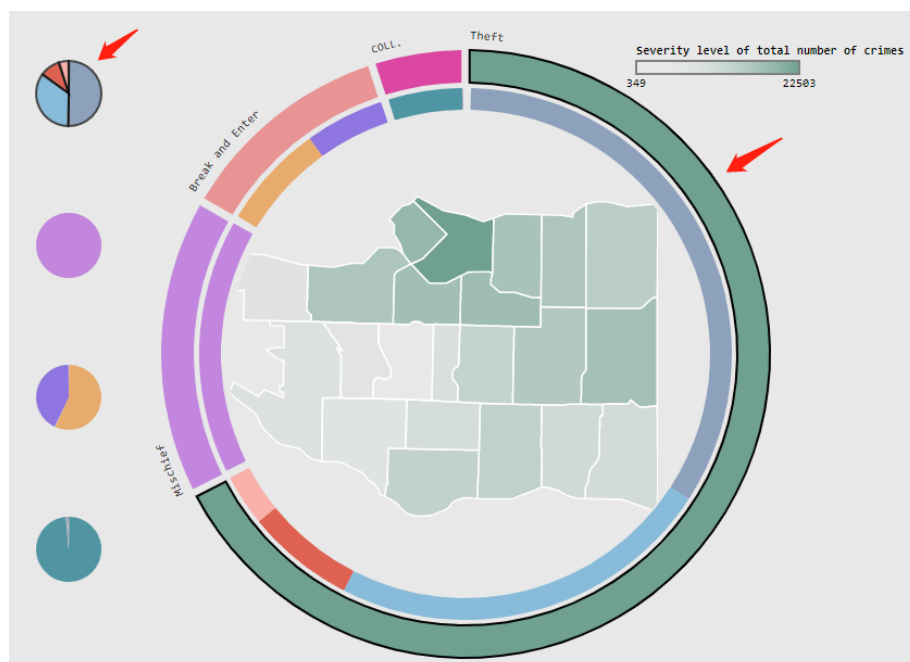
Select a general crime type by clicking an outer donut.
The corresponding pie will be highlighted as a whole.
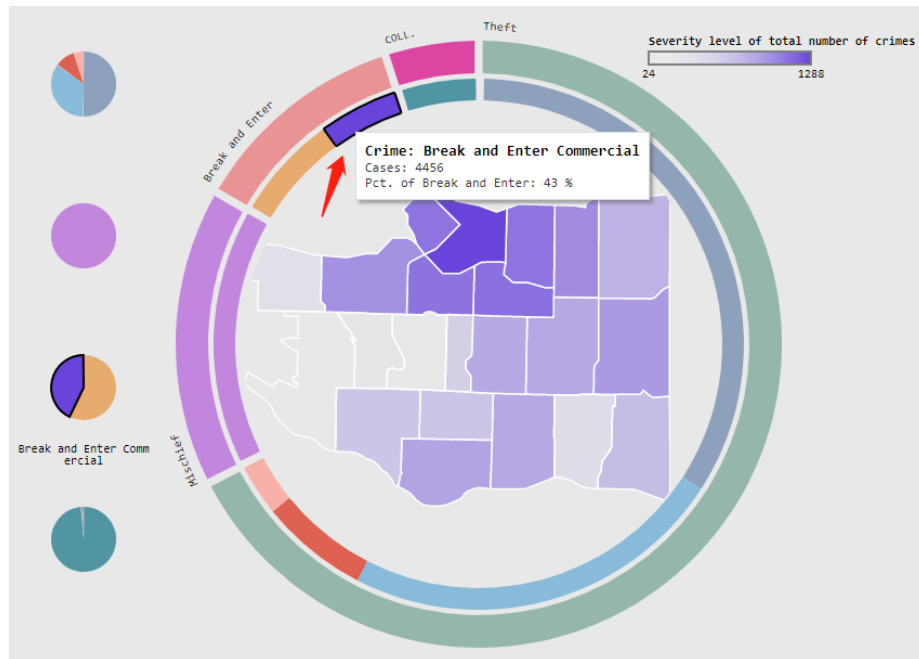
Select a sub-crime type by clicking an inner donut.
The corresponding pie will also be highlighted.
Hovering on the donut will show the detail.
Deselect the sub-crime type by re-clicking this donut or clicking another crime type.
The selected crime type will be passed off.
One of the results shown in the picture is that the color of the choropleth map will be changed.

