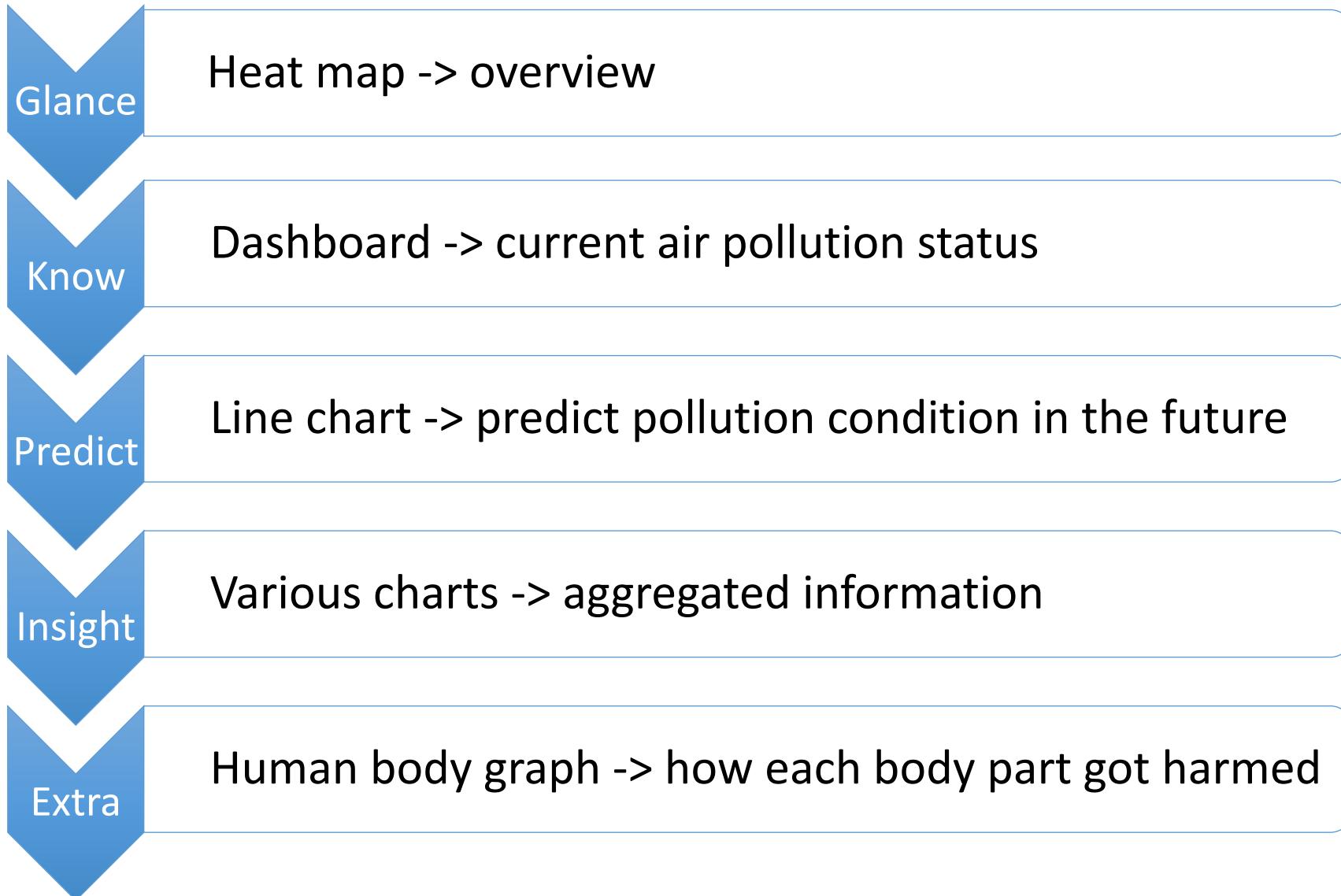


# California Air Pollution

Team lorelei

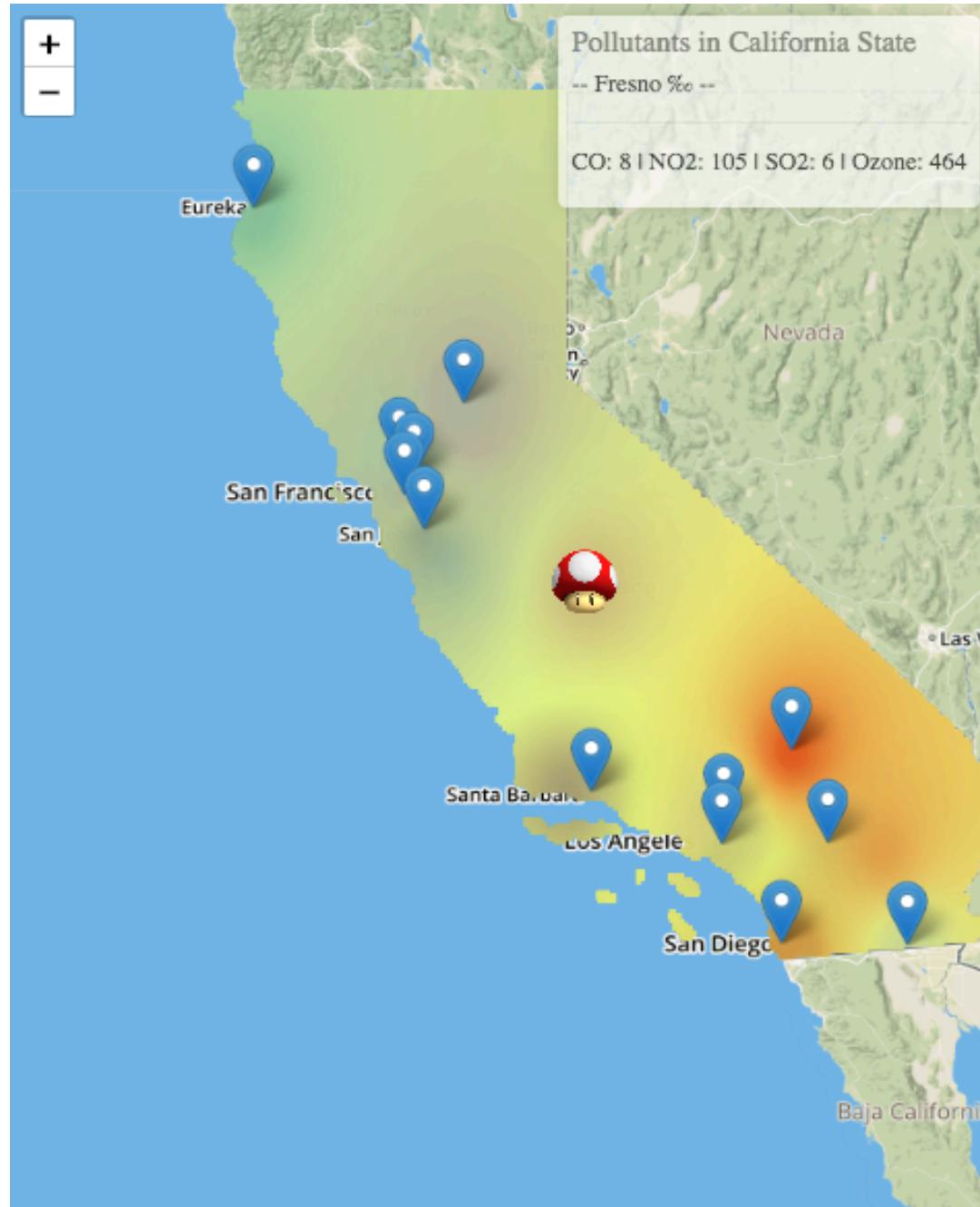


# *5 – level User Perception*



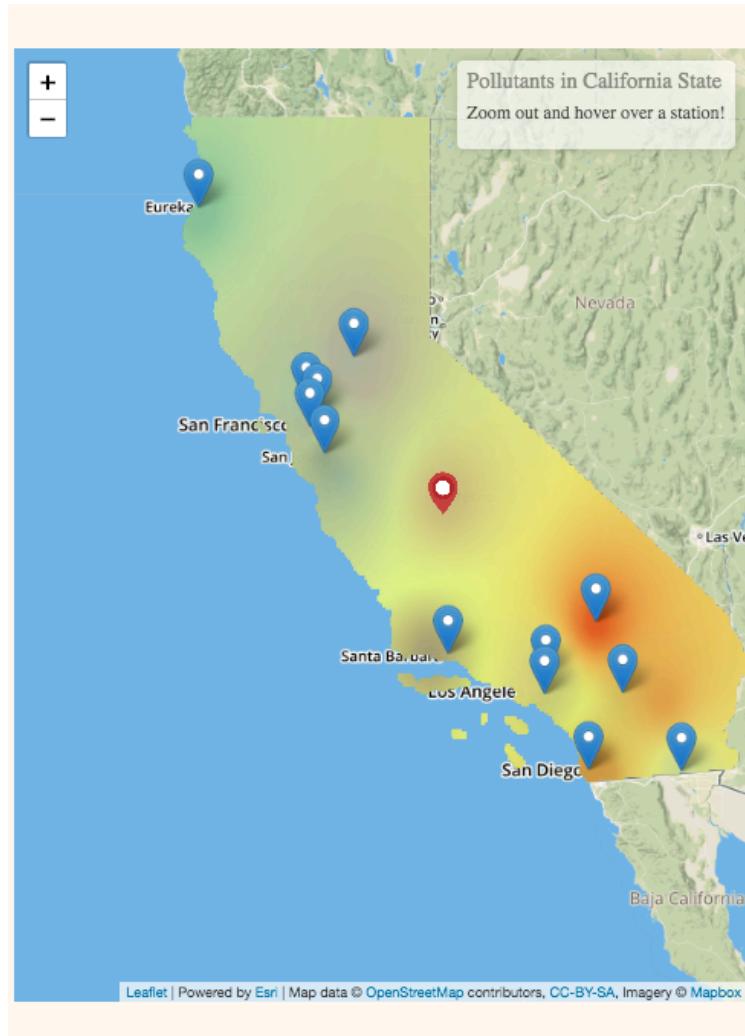
# *Glance*

An overview of  
California pollution  
condition via heat map



