



Crashes Around Three Schools in Iowa and Routing from Crash Site to Hospital

CRP 558

Final Project

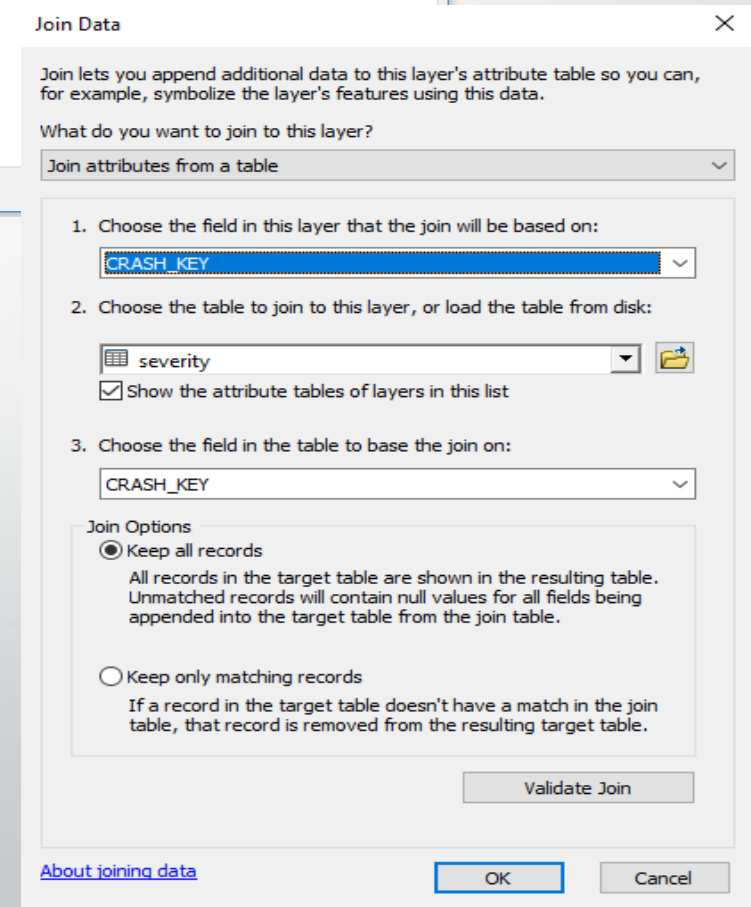
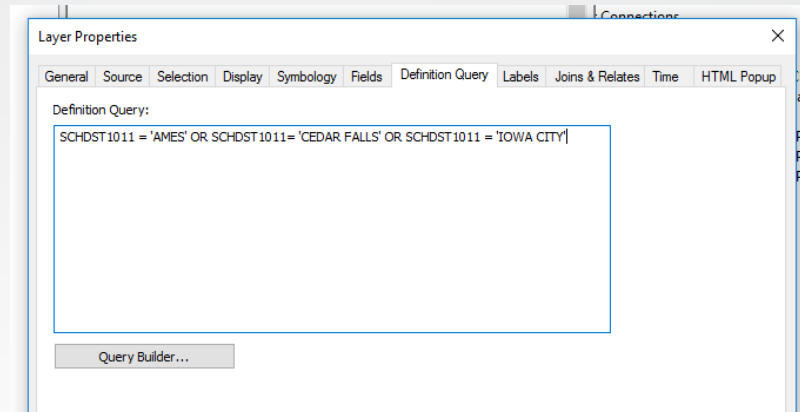
Xingwei Weng

Technology

- Leaflet
- Awesome markers
- jQuery
- JSON
- Leaflet plugins
- MapQuest

Data

- Crashes In city of Ames, Iowa City and Cedar Falls
- Crash year: 2016(was going to do 5 years but the data is too big to process)
- Data is collected in ArcGIS Desktop
- Hospital data is from Natural Resource Geographic Information System Library
- Data converted from shape file to json file by OGRE



Using MapQuest to get the Routing

- The MapQuest Routing is using Leaflet Plugin

```
6 var map,
7   dir;
8
9 map = L.map('map', {
10   layers: MQ.mapLayer(),
11   center: [ 42.0308, -93.6319 ],
12   zoom: 13
13 });
14
15 dir = MQ.routing.directions();
16
17 dir.route({
18   locations: [
19     {latLng: { lat:
20       42.03259132650252, lng: -93.61150603308985}},
21     {latLng: { lat:42.00832550643278, lng:-93.60736418565381}}
22   ]
23 });
24
25
26 map.addLayer(MQ.routing.routeLayer({
27   directions: dir,
28   fitBounds: false
29 }));
```