3. Pie Chart

Derived data:
The percentage of the sub-crime types to the corresponding general crime type

Marks:
interlocking areas encode sub-crime types of the corresponding general crime type

Channels:
Angle (2D area varies, magnitude) encodes the percentage (quantitative) of the sub-crime type to the general crime type. Each slice represents a sub-crime of a general crime type. The area of each slice shows the proportion of this sub-crime to the general crime type (e.g. 20 cases Break and Enter Commercial of a particular neighborhood in a specific year range, 80 cases Break and Enter Residential/Other of a particular neighborhood in a specific year range, then the pie chart to the Break and Enter donut arc shows two pies, one counts for 20% and the other one counts for 80%)

Task:
By selecting a slice in each pie chart, the application will filter the data with this particular sub-crime type. For example, by selecting the slice **Theft from Vehicle** of the pie chart near the Theft arc, a user can see the **distribution** of **Theft from Vehicle** in Oakridge from 2017-2021 from the *choropleth*, the **trend** of **Theft from Vehicle** in Oakridge from 2017-2021 from the *line chart*, and the **ranking** and **percentage** of **Theft from Vehicle** in Oakridge from 2017-2021 from the *bar chart*.
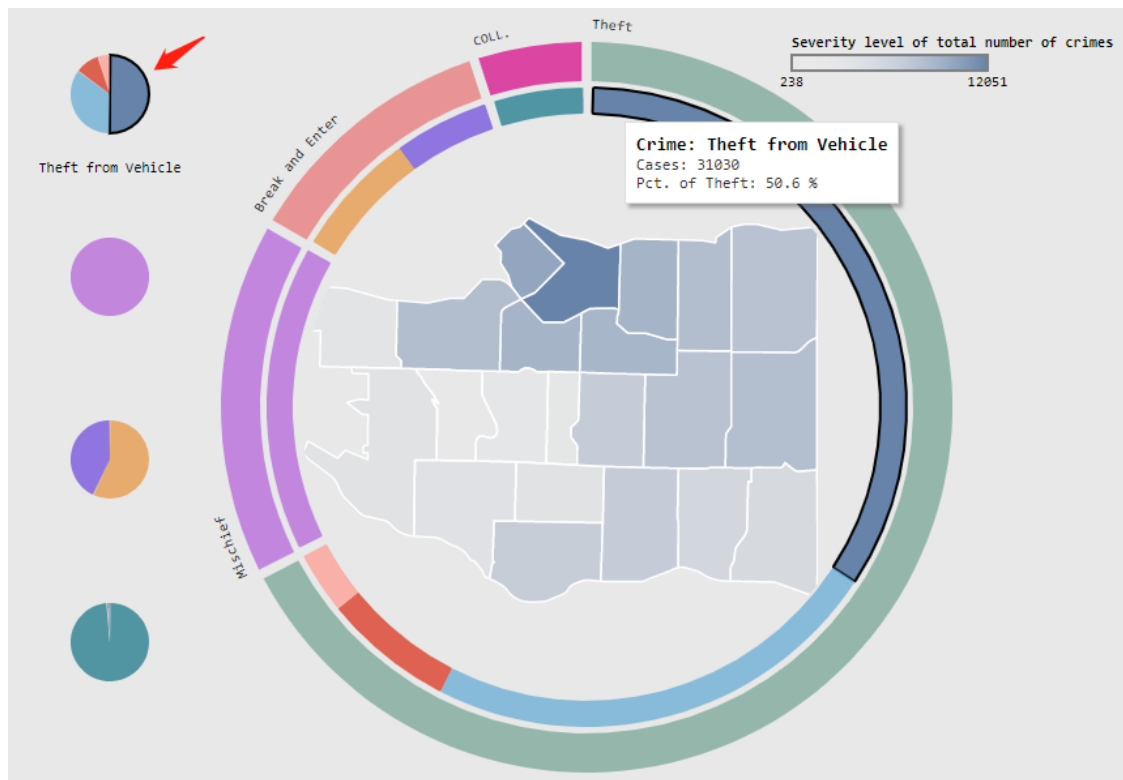
Select a sub-crime type by clicking a slice.
The corresponding donut will also be highlighted.
Hovering on the pie will show the detail.
Deselect the sub-crime type by re-clicking this pie or clicking another pie.
The selected crime type will be passed off.
One of the results shown in the picture is that the color of the choropleth map will be changed.

4. Bidirectionality between Interactive Legend and Innovative View
    -   Interactive legend 👉 innovative view
        -   filter daytime and nighttime cases
        -   filter year range
    -   Innovative view 👉 interactive legend
        -   selected crime type pass off to the legend
        -   selected neighborhoods pass off to the legend

Analysis for Other Views:

5. Line Chart (x-axis: all the year, y-axis: number of cases of a sub-crime / general crime)
    Derived data:
    daily total crimes for a certain year range

    Task:
    A line chart can easily convey the trend of the total crimes among certain year ranges. Therefore, when the user selects at most three neighborhoods in the choropleth map, they can compare the selected neighborhoods and see whether the number of crime cases are rising or not.
    a. By default, the entire Vancouver area will be displayed, therefore we see the trend of all crimes throughout the entire Vancouver area from 2017 to 2021 (1 line).

