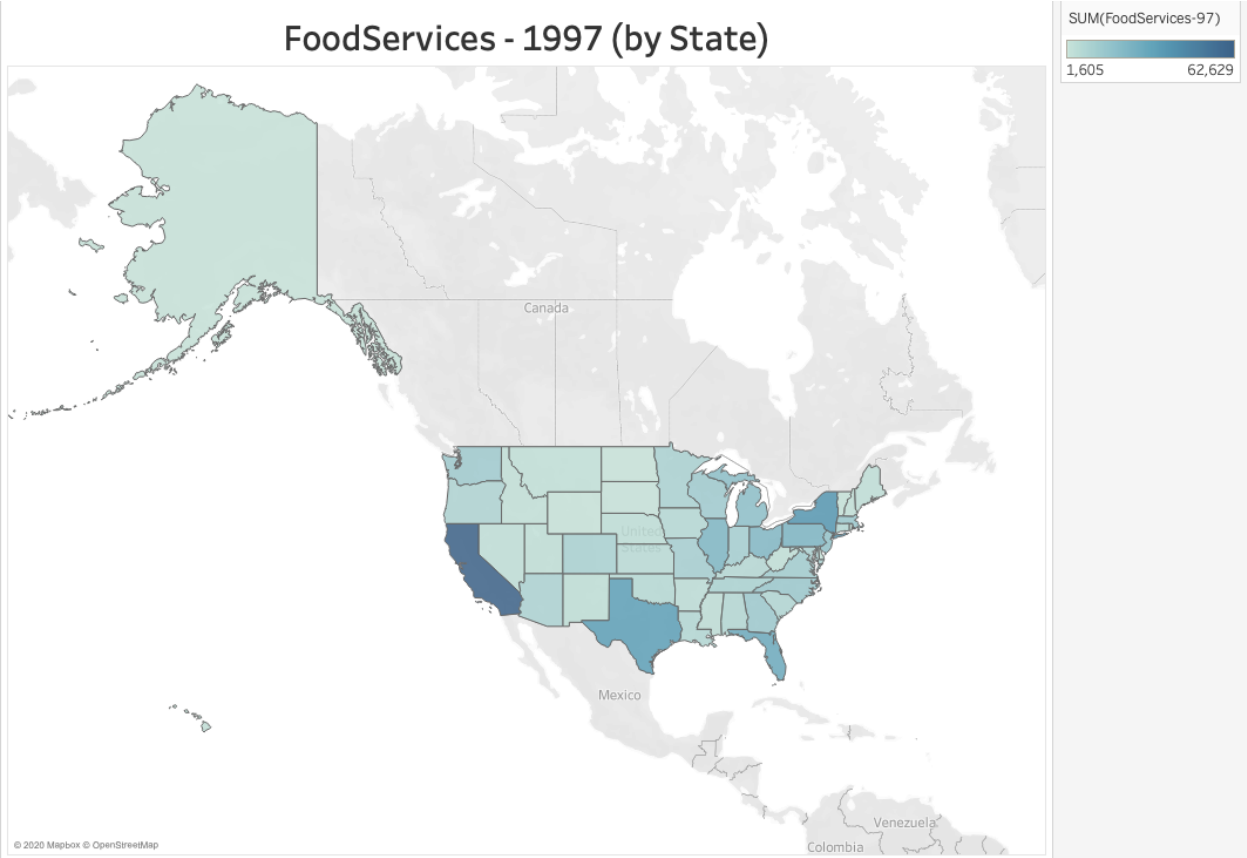
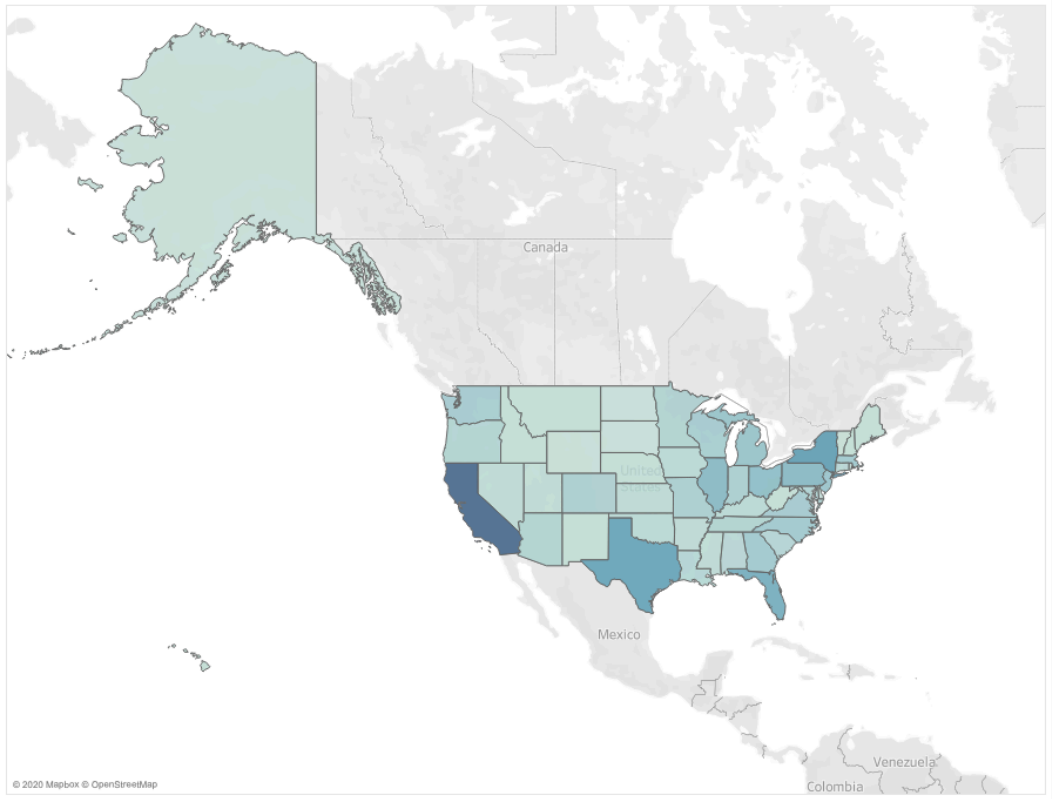
DSC 465
HW2
Ximan Liu