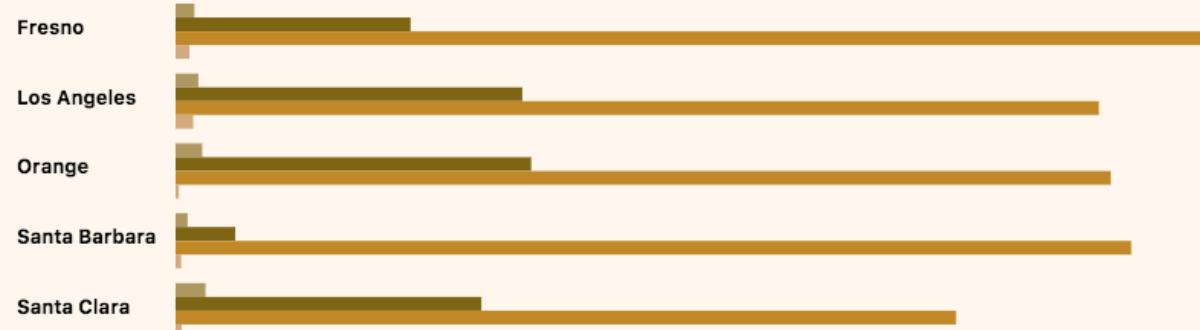
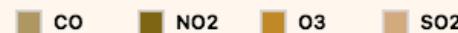
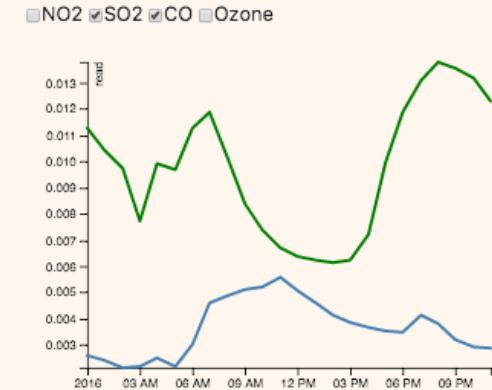
# Know

Know the current pollution status via dashboard



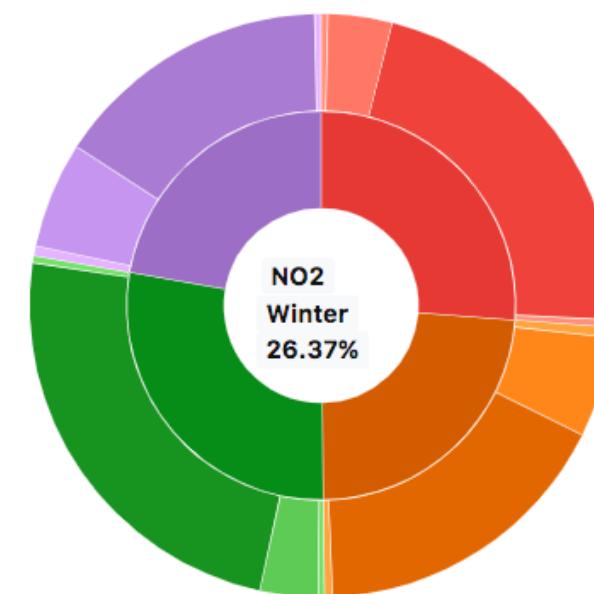
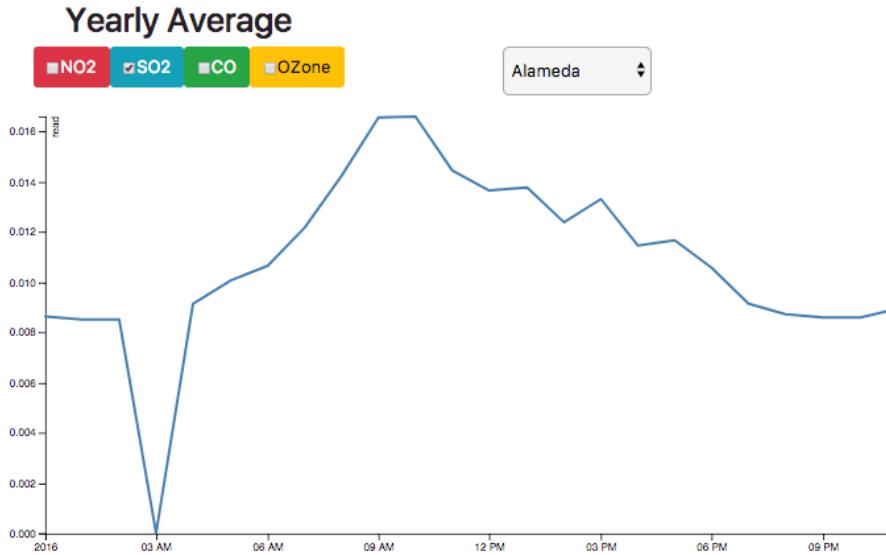
# Predict