Cases   Vancouver

2018-05-01
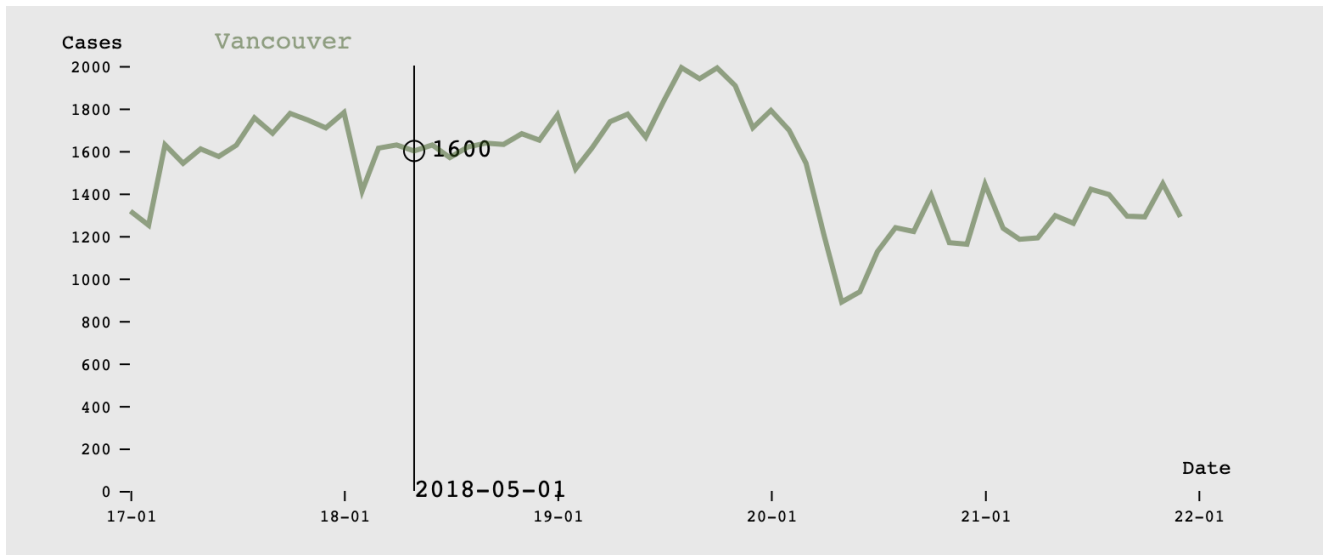
b. If the user select up to three neighborhoods in the map, they see the trends of those three neighborhoods (i.e. three lines) with a certain crime type.

Cases   Fairview   Theft from Vehicle
      Hastings-Sunrise
      Victoria-Fraserview
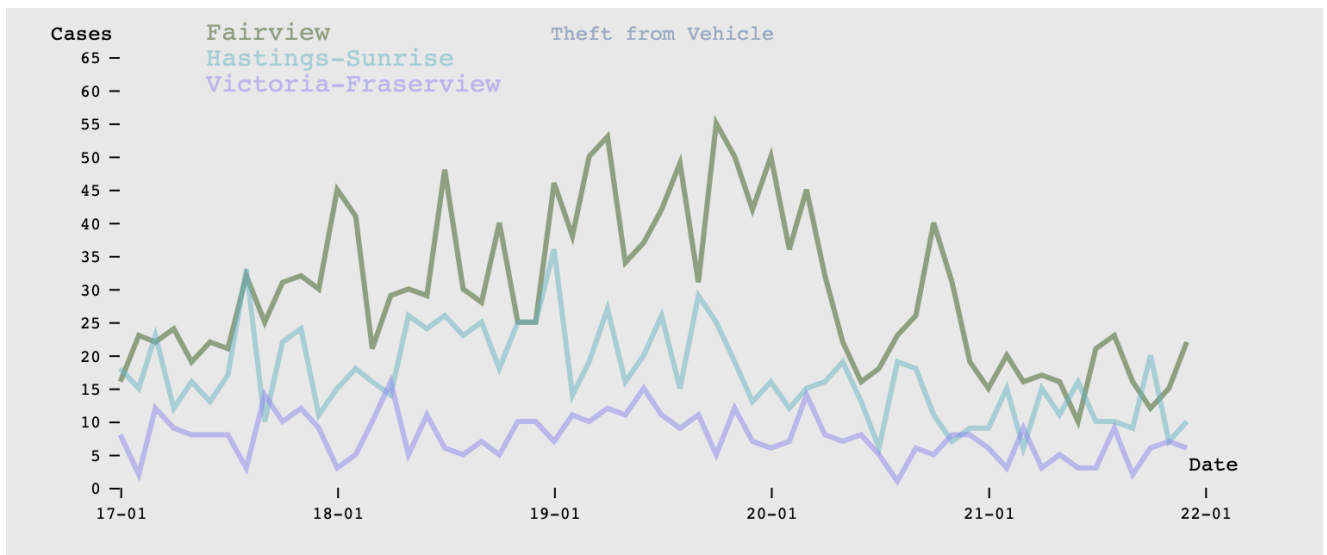
c. The vertical tooltip will show the exact number of crimes for the selected neighborhoods