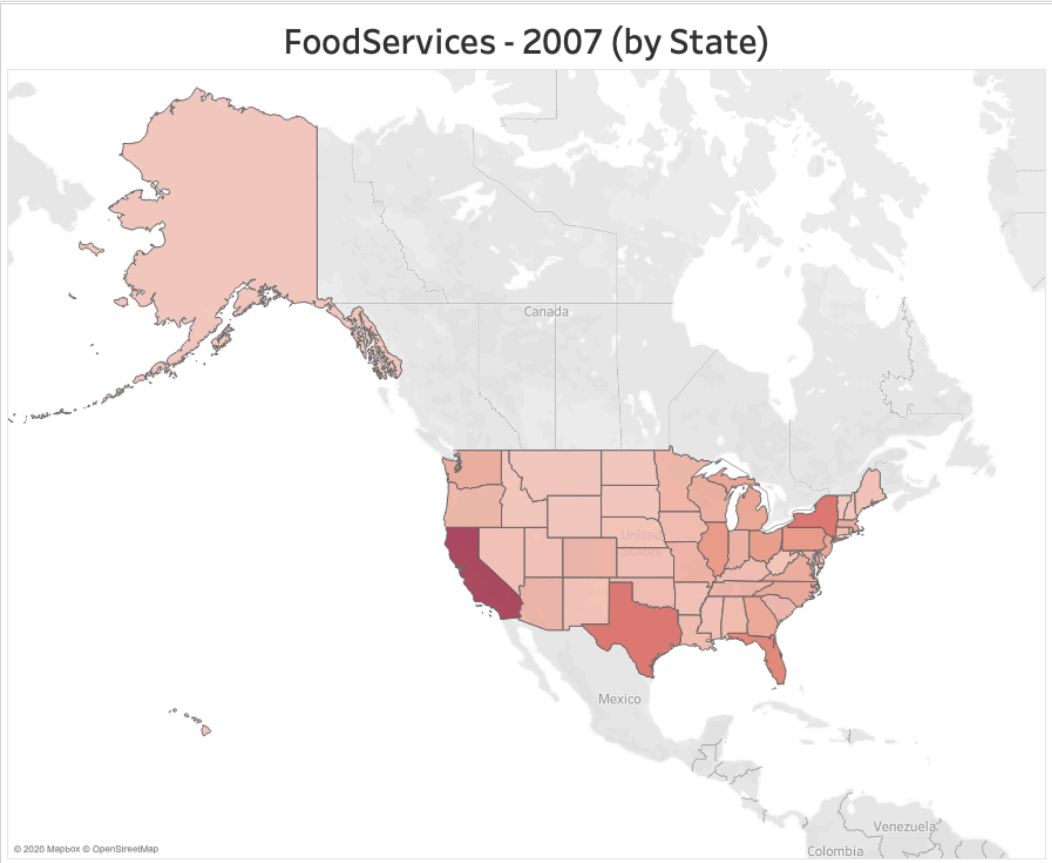
[1a]



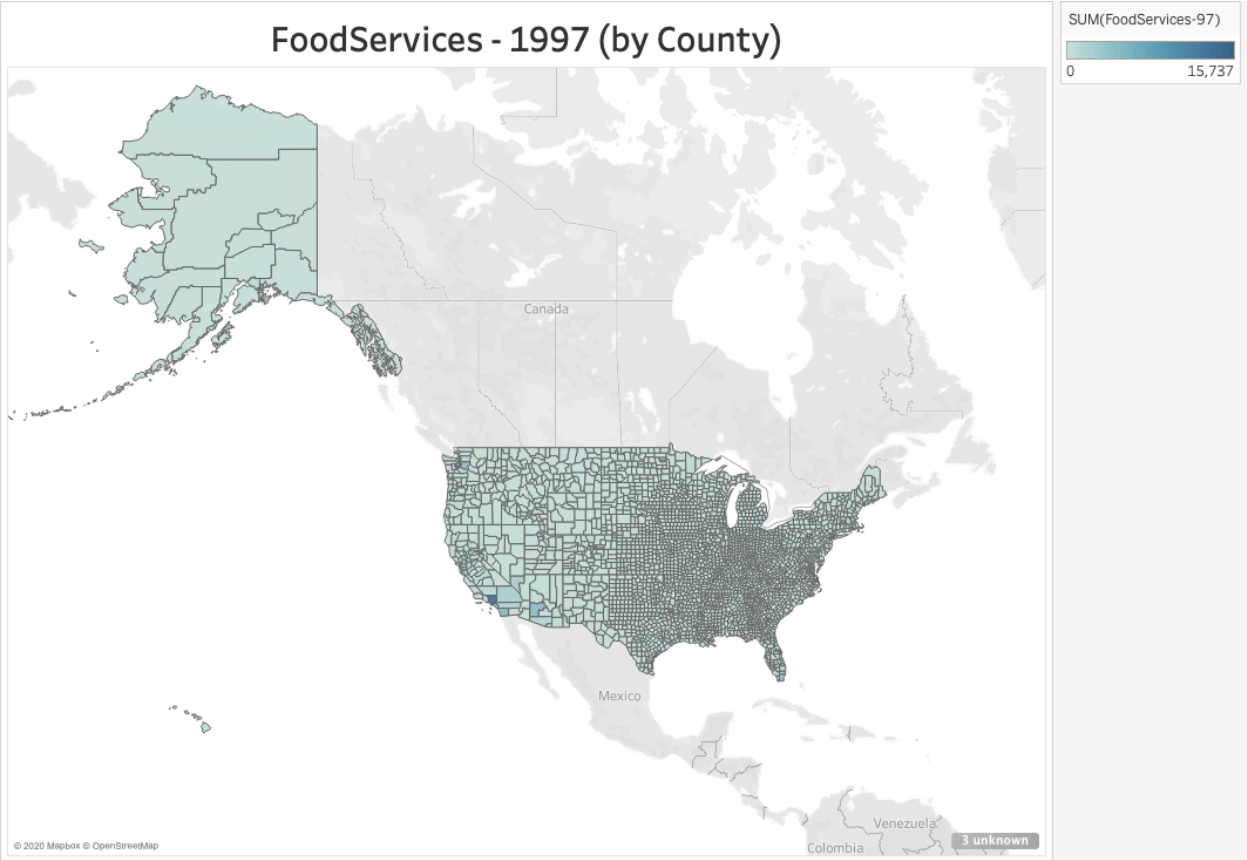
FoodServices - 2002 (by State)

