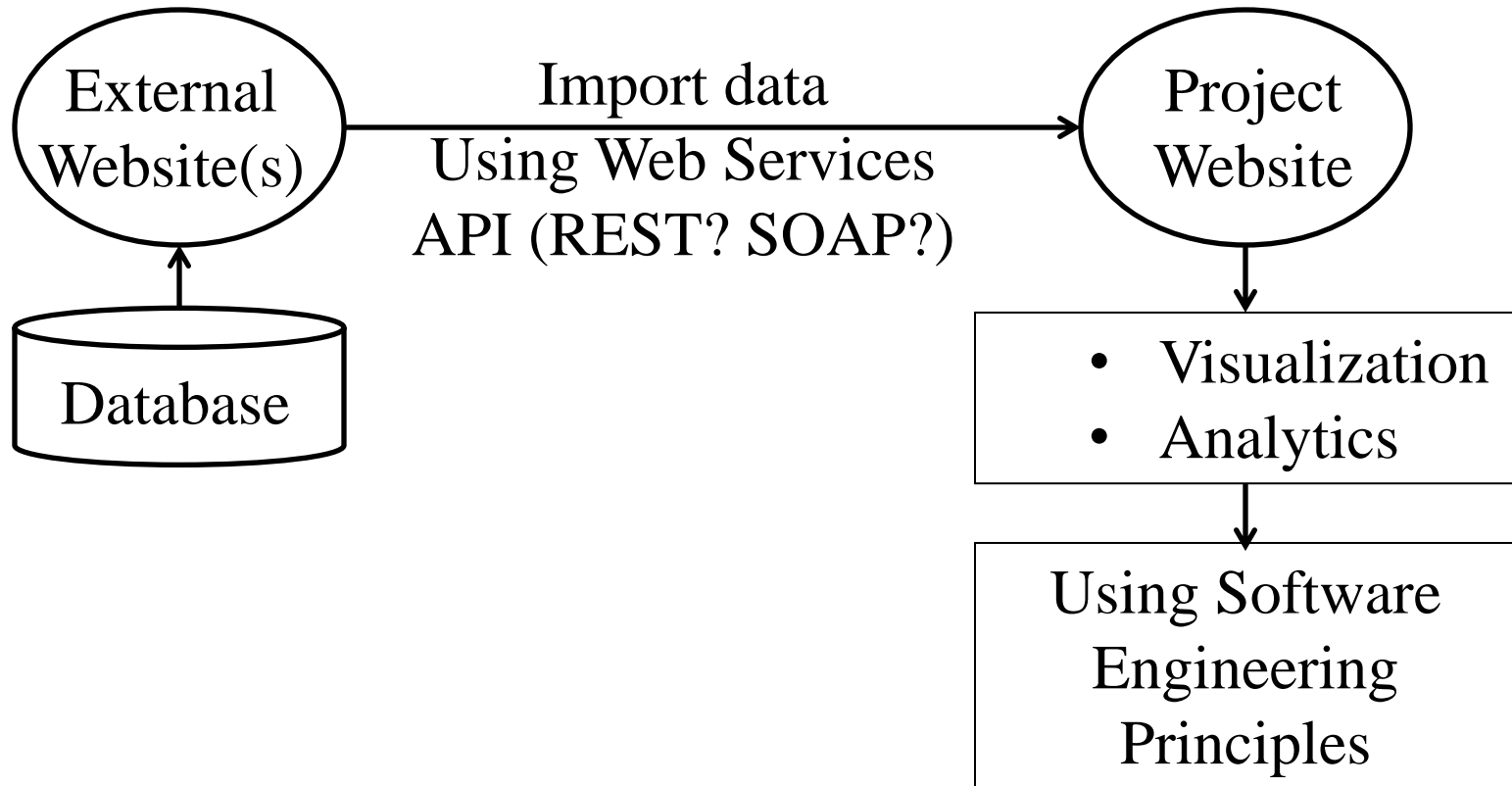


# **IT systems**

Nagesh Kolagani

TAs: Ravi, Sandeep, Ambuj, Vineeth, Yasmin