Predict pollution trend via line chart



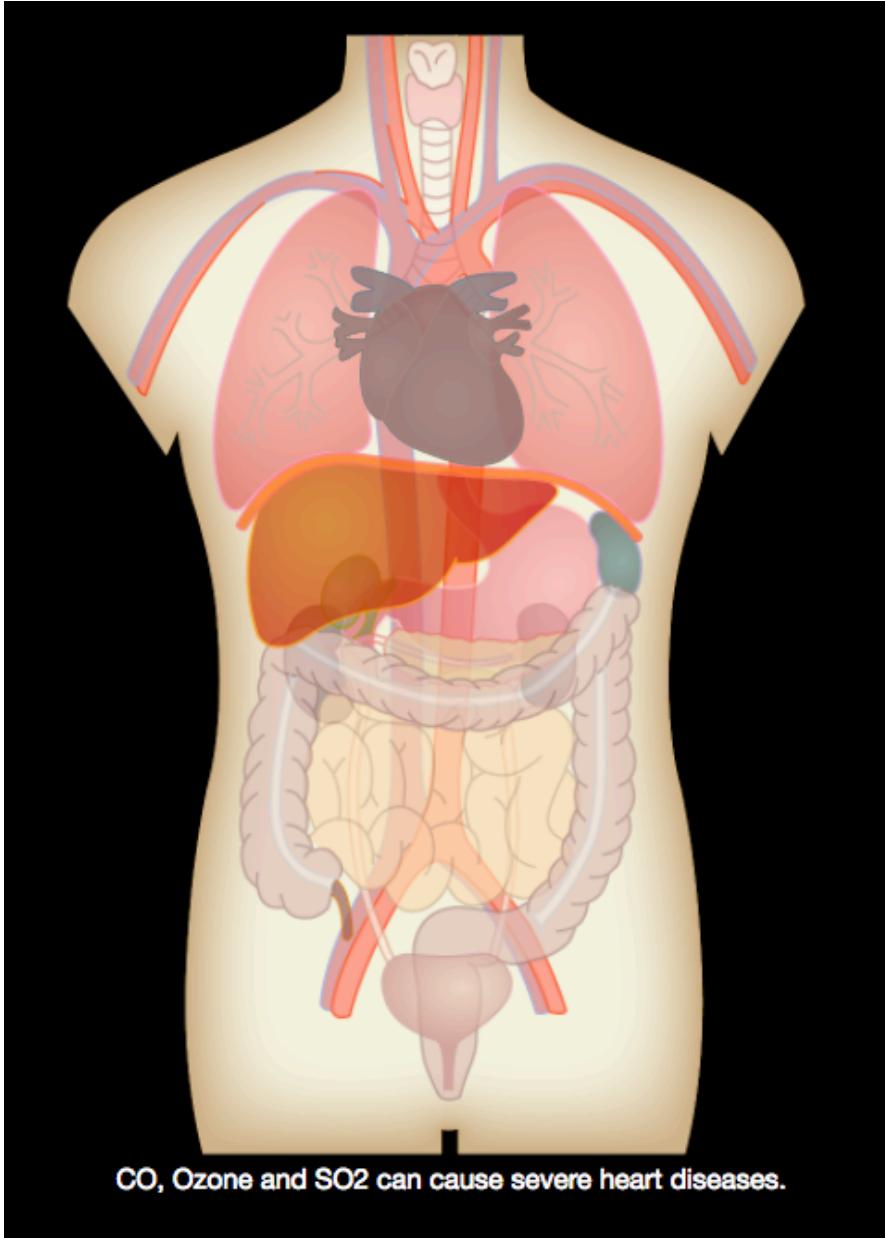
# *Insight*

Aggregated data  
revealing general  
patterns via various  
kinds of visualizations



## *Extra*

Interactive  
information on how  
pollutants affect  
our body parts



# Data Source

4 kinds of air pollutants  
14 major stations in CA  
Hourly data of every day in 2016

Processed  
Over 135 GB of data  
Over 10 million lines of data

## Hourly Data

### Criteria Gases

Year	Ozone (44201)	SO2 (42401)	CO (42101)	NO2 (42602)
2017	<a href="#">hourly_44201_2017.zip</a> 1,249,095 Rows 9,197 KB As of 2017-05-26	<a href="#">hourly_42401_2017.zip</a> 650,606 Rows 4,356 KB As of 2017-05-26	<a href="#">hourly_42101_2017.zip</a> 326,343 Rows 2,451 KB As of 2017-05-26	<a href="#">hourly_42602_2017.zip</a> 494,577 Rows 3,896 KB As of 2017-05-26
2016	<a href="#">hourly_44201_2016.zip</a> 9,124,268 Rows 67,830 KB As of 2017-05-26	<a href="#">hourly_42401_2016.zip</a> 3,709,623 Rows 24,299 KB As of 2017-05-26	<a href="#">hourly_42101_2016.zip</a> 2,427,085 Rows 17,375 KB As of 2017-05-26	<a href="#">hourly_42602_2016.zip</a> 3,596,828 Rows 27,739 KB As of 2017-05-26
2015	<a href="#">hourly_44201_2015.zip</a> 9,043,482 Rows 67,218 KB As of 2017-05-26	<a href="#">hourly_42401_2015.zip</a> 3,754,496 Rows 24,734 KB As of 2017-05-26	<a href="#">hourly_42101_2015.zip</a> 2,451,998 Rows 17,435 KB As of 2017-05-26	<a href="#">hourly_42602_2015.zip</a> 3,556,491 Rows 27,194 KB As of 2017-05-26

# Data Processing

- Convert raw readings to pollution indexes
  - Calculated based on National Ambient Air Quality Standard
- Summarize data based on different dimensions
  - Seasonality, trend, day of week, hour, and location