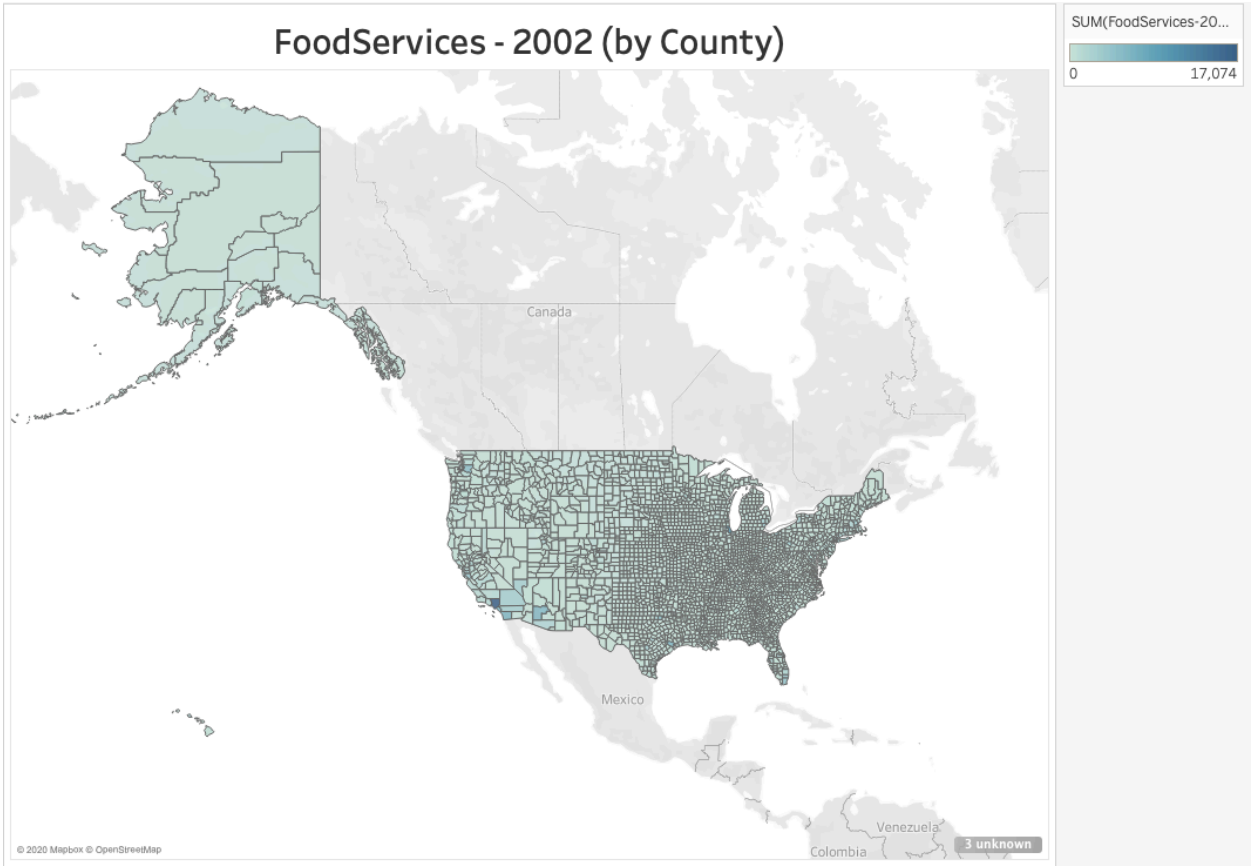


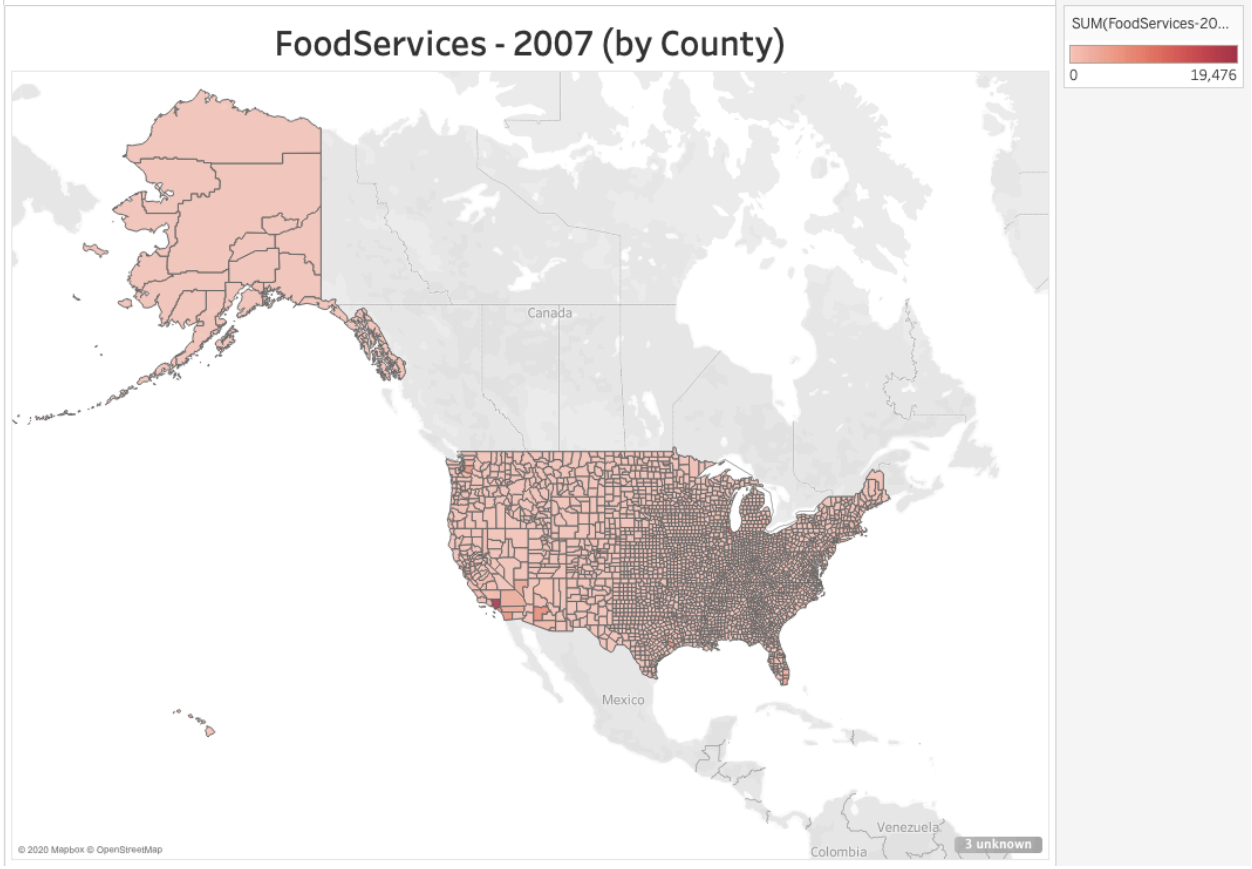
FoodServices - 2007 (by State)



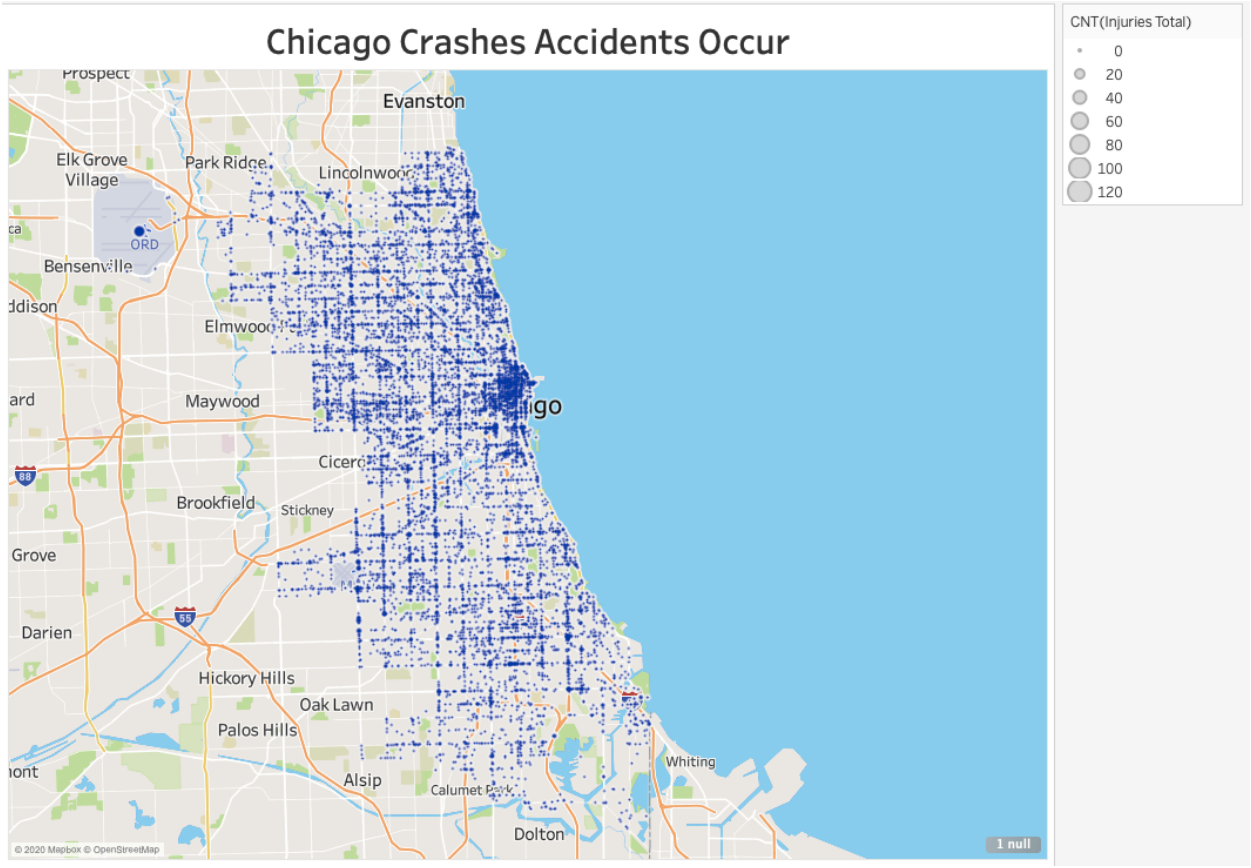
