

# Animating TTS and TTC data using Kepler.gl and Deck.gl

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# Overview

1. Introduction
2. Kepler.gl & Deck.gl
3. Layers
4. Proof of concepts
5. Next steps
6. Website Layout

# Introduction

Integrating Projects

Accessibility

Consistent Design

Flexible Web-based tool

Data literacy / Fluency

Kepler.gl and Deck.gl

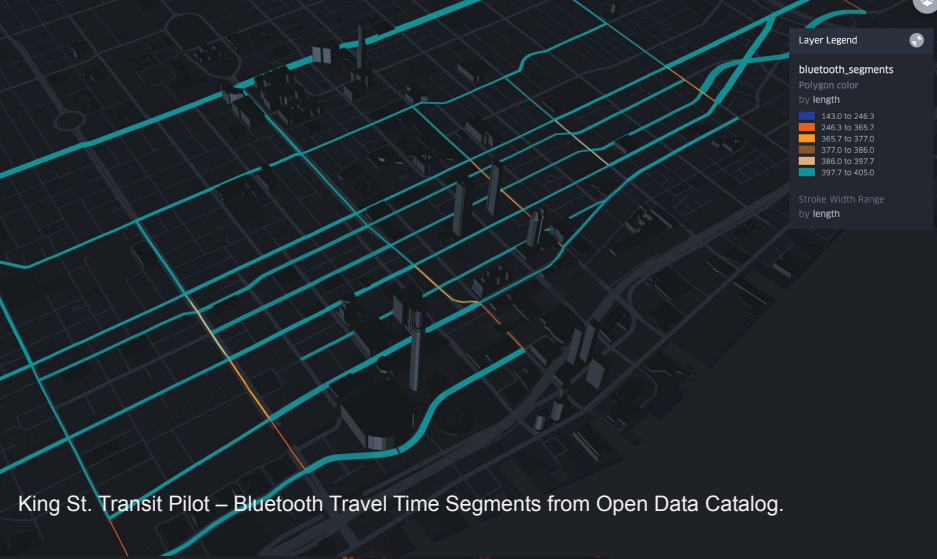
# Kepler.gl + Deck.gl

Open source tools part of the Vis.gl suite by Uber.