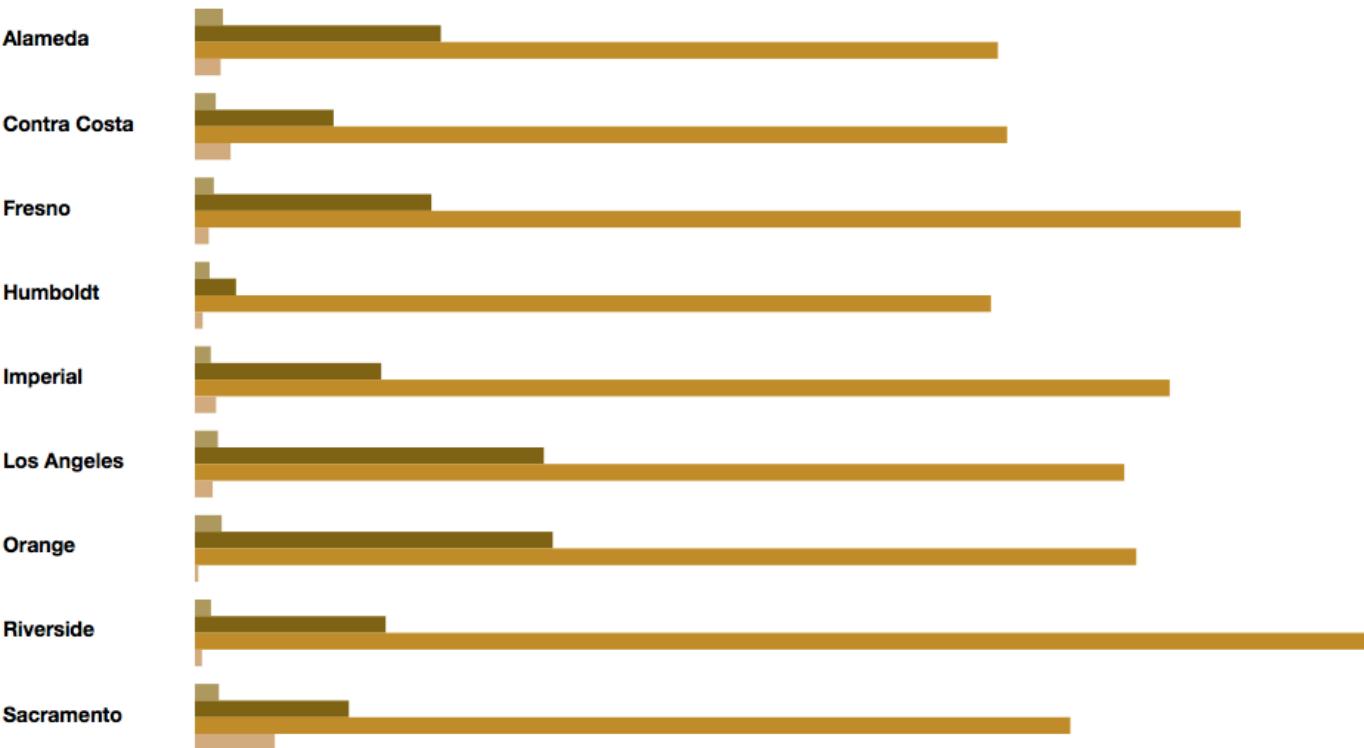
Pollutant [links to historical tables of NAAQS reviews]	Primary/ Secondary	Averaging Time	Level
<a href="#">Carbon Monoxide (CO)</a>	primary	8 hours	9 ppm
		1 hour	35 ppm
<a href="#">Nitrogen Dioxide (NO<sub>2</sub>)</a>	primary	1 hour	100 ppb
	primary and secondary	1 year	53 ppb <sup>(2)</sup>
<a href="#">Ozone (O<sub>3</sub>)</a>	primary and secondary	8 hours	0.070 ppm <sup>(3)</sup>
<a href="#">Sulfur Dioxide (SO<sub>2</sub>)</a>	primary	1 hour	75 ppb <sup>(4)</sup>
	secondary	3 hours	0.5 ppm

# Bar Chart

- Click on the squares to add/remove pollutant(s):

Compare pollutions between  
different counties

co NO<sub>2</sub> O<sub>3</sub> SO<sub>2</sub>



# Bar Chart (Continued)

Allow users to add/remove pollutant(s)

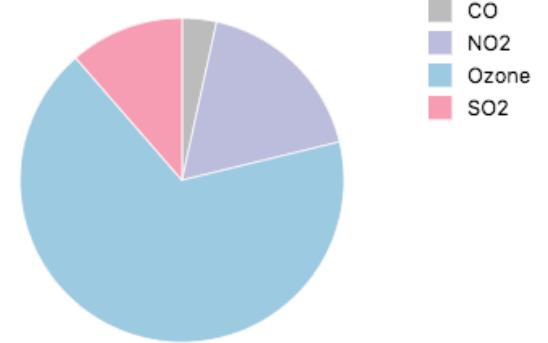
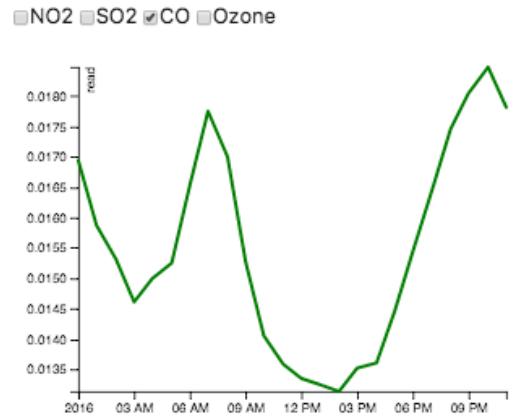
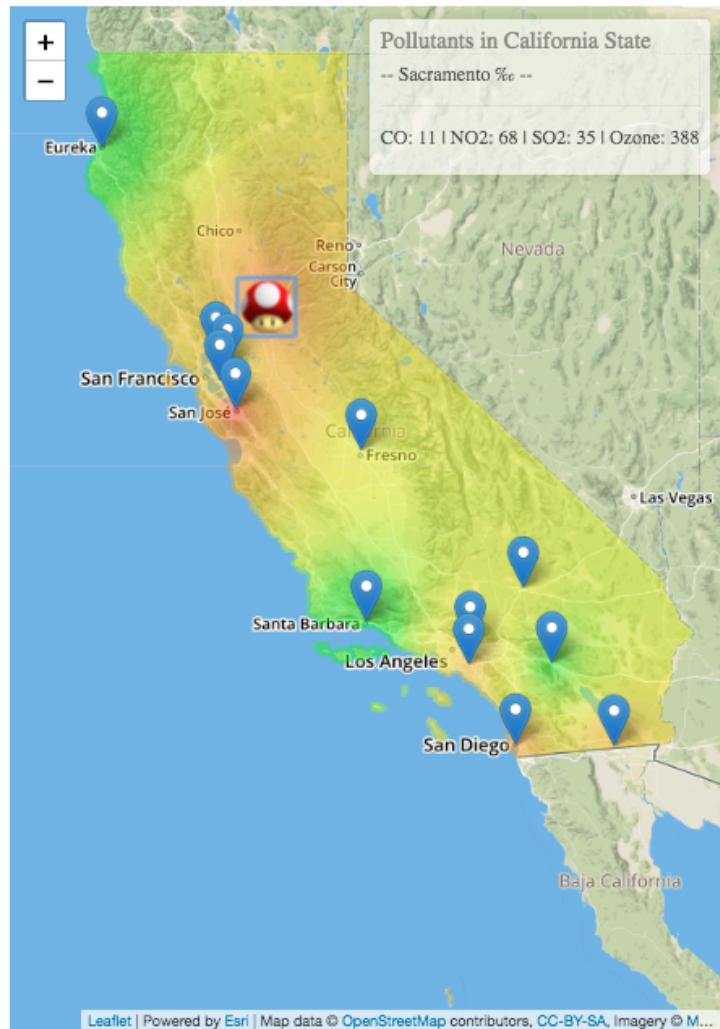
Scales will also change dynamically based on the pollutant(s) selected