Awesome Marker

- Awesome marker was used to show the location of the hospitals

```
31 var hospitalicon = L.AwesomeMarkers.icon({  
32   prefix: 'fa',  
33   markerColor: 'red',  
34   icon: 'fa-plus'  
35 });
```

Ajax Plugin was used for Json File

```
56
57 var ames = new
    L.GeoJSON.AJAX('https://bestlukcy.github.io/LA558/finalprojectdata/ames2016.json',
58 {pointToLayer: function(feature, latlng) {
59   return new L.CircleMarker(latlng, geojsonMarkerOptions);
60 },
61 style: function(feature) {
62   return {
63     radius: 3,
64     fillColor: getColor(feature.properties.CSEVERITY)
65   };
66 },
67 onEachFeature: function(feature, layer) {
68   layer.bindPopup("<strong>Crash Key</strong>: " + feature.properties.CRASH_KEY + "<br>
    <strong>Number of Vehicles involved</strong>: " + feature.properties.VEHICLES+ "<br>
    <strong>Number of People involved</strong>: " + feature.properties.TOCCUPANTS+ "<br>
    <strong>Coordinates</strong>: " + feature.geometry.coordinates);
69   // console.log(feature.geometry.coordinates);
70
71 },
72
73
74
75 });
76
```

Loop

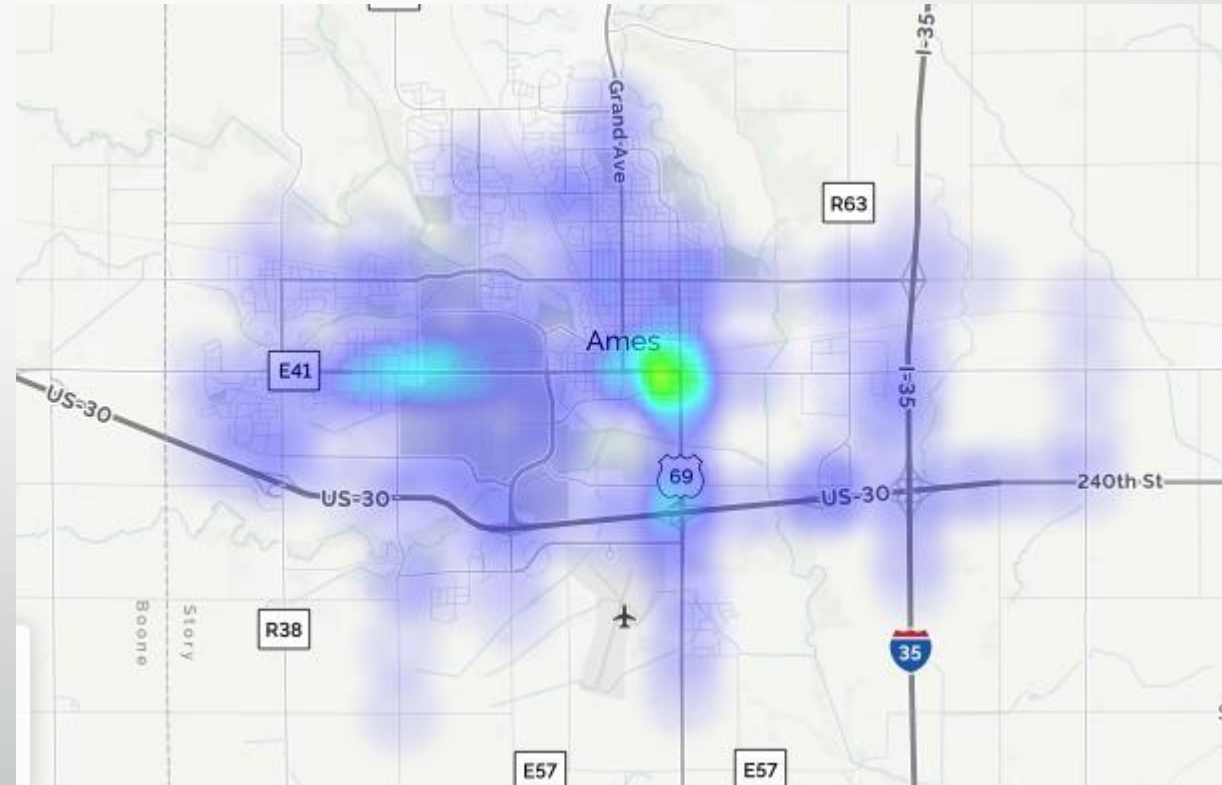
- Since converting shape file to json file , the lat and long are switched. A loop is created to change them back.

```
1173 [-93.57334992508201, 42.008824680333696],  
1174 [-93.5711095980782, 42.00408035850779],  
1175 [-93.57100049962408, 41.99592991008446],  
1176 [-93.66477184150396, 42.02082375954152],  
1177 [-93.54100890426157, 42.03155218577798],  
1178 [-93.63948762773944, 42.00839421800992],  
1179 [-93.60736418565381, 42.00832550643278],  
1180 [-93.62549079275344, 42.008345249524226],  
1181 [-93.64849598698409, 42.02142123703969],  
1182 [-93.6612180879534, 42.03921766311548]];  
1183 var b=[];  
1184 for (var i=0; i < a.length;i++){  
1185     b.push([a[i][1],a[i][0]]);  
1186 }  
1187  
1188 //console.log(b);  
1189  
1190
```