Cases   Renfrew-Collingwood
      Hastings-Sunrise
      Kensington-Cedar Cottage

2017-12-01
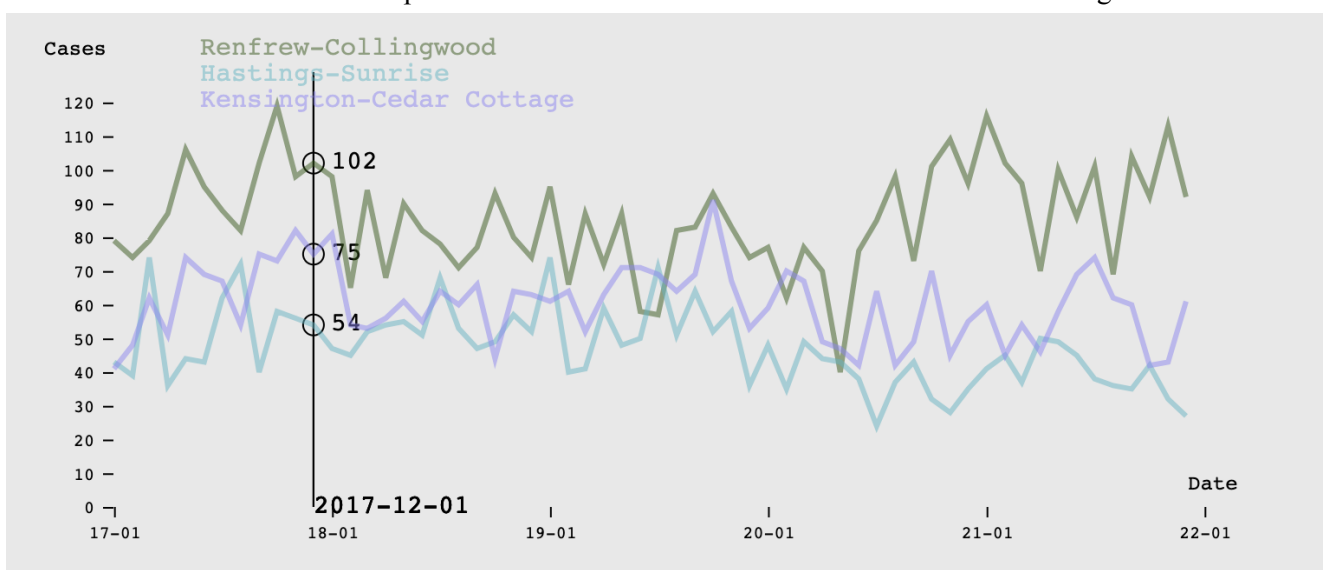
6. Bar Chart (four big general crime types)

Derived data:

General crime type bar chart (top):
Count the number of crime cases for each general crime type and divide by the total number of crimes in the neighborhood to get the percentage.
Sub-crime type bar chart (bottom):
 Count the number of crime cases for each sub-crime type and divide by the total number of crimes in the neighborhood to get the percentage.

Task:
Bar chart uses 1D length which is on a common scale and all the bars are aligned and ordered by descending order. This lets users easily see the most frequent crime types in the *latest* clicked neighborhood.