– Click on the squares to add/remove pollutant(s):

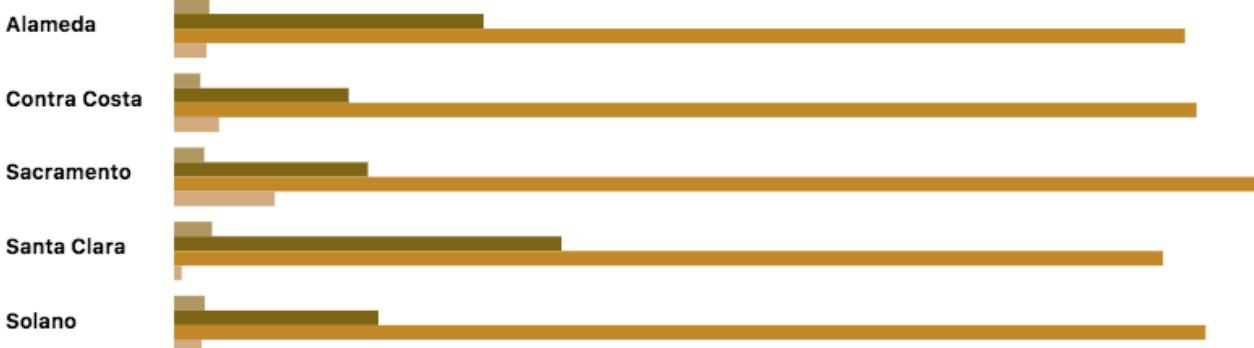
CO     NO<sub>2</sub>     O<sub>3</sub>     SO<sub>2</sub>



CO: Year	CO: Spring	CO: Summer	CO: Autumn	CO: Winter	NO2: Year	NO2: Spring	NO2: Summer	NO2: Autumn	NO2: Winter
SO2:Year	SO2:Spring	SO2:Summer	SO2:Autumn	SO2:Winter	Ozone:Year	Ozone:Spring	Ozone:Summer	Ozone:Autumn	Ozone:Winter