# Visualization and Analytics

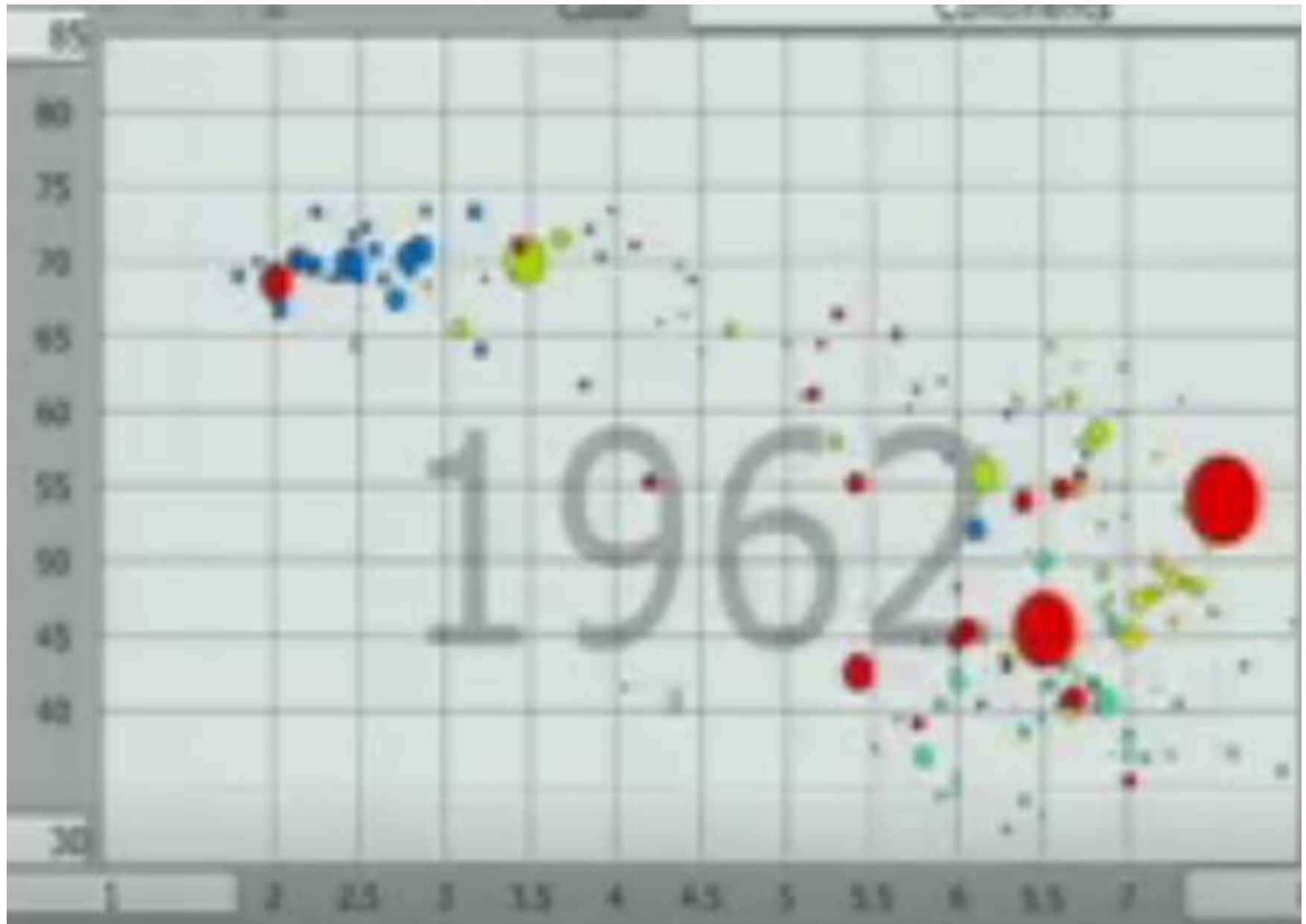


# Visualization

- Ted talk by Hans Rosling about data presentation:

[https://www.ted.com/talks/hans\\_rosling\\_shows\\_the\\_best\\_stats\\_you\\_ve\\_ever\\_seen](https://www.ted.com/talks/hans_rosling_shows_the_best_stats_you_ve_ever_seen)

# Ted talk by Hans Rosling about data presentation



LifeSpan versus FamilySize 1962.

# Ted talk by Hans Rosling about data presentation



stats you've ever seen

LifeSpan versus FamilySize 2003.

# Visualization

- Ted talk by Hans Rosling about data presentation:

[https://www.ted.com/talks/hans\\_rosling\\_shows\\_the\\_best\\_stats\\_you\\_ve\\_ever\\_seen](https://www.ted.com/talks/hans_rosling_shows_the_best_stats_you_ve_ever_seen)

- Mapping rivers in an appealing way:

<http://www.dailymail.co.uk/sciencetech/article-4711816/Incredible-maps-reveal-world-s-rivers-veins.html>

- Strahler Stream Order Classification...Branches of higher stream orders are indicated as thicker lines
- Different colors for differentiate branches
- Uses the open-source QGIS software

# Visualization

Some of the tools available for better and more interactive (as well as informative) presentations using animation:

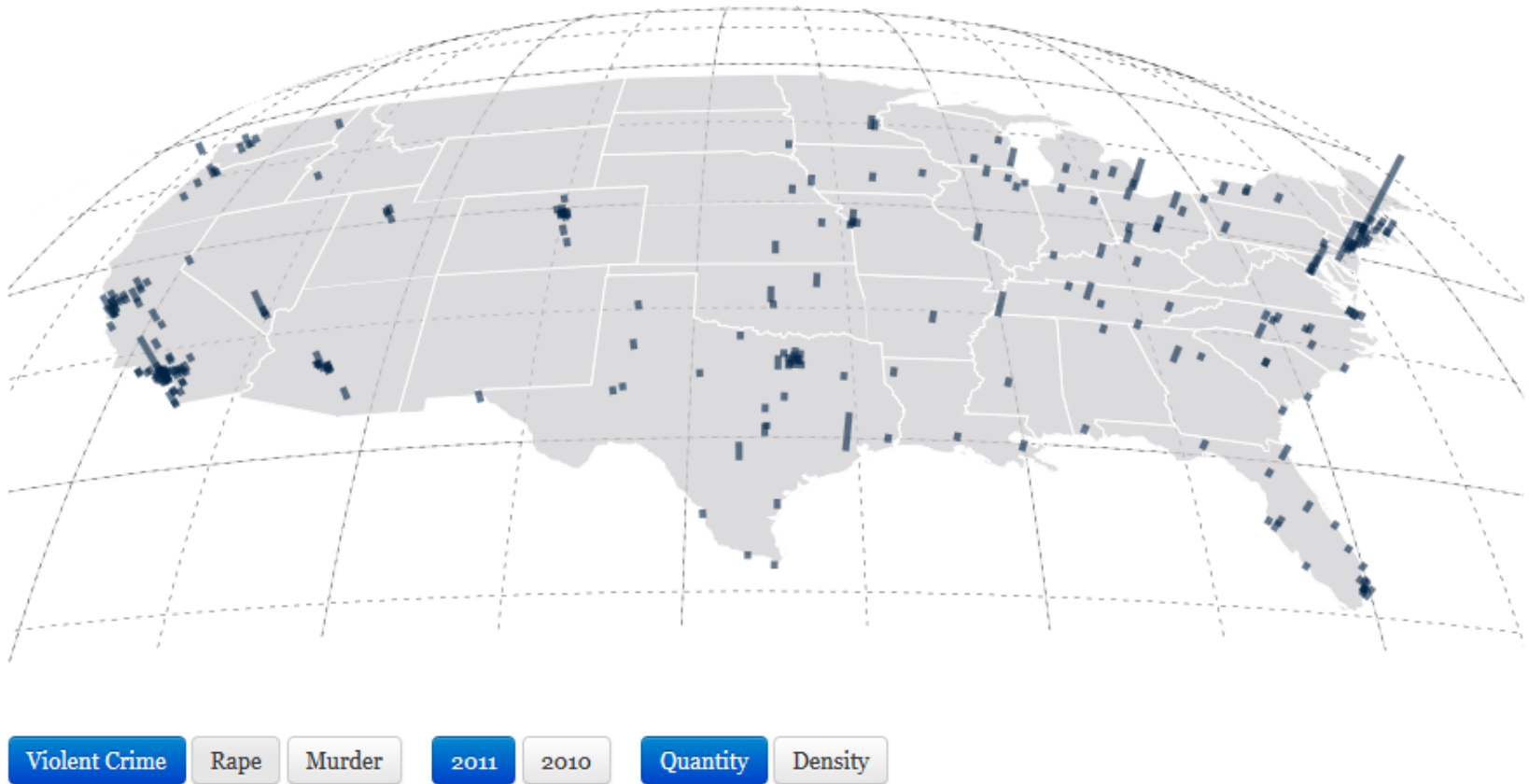
- Kartograph: <http://kartograph.org/>
  - A framework for creating interactive vector maps without Google Maps or any other framework
  - Provides Python library for generating SVG maps, and JavaScript library for creating interactive maps based on these SVG maps