    a. <u>when a neighborhood is selected</u>:
        display and rank the percentage of all types of crime of the *latest* selected neighborhood
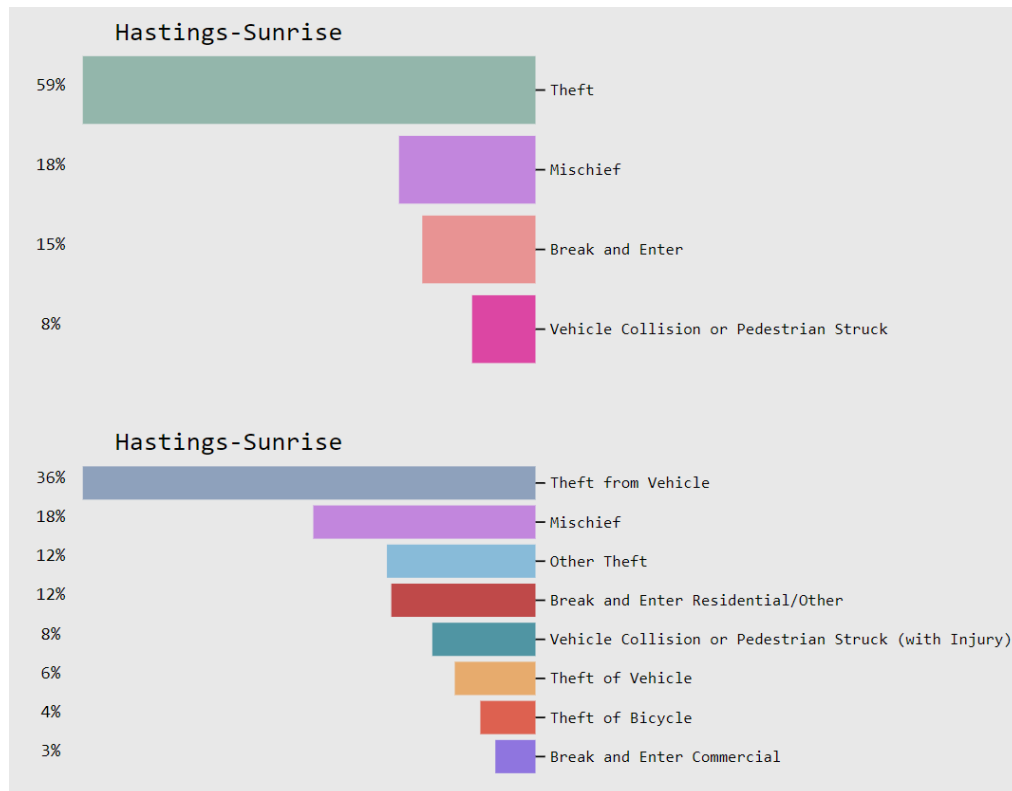
    b. <u>when there is no neighborhood selected</u>:
        it shows the four general crimes types of the entire Vancouver with a message that prompt the user to select a neighborhood
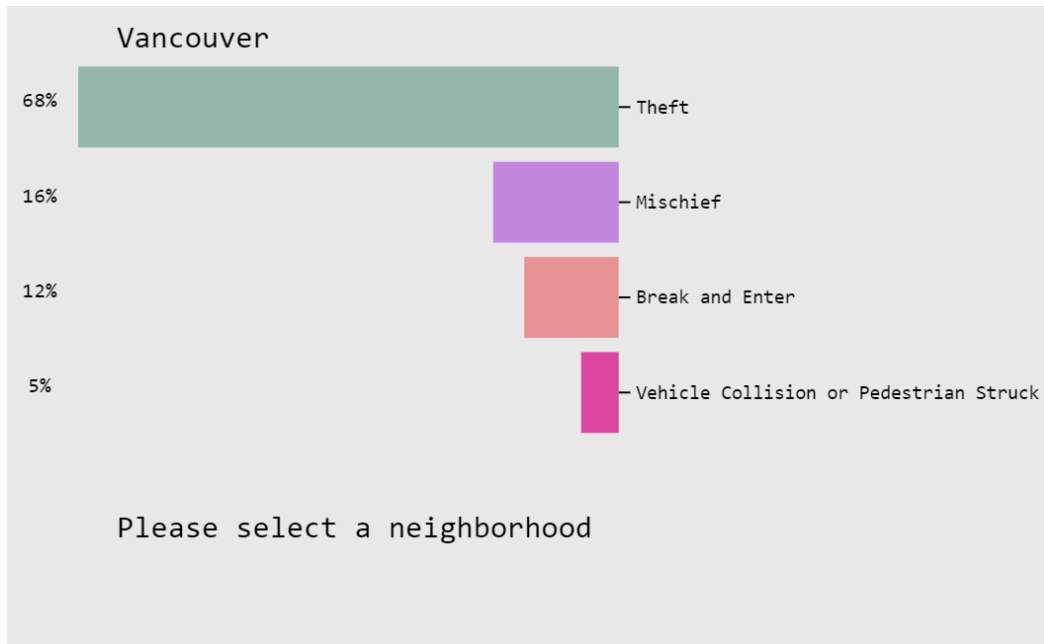