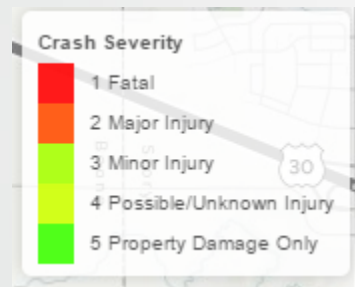
Heat Map

- A Heat Map was created based on the frequency of the crash locations

```
189  
190  
191 var amesheatMap = L.heatLayer(amesheat, {  
192     minOpacity: 0.1,  
193     maxZoom: 19,  
194     max: 1.0,  
195     radius: 20,  
196  
197     });  
198
```



Legend

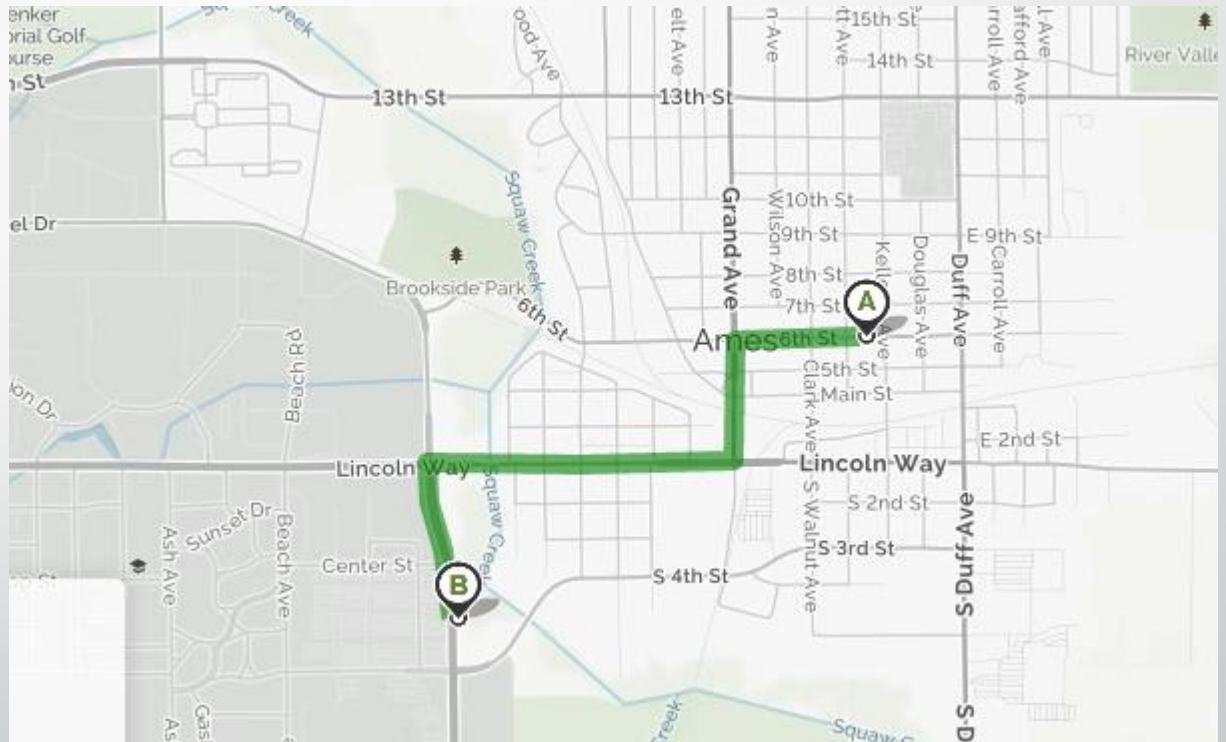


- The legend was created based on the crash severity

```
49
50 legend1.onAdd = function(map) {
51
52     var div = L.DomUtil.create('div', 'info legend'),
53         cs = [ 1,2, 3, 4, 5],
54         labels = ['Fatal','Major Injury', 'Minor Injury',' Possible/Unknown Injury','Property
55                 Damage Only'];
56
57     div.innerHTML += "<b>Crash Severity</b><br>";
58
59     for (var i = 0; i < cs.length; i++) {
60         div.innerHTML +=
61             '<i style="background:' + getColor(cs[i] ) + ' "></i> ' +
62             cs[i] + ' '+labels[i]+'<br>';
63     }
64
65     return div;
66 };
67 legend1.addTo(map);
68
69
```