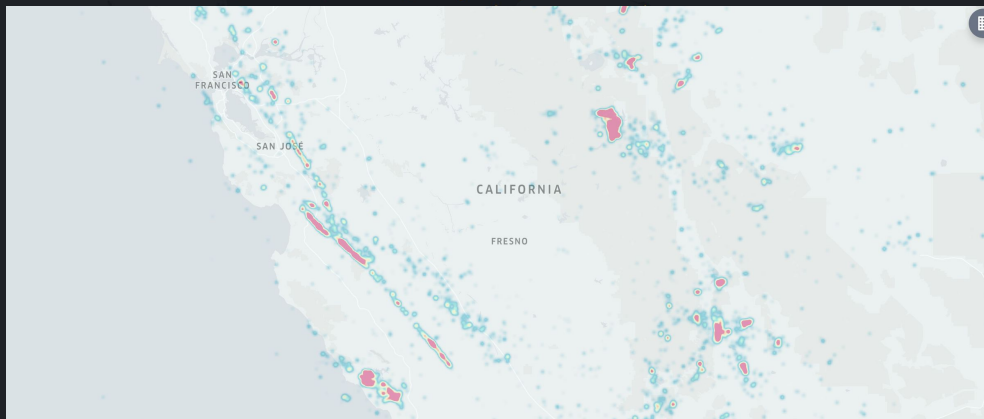
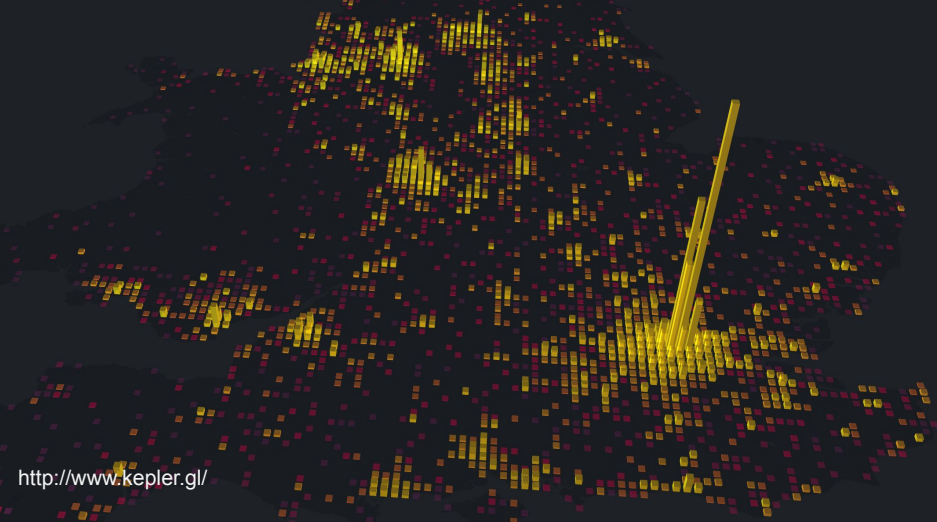
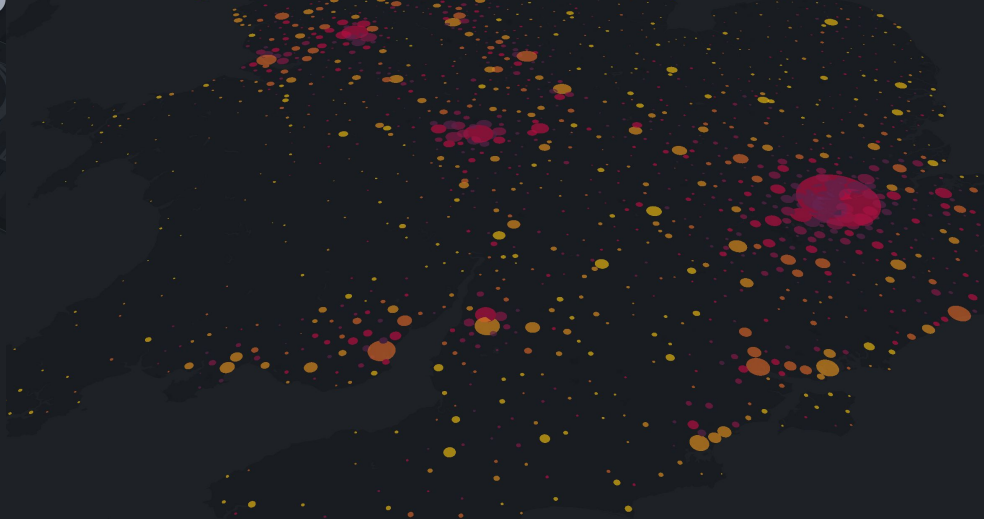
<b>Kepler.gl</b>	<b>Deck.gl</b>
Standalone Ver. (no coding required)	Framework. Easier to customize
Node.js or html export	Client-side or Node.js
Independent layers	Customizable layers (data handling)
Timeline	No timeline (custom Inputs)
Built for data exploration	Built for visualizations
CSV, JSON, GEOJSON	CSV, JSON, GEOJSON (+javascript arrays)