c. when a crime type is selected in the donut chart, the corresponding bar chart will be highlighted. For example, the **Theft** segment in the donut chart and the bar chart was both highlighted in the following screenshot.
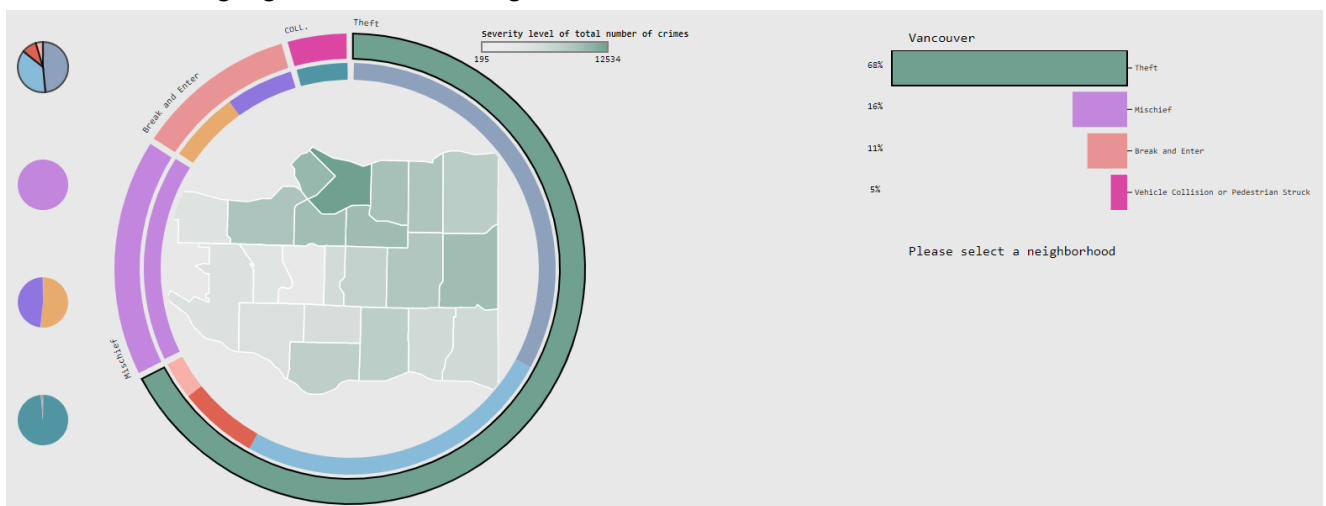
Selecting a general crime type, and highlighting the bar in the upper chart
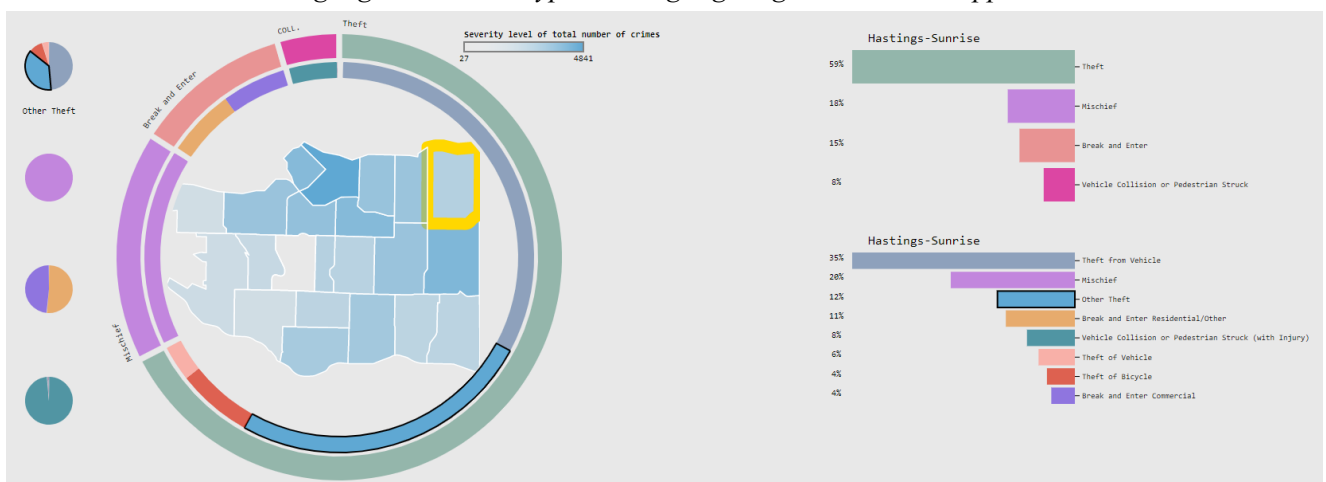
Selecting a sub-crime type, and highlighting the bar in the lower chart