MapQuest Routing

- The MapQuest Routing is created and it is draggable so you can get the shortest path from two locations

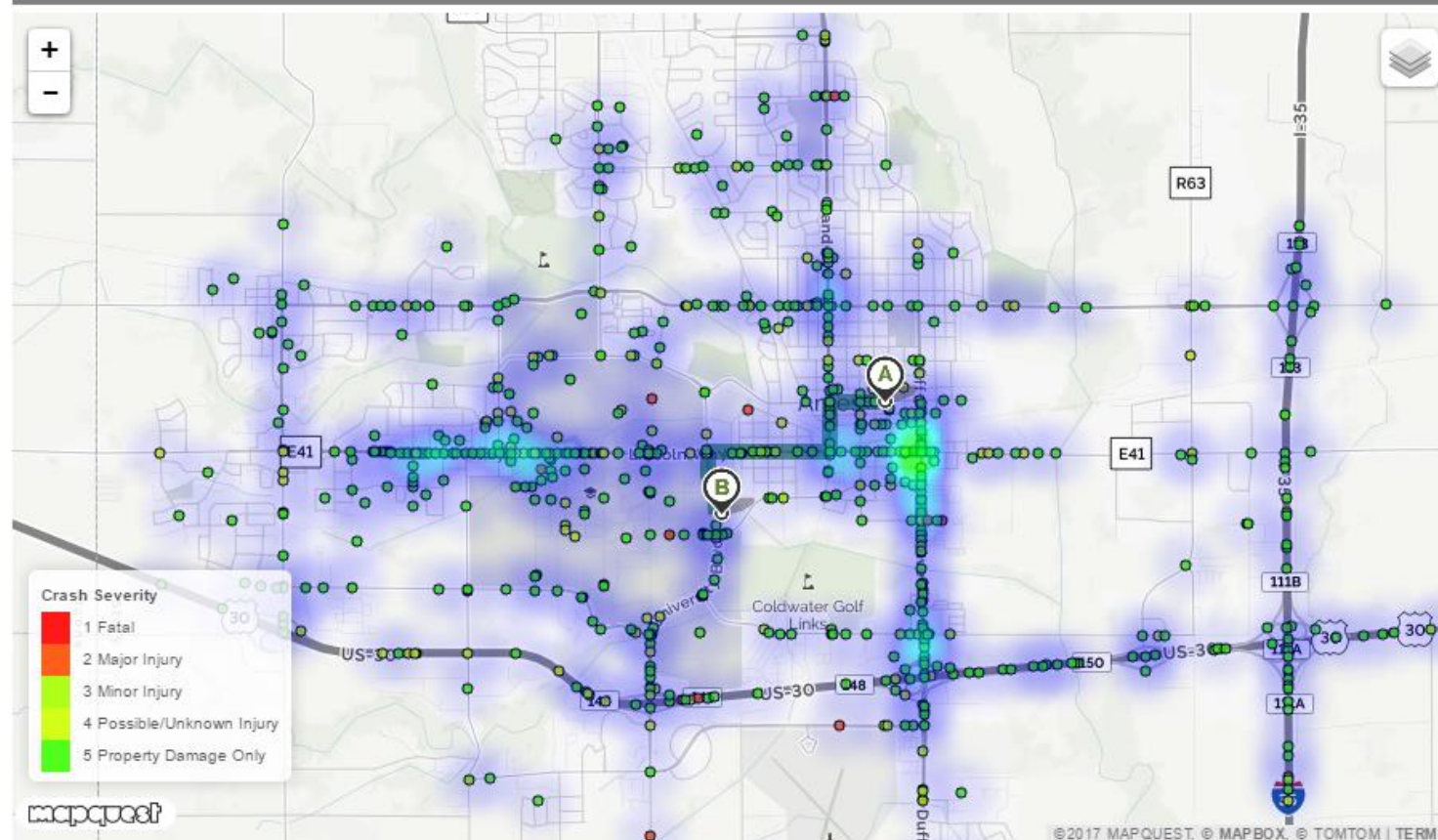


Overview

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Ames Iowa City Cedar Falls Iowa





Thank You!