

Milestone 2 – Group 16

Motivation of the Idea

Local mosquito-borne Zika virus transmission and Zika virus outbreaks have been reported in the United States and in United States territories. We want to provide a platform where users can understand their Zika risk, from where they live, their travel history, the travel history of their family by having access to a visual map that contains the total number of cases, the rate of cases per month, CDC travel notices, and a rough number of Zika case in the future in a given region.

Features that will definitely be implemented in the application

- Interactive D3.js map where users can click on a US state or territory to see the total number of cases, rate of cases/month, and the predicted number of cases in the future
- Have a sidebar that links to: (stored in NoSql)
 - o CDC website for more information about Zika virus
 - o CDC website for more information about Zika virus symptoms
 - o CDC website for more information about how it's contracted
 - o Infographic about Zika transmission
- Tedtalk video underneath map - <https://www.youtube.com/watch?v=9qgKOR9vm8g>

Features that might implemented in the application, given enough time

- Twitter feed on the bottom of the website that collects tweets that have the hashtag “zikavirus”
- Login feature

Technology and tools to be used

NoSQL – MongoDB – for pictures, videos, links and other nontabular data, query data live through Wikipedia

MySQL

Meanstack to communicate between NoSQL and MySQL

Node.js

JavaScript – make actual website

Python to put data in usable format

Amazon Web Services - hosting database and deploying application

Description of the complimentary sources you intend to use for data, and how you intend to ingest the data into your database

Sources for the data

CDC Github - Zika total case count by state and US territory (csv)

Manual data scraping from climate.gov - State average 12-month temperature data (xlsx)

Manual data scraping from <http://www.latlong.net/> - Latitude and longitude of states (xlsx)

Predicted temperature data – still have to run the simulation in MATLAB to get the data (csv)

- Still working on getting predicated temperature
- Temperatures expected to increase by 1 degree in all states

- So the latitude and longitude of where the mosquitos can go will change (can travel farther north)
- Base on count data we have from the states we will probably run a regression using lat/long data, total case count data, Zika case rate data to get a prediction of the number of cases in the state that currently does not have the Zika virus -> something like this:
https://www.google.com/search?q=mosquito+temperature+range&espv=2&source=lnms&tbm=isch&sa=X&ved=0ahUKEwipk7Own9nSAhVIMyYKHYY-8DVkQ_AUIBygC&biw=876&bih=699#imgsrc=497L3VDWxG69uM:

CDC infographic – pdf

- <https://www.cdc.gov/zika/pdfs/zika-transmission-infographic.pdf>
- https://www.cdc.gov/zika/pdfs/flu_or_zika_infographic.pdf

We will ingest the data into the database by using python or java cursors to insert the data.

Division of responsibilities

Collect data – Frankie

- Development: Frankie
- Check if complete: Xilei

Exploratory data analysis - All

Develop with MeanStack (Angular, Express, MongoDB, Node.js)

- Development: All
- Check if complete:

Design user interface

- Development: All
- Check if complete: All

Get data into usable format

- Development:
- Check if complete:

Write SQL and NoSQL queries - Lanqing, Frankie

- Development: Frankie
- Check if complete: Lanqing

Design schema - Xilei, Frankie - meet Wednesday talk to TA on Friday

- Development: Frankie, Xilei
- Check if complete: Lanqing

Put data into SQL and NoSQL

- Development: Frankie
- Check if complete: Lanqing

Set up website – Xilei, Lanqing

- Development: Lanqing
- Check if complete: Xilei, Will

Data Visualization for website (D3)

- Development: Xilei

- Check if complete: Frankie, Lanqing

Make sure server/stack works

- Development: Will
- Check if complete: Lanqing

SQL DDL

```
CREATE TABLE State (
```

```
State VARCHAR (225),
```

```
StateCode VARCHAR(2),
```

```
PRIMARY KEY (StateCode)
```

```
)
```

```
CREATE TABLE Case (
```

```
StateCode VARCHAR(2),
```

```
Case int,
```

```
Date date,
```

```
PRIMARY KEY (StateCode, Date)
```

```
FOREIGN KEY Code REFERENCES State(StateCode)
```

```
)
```

```
CREATE TABLE CaseCount (
```

```
StateCode VARCHAR(2),
```

```
Case int,
```

```
PRIMARY KEY (StateCode, Case)
```

```
FOREIGN KEY Code REFERENCES State(StateCode)
```

```
)
```

```
CREATE TABLE CasePredict(  
  StateCode VARCHAR(2),  
  Predict int,  
  PRIMARY KEY (StateCode, Predict)  
  FOREIGN KEY Code REFERENCES State(StateCode)  
)
```

NoSql – MongoDB

Collections : notices, links

ER Diagram