Section 5: Credits

Name of chart		Link
		Change of Magnitude
Donutchart		https://d3-graph-gallery.com/graph/donut_basic.html
		adapt the prototype for the static view, add functionality and interaction.
Interactive legend	slider	https://bl.ocks.org/johnwalley/e1d256b81e51da68f7feb632a53c3518
		combine the prototype of Time and Range for the static view, add functionality and interaction
	day & night toggle	https://codemyui.com/pure-css-ampm-toggle-switch/
		Modify the earth button
Inner donutchart		https://codepen.io/meditatingdragon/pen/QWjNYaX
		inspired by the computation of innerRadius(), outerRadius(), startAngle(), and endAngle() for the static view, add functionality and interaction
Pie chart	static view	https://d3-graph-gallery.com/graph/pie_basic.html
		adapt the prototype for the static view, add functionality and interaction
	typer effect	http://jsfiddle.net/QbysN/3/
		typer effect
Choropleth map	geographic view	https://codesandbox.io/s/github/UBC-InfoVis/2021-436V-examples/tree/master/d3-choropleth-map?file=/css/style.css:70-104
		get the idea of how to use geoMercator() and geoPath() to read GeoJSON data
	Zoom in/out	https://bl.ocks.org/iamkevinv/0a24e9126cd2fa6b283c6f2d774b69a2
		inspired by the clicking behavior to zoom in/out, adapt it into scrolling behavior
	Choropleth data	https://www.sfu.ca/~lyn/data/Urban/VancouverAreaSize.json
		adapt geographical data
Line chart		https://bl.ocks.org/LemoNode/a9dc1a454fdc80ff2a738a9990935e9d
		Move along the line to see the exact value
Bar chart		(no citation adapted)

Section 6: Reflection

Safety is always at the top of neighborhoods' concerns. Our initial goals were to display the **distribution** of the crime cases across the neighborhoods and show the **trends** over selectable year ranges. We followed these goals throughout our project.

During our implementation of the first submission, we realized that using icons to represent all the crimes delivers only symbolic meanings. So in the second milestone, we replaced the icon filters with the pie chart groups to make each slice clickable in the pie chart. Later, we found that the unified length of the donut chart segments limited the functionality to a simple filter. So we have the length of the segment subjective to the value of filtered data. Besides, we want to display a **part-to-whole relationship** for crime types in our innovative view by having the inner donut chart embraced by the outer donut chart.

In order to separate the tasks of clicking to select neighborhoods and clicking to reveal crime case points within a neighborhood, we changed our zoom in/out from clicking to scrolling. During the implementation of the second delivery, we added an inner layer of donut chart for sub-crime types as well and made it thinner than the outer one to show the affiliation. To address the confusion of the mismatched color of the longest arc between the outer donut chart (corresponding to 4 general crime types) and the original bar chart (corresponding to 9 sub-crime types), we added a second bar chart for the general crime types as well. In addition, we replaced the linear scale with log scale for the choropleth map to better spread out the saturated color. The final layout was different from our original design due to the purpose of making maximum use of the white space and to balance the **information density.** The technical parts are worthy of highlighting the zoom-in and zoom-out effect of the choropleth map, animated line chart, interactive legend, bar chart, and double-ring donut chart. Some designs are beyond our original scope, for example, substituting the icon filters with the pie charts, having a double-ring donut chart, adding animation to the line chart, and making legend interactive. To make the details clearer, such as the dots in the choropleth map to be seen clearer, we shrunk the size of the dataset from 2015 - 2021 to 2017 - 2021, also reserved one color for the default zoom-in view (no crime type was selected) and two colors to distinguish the day and night mode. So far, the technical parts are sufficient and realistic to fulfill our original design goals. In terms of future work, we would probably consider making further good use of the inner donut chart and the pie chart, for example, add bidirectionality to one of them with either a line chart or a bar chart. Moreover, after we preprocessed our data, we found that the number of "Break and Enter with (Fatality)" was extremely small compared to our dataset. Therefore, if we could do it again, we would probably neglect this crime type to avoid handling some extreme edge cases.

Section 7: Work breakdown, schedule / progress
PS: We highlight the extra work with yellow highlight

Task & Description		EST. comp. date	Actual comp. date	EST. time	Actual time	asgmt.
Write up documentation	M1 & M2 & M3	Mar 11 - April 12	Mar 11 - April 12	8 hours for everyone	8 hours for everyone	BW, MS, KZ
Set up project structure	Init project hierarchy and components' scripts Init git branch	Mar 13	Mar 11	0.5 hours for everyone	0.5 hours for everyone	BW, MS, KZ
Data Preprocessing	Adjusting dataset through the implementation	Mar 13	April 12	2 hours	5 hours	BW