# Kepler.gl Layers

Type	Required Data Format	Optional Attributes
<b>Point</b>	Lat and Lng coordinates	Altitude (numeric), Color (numeric), Radius (numeric), Label (any),
<b>Arc</b>	2 Lat and Lng coordinates	Color (numeric) Stroke (numeric)
<b>Line</b>	2 Lat and Lng coordinates	Color (numeric) Stroke (numeric)
<b>Grid</b>	Lat and Lng coordinates	Color (numeric) Radius (fixed) Height (numeric)
<b>Hexabin</b>	Lat and Lng coordinates	Color (numeric) Radius (fixed) Height (numeric)
<b>Polygon</b>	Geojson	Color (numeric)
<b>Cluster</b>	Lat and Lng coordinates	Color (numeric), Radius (fixed, cluster size and radius range)
<b>Icon</b>	Lat and Lng coordinates, Icon	Color (numeric), Label (any)
<b>Heatmap</b>	Lat and Lng coordinates	Color (numeric), Weight( by density or numeric).
<b>H3</b>	Hex_id(?)	Color, Coverage, Height.



King St. Transit Pilot – Bluetooth Travel Time Segments from Open Data Catalog.



# Deck.gl

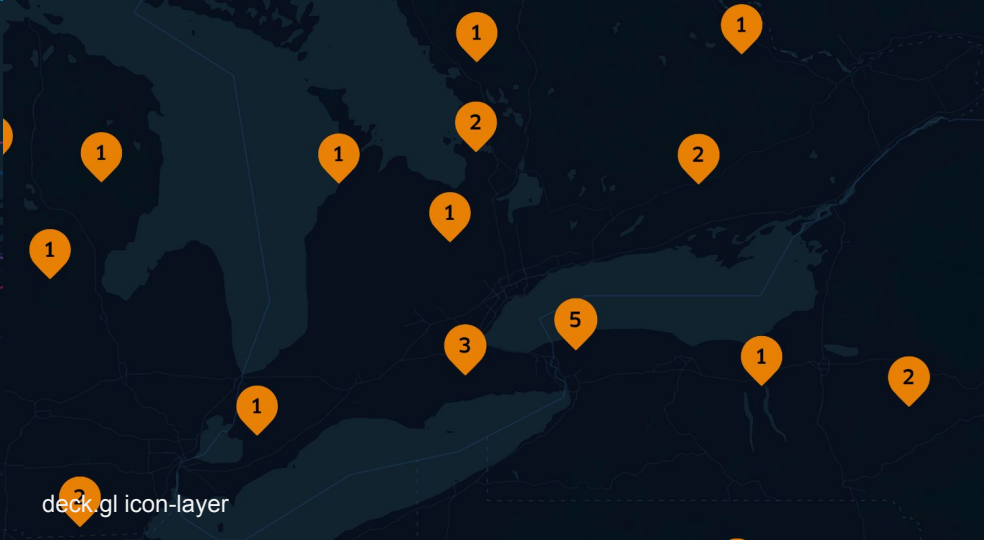
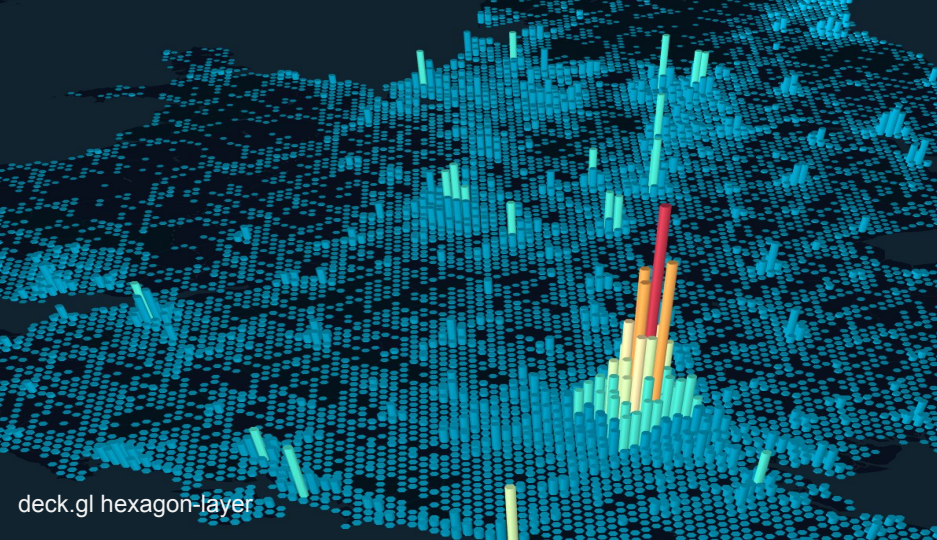
<b>Core Layers</b>
ScatterplotLayer
ArcLayer
LineLayer
GridCellLayer
PointCloudLayer
PolygonLayer
SolidPolygonLayer
IconLayer
TextLayer
ColumnLayer
GeoJsonLayer
PathLayer
BitmapLayer