# Kartograph

## Three-dimensional Mapping

[\(view source\)](#)

This map shows crime data for some cities in the United States. You can choose between showing actual quantities of incidents or the rates. Note that the purpose of this demo is not to promote 3D bar charts (which are fairly ineffective), but to showcase the satellite projection along with the possibility to project three dimensional geo-coordinates. In fact, the height of the bars in this example is given in km above ground.

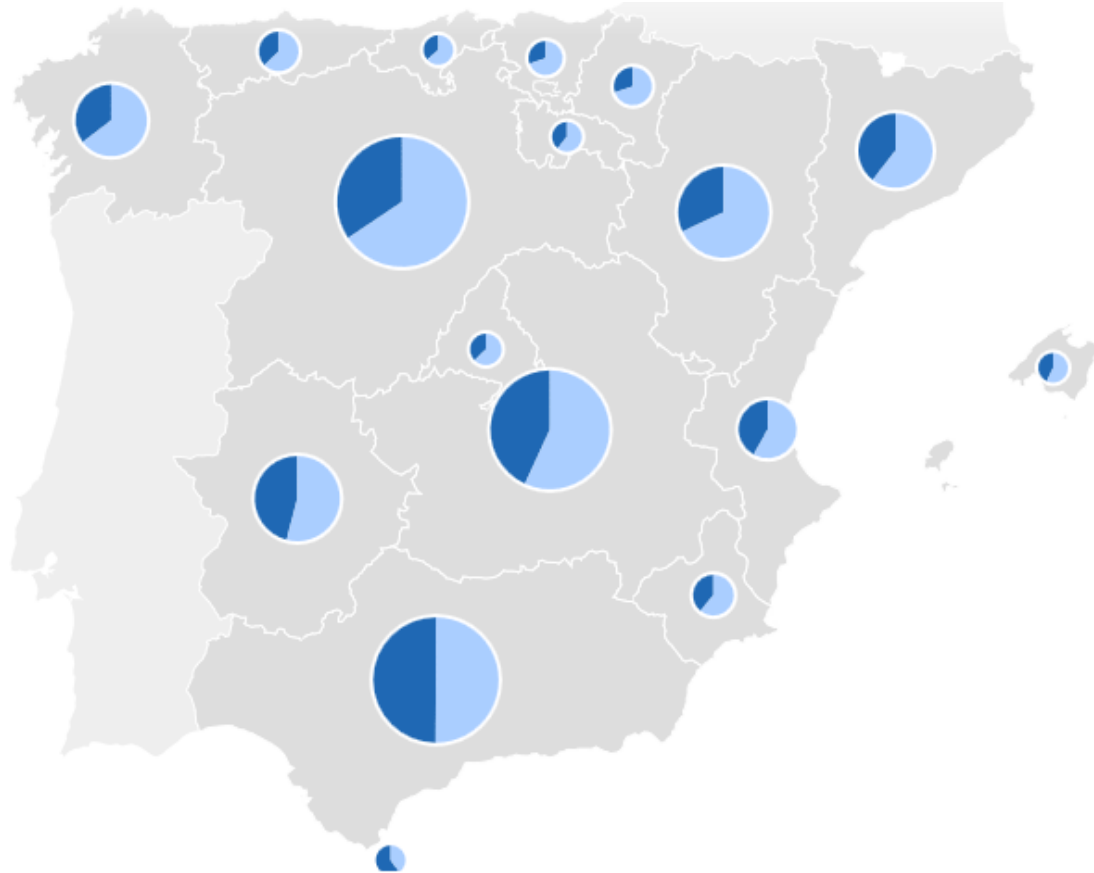


© Copyright 2012-2014. Created by [Gregor Aisch](#).

Map with 3D symbols



# Kartograph



One disadvantage of choropleth maps is that you always need to look at the legend in order to read the actual numbers. While this is inevitable for absolute quantities, there are more effective ways for visualizing percentages.

This map shows how unemployment rates in Spain.

Gender:

Total

Male

Female

Age:

15-24

25+

Chart:

Pie

Bar

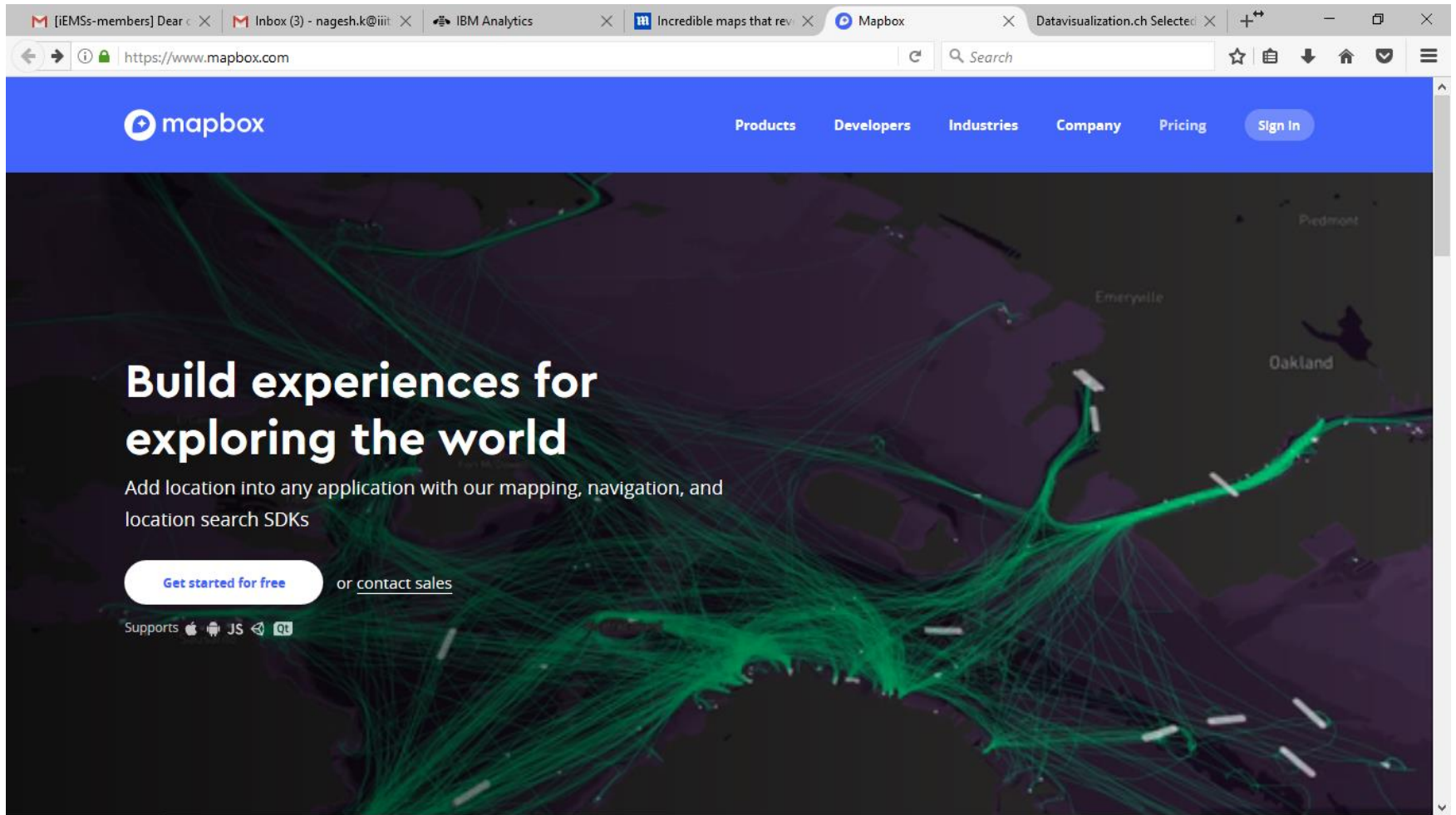
## Map with pie charts

# Visualization

Some of the tools available for better and more interactive (as well as informative) presentations using animation:

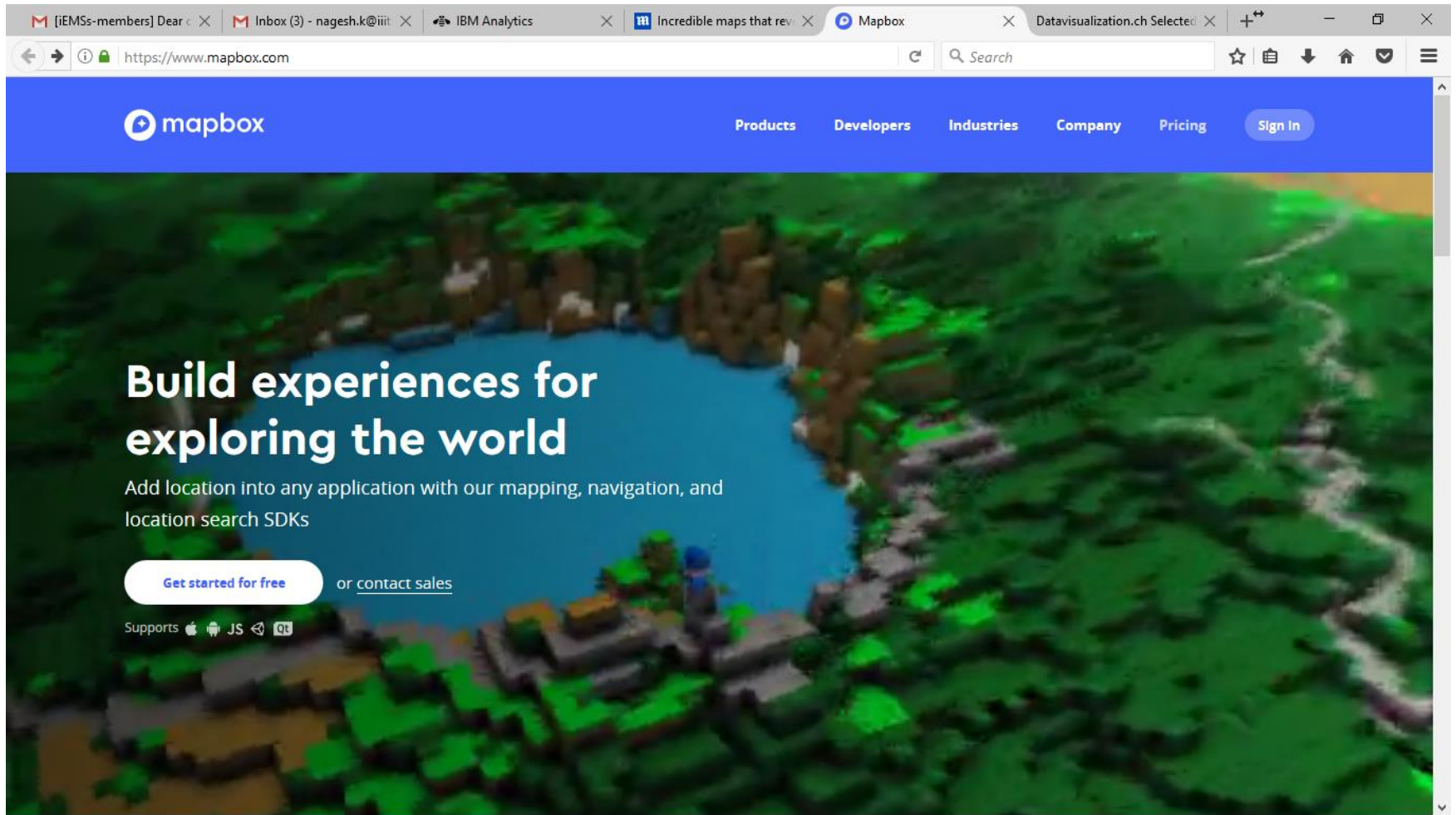
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  - A framework for creating interactive vector maps without Google Maps or any other framework
  - Provides Python library for generating SVG maps, and JavaScript library for creating interactive maps based on these SVG maps
- Mapbox:  
<https://www.mapbox.com/>
  - provides mapping, navigation and location search SDKs