ReadMe	add readme to the repo & modify along the implementation	Mar 13	April 12	1 hour	3 hour	KZ & BW & MS
Implement day & night toggle	Create initial static view of the day and night toggle, together with the text label	Mar 14	Mar 19	6.5 hours	6 hours	KZ
	Filter data by day time and night time day time: (by default) 6 am - 6 pm night time: 6 pm - 6 am (next day)	Mar 15	Mar 19	6.5 hours	7 hours	BW
Implement year bar slider	Create initial static view of "2015 - 2021 vertical scrolling bar"	Mar 16	Mar 18	6 hours	3 hours	BW
	Create initial static view of "all year" button	Mar 17	Mar 18	4.5 hours	2 hours	BW
	Add interaction to the bar and button i.e. when mouse click on, select the all years / a specific year	Mar 18	Mar 18	8 hours	6 hours	BW
Implement donut chart	Create initial static view of donut chart	Mar 18	Mar 22	2 hours	4 hours	BW
	Add interaction to the donut chart: select an aggregated crime type and pass out	Mar 18	Mar 22	4 hours	4 hours	BW
	Add typer effect to the name of the crime	Mar 18	Mar 22	3 hours	3 hours	BW
	Have the donut chart data listen to the year bar	Apr 1	Apr 1	1 hour	1 hours	BW
Implement icon filter (each icon represents a type of crime)	Create initial static view of the icon filter (has been removed)	Mar 19		4.5 hours	4 hours	BW
	Add interaction to the icons: when mouse click on, select the crime type (has been removed)	Mar 19		6 hours	5 hours	BW
Implement pie chart	Create initial static view of the pie charts	Mar 29	Mar 29	3 hours	3 hours	BW

	Add interaction to the pie chart: selecting a pie, selecting a sub-crime type	Mar 29	Mar 29	3 hours	3 hours	BW
	Have the pie chart data listen to the year bar	Apr 1	Apr 1	1 hour	2 hours	BW
	Add typer effect for the sub-crime title	Apr 10	Apr 10	2 hours	3 hours	BW
Implement choropleth of zoom-out view	Create an initial static view with legend	Mar 25	Mar 20	8 hours	6 hours	MS
	Have the data items listen to the day & night toggle	Mar 25	Mar 25	4 hours	2 hours	MS
	Have the data items listen to the year bar (all year and a specific year) By default: all year	Mar 25	Mar 29	4 hours	2 hours	MS
	Link color hue of each region to the selected crime type	Mar 25	Mar 24	6 hours	2 hours	MS
	Link saturation of each region to the number of cases of a specific crime type	Mar 25	Mar 20	6 hours	3 housr	MS
	Add interaction: - when mouse hover on, show the tooltip of crime type introduction - allow user to select upto 3 neighborhoods and dispatch neighborhood list to other charts	Mar 25	Mar 25	6 hours	8 hours	MS
Implement choropleth of zoom-in view	Create an initial static view of the zoom-in view, show crime cases on a zoomed in neighborhood	Mar 25	Mar 24	8 hours	10 hours	MS
	Link the view changes to the mouse event - click to zoom into a neighborhood (changed)	Mar 25	Mar 25	4 hours	12 hours	MS

	- scroll up/down to a specific neighborhood - prevent user click on region on zoom in - fix choropleth position upon zoom in					
	Have the cases related to this neighborhood listen to the year bar (a specific year) By default: 2021	Mar 25	Mar 29	5 hours	2 hours	MS
	Have the cases related to selected neighborhood listen to the crime type filter	Mar 25	Mar 26	4 hours	5 hours	MS
Merge choropleth map into composite map	positioning choropleth to the center of donut chart, data linkage mering	Mar 26	Mar 26	2 hour	1 hour	MS, BW, KZ
	have background color listen to crime type as well as the year bar	April 6	April 9	5 hours	5 hours	KZ
Implement line chart	Create an initial static view of the line chart	Mar 26	Mar 26	4.5 hours	5 hours	KZ
	Have x-axis listen to the the year bar (all year / a specific year), by default all year	Mar 26	Mar.29	6 hours	6 hours	KZ
	Have data items listen to the filtered crime type By default: none	Mar 26	Mar.29	6 hours	6 hours	KZ
	Have data items listen to the selected region(s) By default: all the regions	April 3	April 3	6.5 hours	6.5 hours	KZ
	Add tooltips when hovering on the chart	April 8	April 11	4 hours	4 hours	KZ
Implement bar chart	Create an initial static view of the bar chart	Mar 26	Mar 26	4.5 hours	4.5 hours	KZ
	Have data listen to year range	Mar 26	Mar 26	4 hours	4 hours	KZ
	Have data listen to the selected region	April 3	April.5	4 hours	4 hours	KZ
Implement	Create an initial static	April 4	April 4	4 hours	4 hours	BW

inner donut chart	view of the inner donut chart					
	Make the inner donut chart interactive	April 4	April 4	4 hours	4 hours	BW
Add legend	Add legend / tips to the webpage	April 5	April 4	4 hours	3 hours	BW
	make text label interactive with the parameters (year, crime, neighborhood, day&night) in the chart	April 5	April 4	4 hours	5 hours	BW / MS / KZ
Wrap up	Polish UI and harmonize colors	April 5	April 8	4 hours	5 hours	BW / MS / KZ
	Fix bugs	April 9	April 11	8 hours	8 hours	KZ
	Refactor and clean code	April 5	April 12	4 hours	6 hours	BW / MS / KZ
Total hours	BW	83.5 hours				
	MS	81.5 hours				
	KZ	82.5 hours				