<b>Aggregation Layers</b>
ContourLayer
GridLayer
GPUGridLayer
CPUGridLayer
HexagonLayer
ScreenGridLayer

<b>Mesh Layers</b>
SimpleMeshLayer
ScenegraphLayer

<b>Geo Layers</b>
GreatCircleLayer
H3ClusterLayer
H3HexagonLayer
S2Layer
TileLayer
TripsLayer





# TTS and TTC Data

# TTC Data

TTC Incidents Apr 2019

Report Date	Route	Time	Day	Location	Der	Incident	Delay	Gap	Direction	Vehicle
01-Apr-19	512	4:26:00 AM	Monday	Roncesvalles Yard.	1	Mechanical	10	20	E/B	4460
01-Apr-19	501	4:27:00 AM	Monday	Queen St. E and Woodfield Ave.	1	Mechanical	17	17	E/B	4189
01-Apr-19	501	4:37:00 AM	Monday	Queen St. E at Greenwood Ave.	1	Mechanical	5	10	W/B	4012
01-Apr-19	501	4:46:00 AM	Monday	Queen St E at Woodfield Ave	1	Mechanical	6	4	E/B	4039
01-Apr-19	510	5:00:00 AM	Monday	King and Spadina	1	Mechanical	11		N/B	4465
01-Apr-19	501	5:25:00 AM	Monday	Queen St. E at Greenwood Ave.	7	Held By	1	2	W/B	4121
01-Apr-19	501	5:31:00 AM	Monday	Queen St. E at Greenwood Ave.	1	Mechanical	4	9	W/B	4117
01-Apr-19	506	5:41:00 AM	Monday	Coxwell Ave. and Lower Gerrard St.	1	Mechanical	6	16	E/B	4141
01-Apr-19	501	5:41:00 AM	Monday	Queen St. E at Greenwood Ave.	1	Mechanical	5	10	W/B	4114
01-Apr-19	504	5:44:00 AM	Monday	Leslie Barns	9	Late Leaving Garage	2	6	W/B	4459

# Excel Geocoding Tool

<http://excelgeocodingtool.com>

## Settings

**Geocoder to use:**   
Only Bing Available

**Bing Maps Key:**   
[Click here to learn how to get a Bing Maps key](#)  
[Click here for more information on the Bing Maps API](#)

**Use Proxy?**

**Proxy IP address:**   
Use a format of: IP:Port (eg: 207.211.86.196:80) Note: If your proxy requires you to login, use your web browser.

**Debug Mode:**

Location	Latitude	Longitude
NECR	43.648689	-79.385437
Eglinton	43.648689	-79.385437
Finch	43.7656	-79.4814
Don Mills Rd/Eglinton Ave E	43.72369	-79.3282
Humberwood	43.72372	-79.62011
Kipling stn	43.648689	-79.385437
Royal York and Eglitnon	43.68228	-79.52659
FSTN	43.648689	-79.385437
Kipling Station	43.648689	-79.385437
DONS	43.66907	-79.47203
WEBR	43.648689	-79.385437
Browns Line and Coules Court	43.60832	-79.54805
Exhibition Loop	43.648689	-79.385437
QQYU	43.648689	-79.385437
Weston and Oak	43.70776	-79.53359
Keele Station	43.655247	-79.4598923
Dufferin and St. Clair	43.67788	-79.44304
Dufferin and St.Clair West	43.67788	-79.44304
Eglinton Station	43.705227	-79.3986511
Queens Quay	43.63978	-79.38168
LAWRENCE AVE. AT YONGE ST.	43.72511	-79.40221