■ CO ■ NO2 ■ O3 ■ SO2



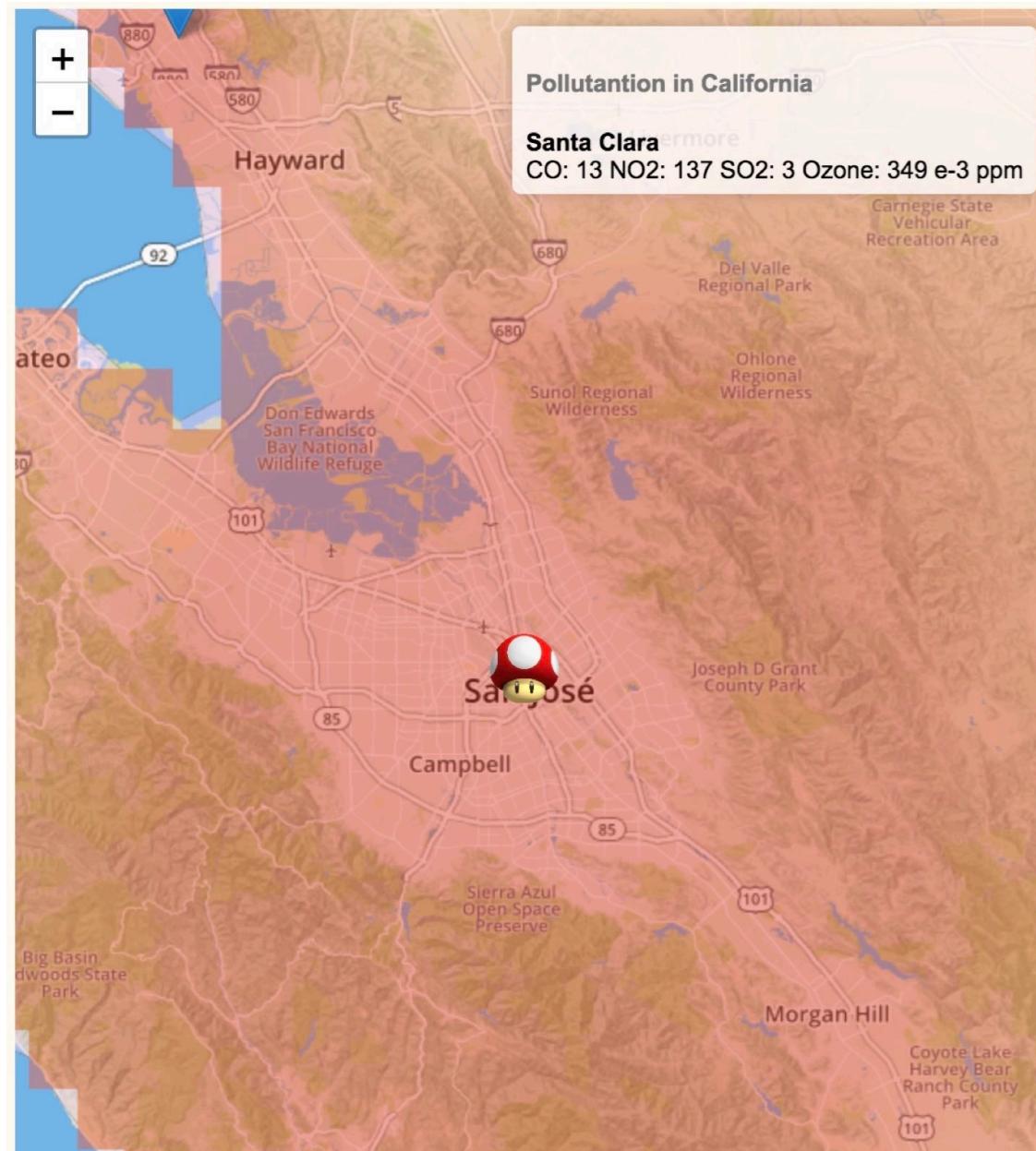


ArcGIS®



ArcGIS Online

Leaflet



proj\_f - ArcMap

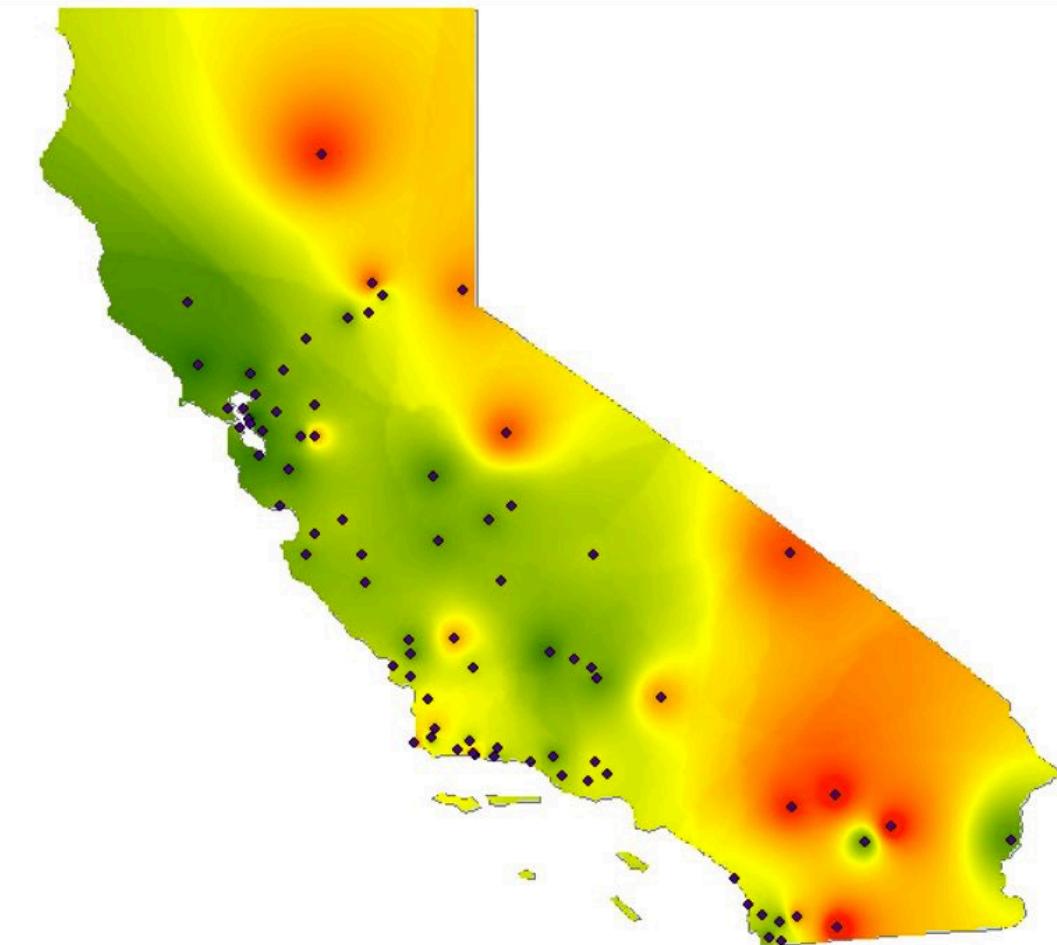
File Edit View Bookmarks Insert Selection Geoprocessing Customize Windows Help



## Table Of Contents

Layers

- ozone
- ozone  
Value  
High : 0.666198  
Low : 0.256784
- cb\_2016\_us\_state\_20m



## Create Features

<Search>

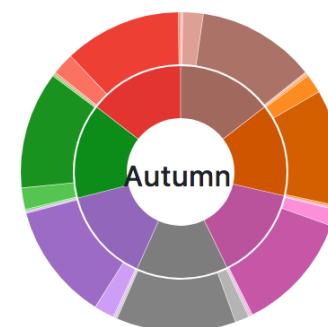
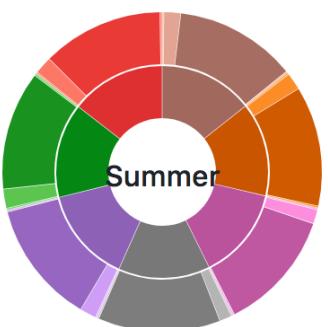
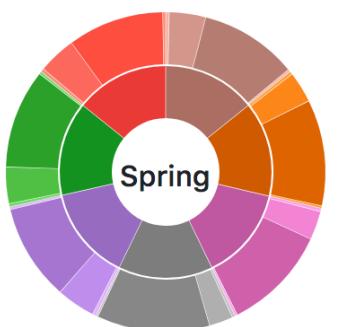
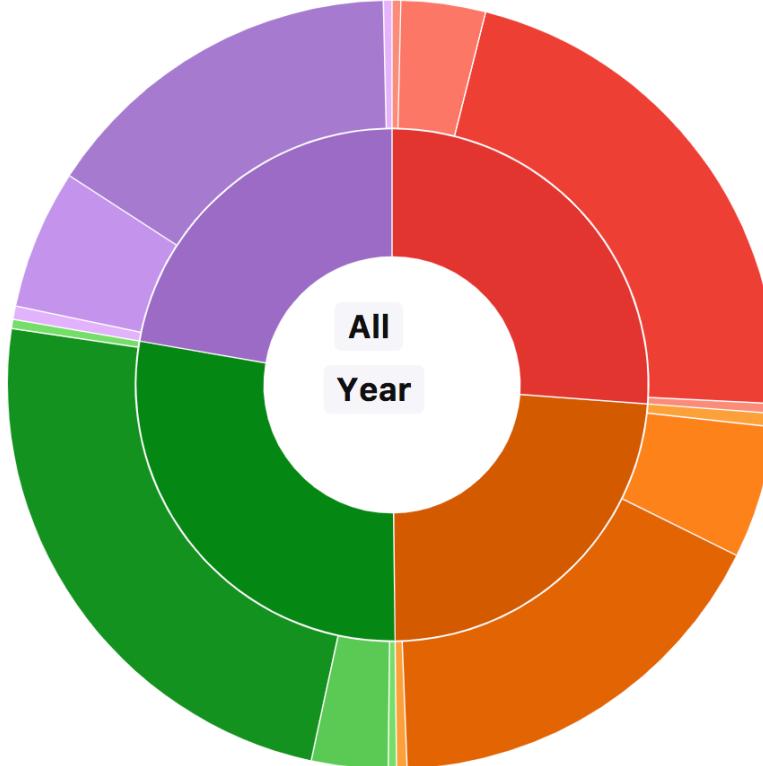
There are no templates to show.