# Mapbox



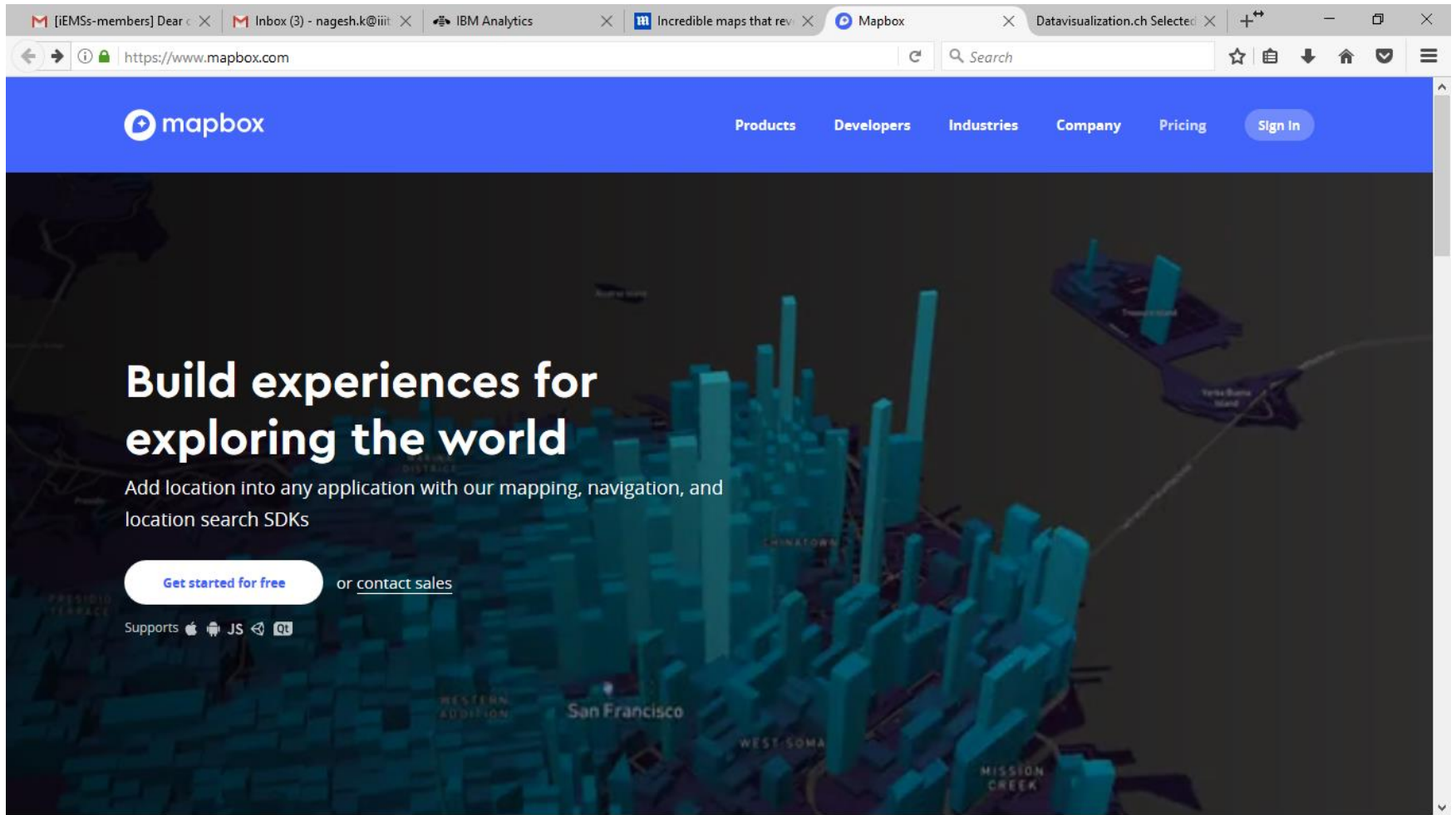
Traffic

# Mapbox



Map with 3D symbols

# Mapbox



Map with 3D symbols

# Visualization

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- Mapbox:  
<https://www.mapbox.com/>
  - Provides mapping, navigation and location search SDKs
- Data-visualization tools repository:  
<http://selection.datavisualization.ch/>

# Using Software Engineering Principles

- Requirement analysis  
↔ UI Prototyping
- Use Cases
- Test Cases  
↔ Test Driven Development
- Design
  - Class Diagrams
  - Sequence Diagrams



# UI Prototyping

University of Washington: Software Engineering course:

- <http://courses.cs.washington.edu/courses/cse403/>
- <http://courses.cs.washington.edu/courses/cse403/13sp/lectures.shtml#today>
- <https://courses.cs.washington.edu/courses/cse403/08wi/lectures/slides/>



# External Website(s)

- BlueFrog.com:

Eventually real data about 5 lakh farmers:

- Initial survey
- Daily monitoring
- Your own website with sample data from BlueFrog.com

# Periodic Project Evaluation by Industry Resource Persons

- August 17<sup>th</sup>, 2017
  - Vishram (IIT-M '88; Senior IT consultant)
  - Shemeer (BITS-Pilan '94; Azim Premji Phil. Initiatives)
  - Group Presentations:
    - UI Prototyping
    - Use Cases