# Poc 1: Kepler.gl

Visualizing TTC Incidents Jan 2019 in Kepler.gl

# TTS Data

Toronto Zones (Geojson)  
Am Transit Time Matrix (CSV)

# PoC 2: Deck.gl

- Custom Tooltip
- Embedding in a webpage
- Using multiple data sources
- Transferring data to other framework
- Using inputs to control the visualization

# Tech Stack

- Html + CSS
- Javascript
  - deck.gl
  - mapbox-gl
  - d3js
- CSVs, JSONs, GeoJsons

```
<html>
<head>
  <title>Minimal Setup</title>
  <script src="https://unpkg.com/deck.gl@^7.0.0/dist.min.js"></script>
  <script src="https://d3js.org/d3.v5.min.js"></script>
  <script
src="https://api.tiles.mapbox.com/mapbox-gl-js/v0.50.0/mapbox-gl.js"></script>
  <style type="text/css">
    CSS CODE
  </style>
</head>
<body>
  HTML BODY
</body>
<script type="text/javascript">
  JAVASCRIPT CODE
</script>
</html>
```



# Next steps: Integrate charts

React-Vis

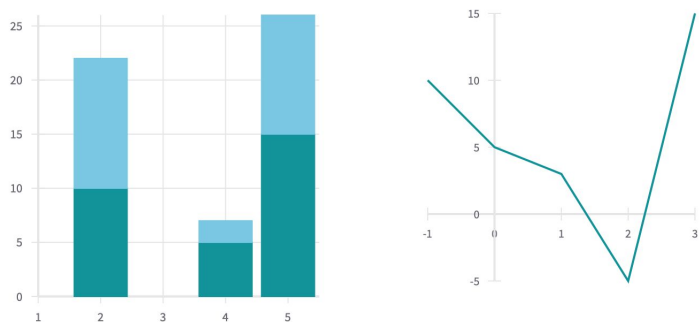
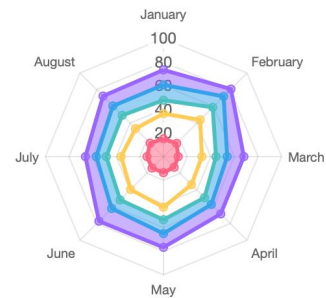
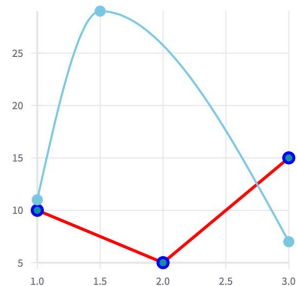
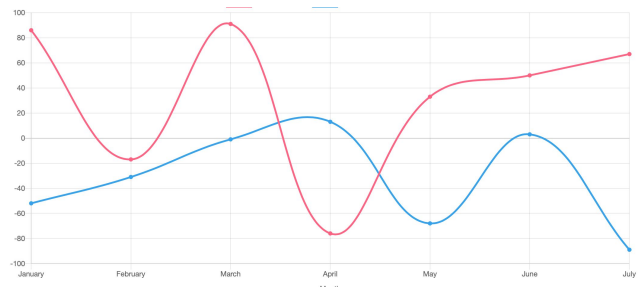


Chart.js



## Next steps:

Implement visualizations.

Integrate with website's design language.

# iCity ORF Website Information Architecture



- Primary
- Secondary
- Tertiary L1
- Tertiary L2
- External Links
- Footer
- Linking