## Construction Tools

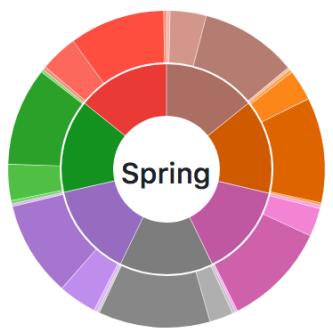
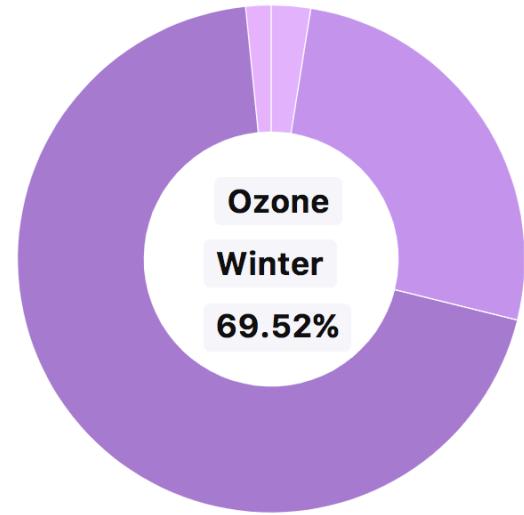
Select a template.

-119.353 39.302 Decimal Degrees

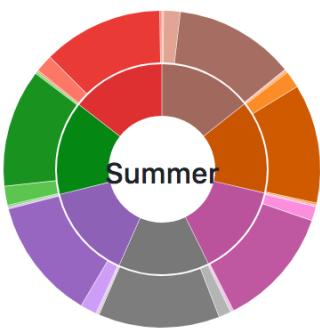
## Sunburst Diagram



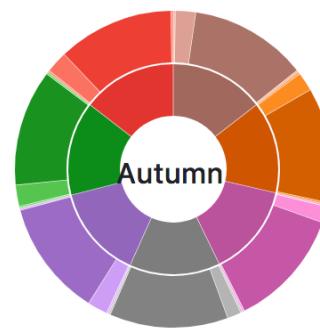
# Sunburst Diagram



Mon: 14.46%



Mon: 14.27%

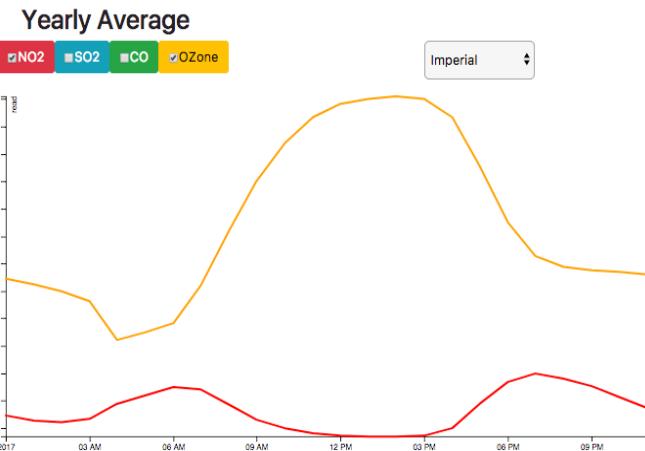
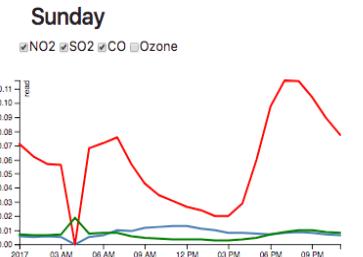
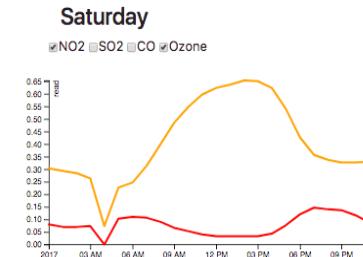
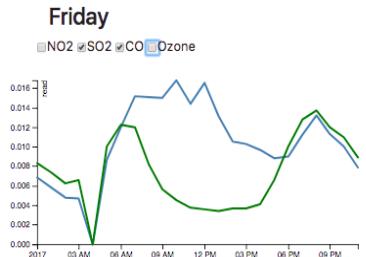
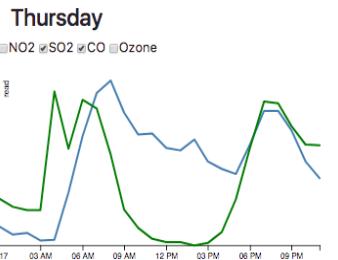
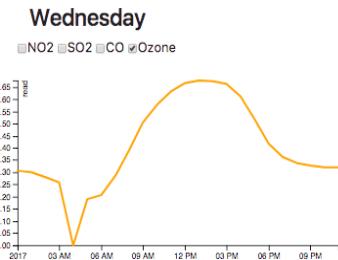
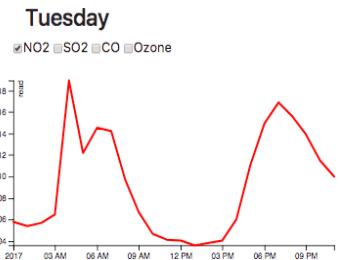
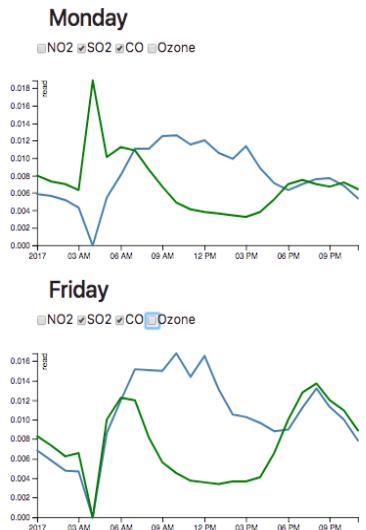


Mon: 14.1%



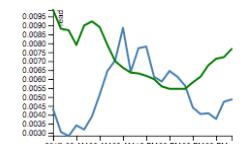
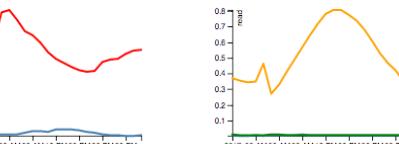
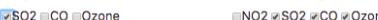
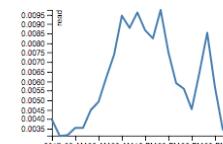
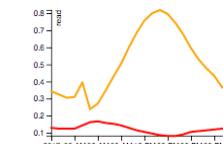
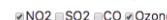
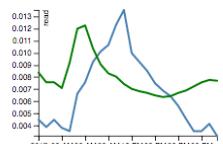
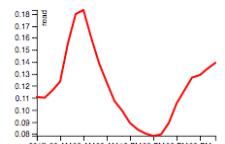
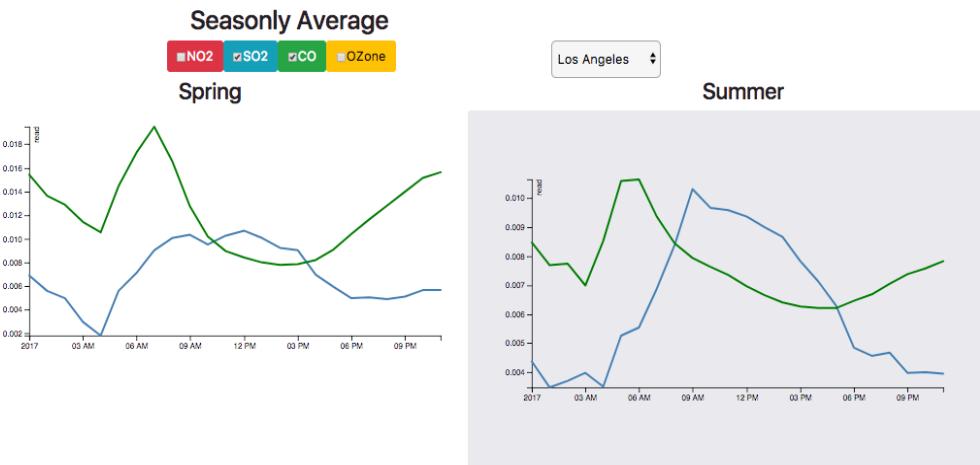
Mon: 14.2%

# Yearly Average Patterns

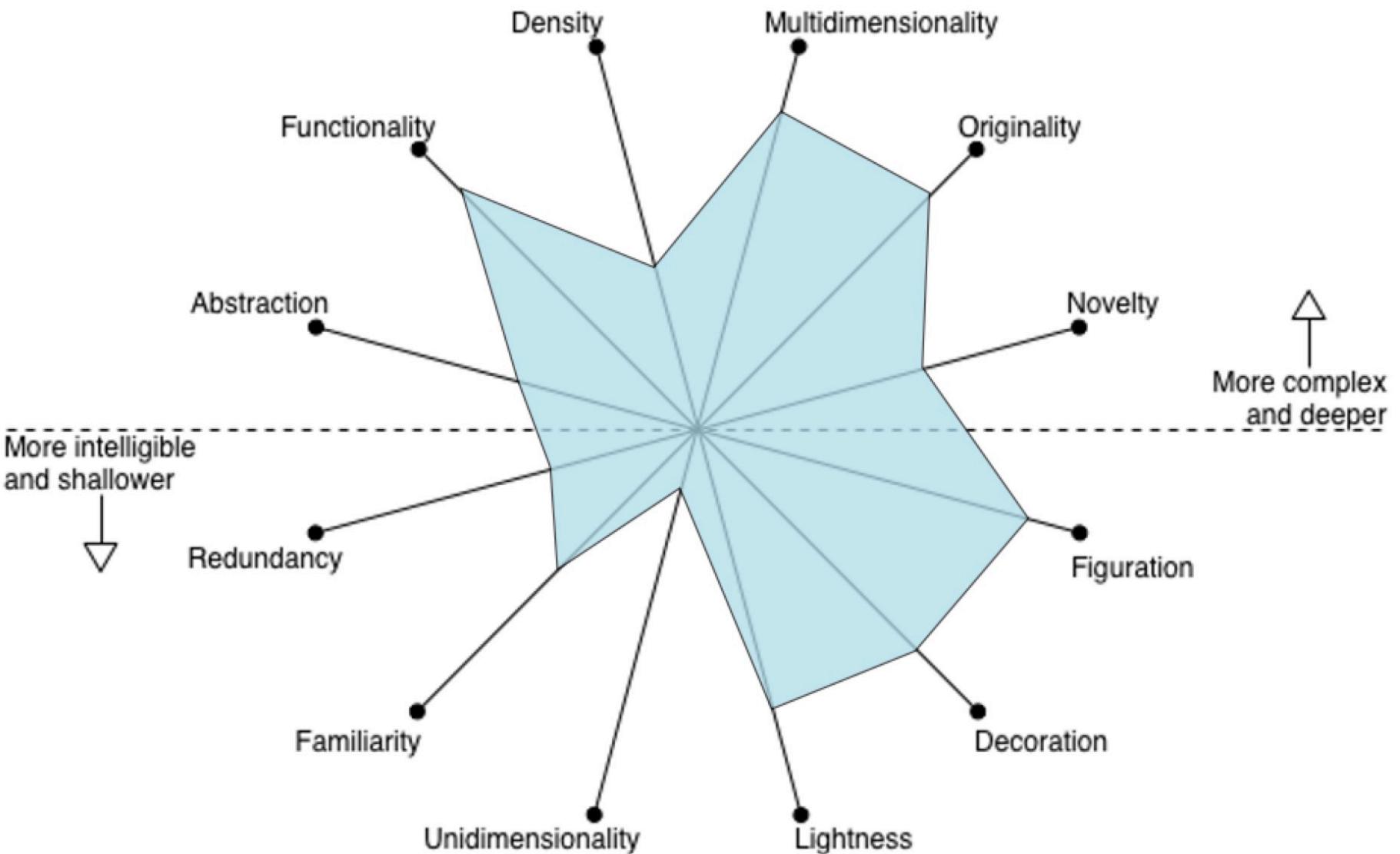


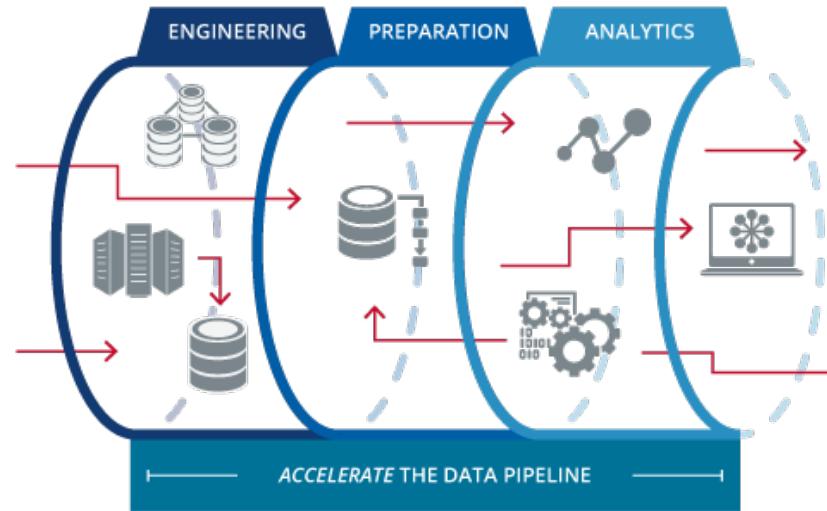
Imperial

# *Seasonally Average Patterns*



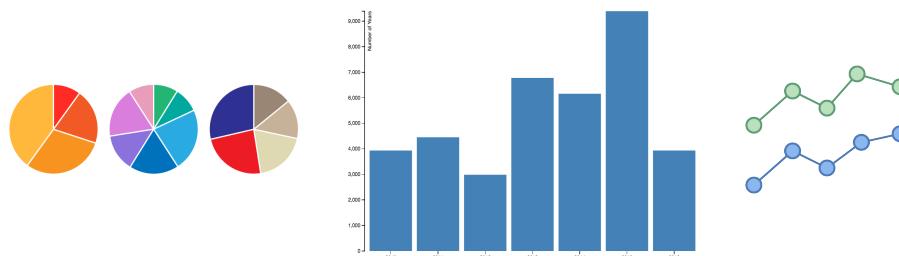
## *Visualization wheel*





Real-time data pipeline

## Improvements



Making data more comparable



More visualization formats

# Thank you

See <http://scf.usc.edu/~fanpan/project2/index.html> for details!