[1b]


FoodServices - 1997 (by County)
SUM(FoodServices-97)
0
15,737
Canada
Mexico
Venezuela
Colombia
© 2020 Mapbox © OpenStreetMap
3 unknown

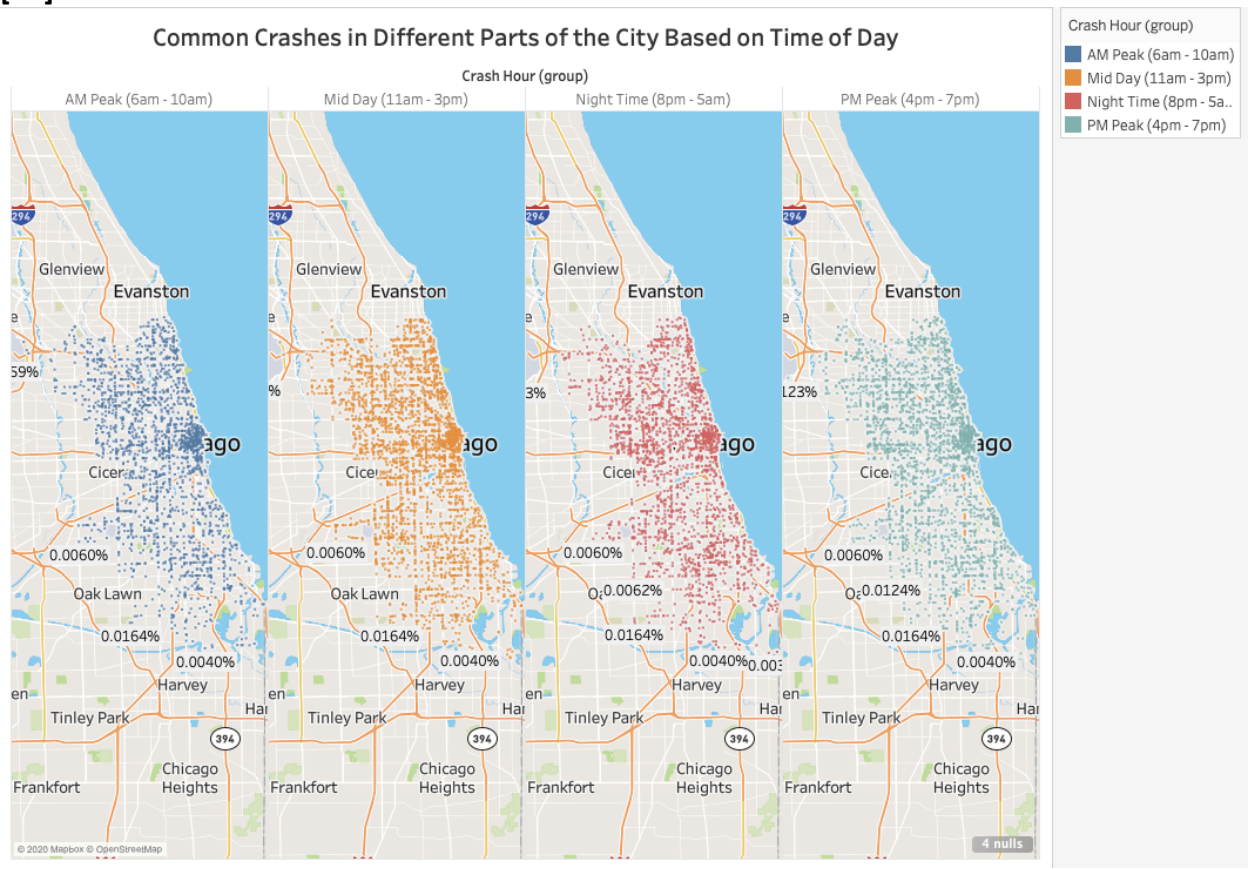

FoodServices - 2002 (by County)
SUM(FoodServices-20...
0
17,074
Canada
Mexico
Venezuela
Colombia
3 unknown
© 2020 Mapbox © OpenStreetMap


FoodServices - 2007 (by County)
SUM(FoodServices-20...
0
19,476
Canada
Mexico
Venezuela
Colombia
3 unknown
© 2020 Mapbox © OpenStreetMap

[2a]

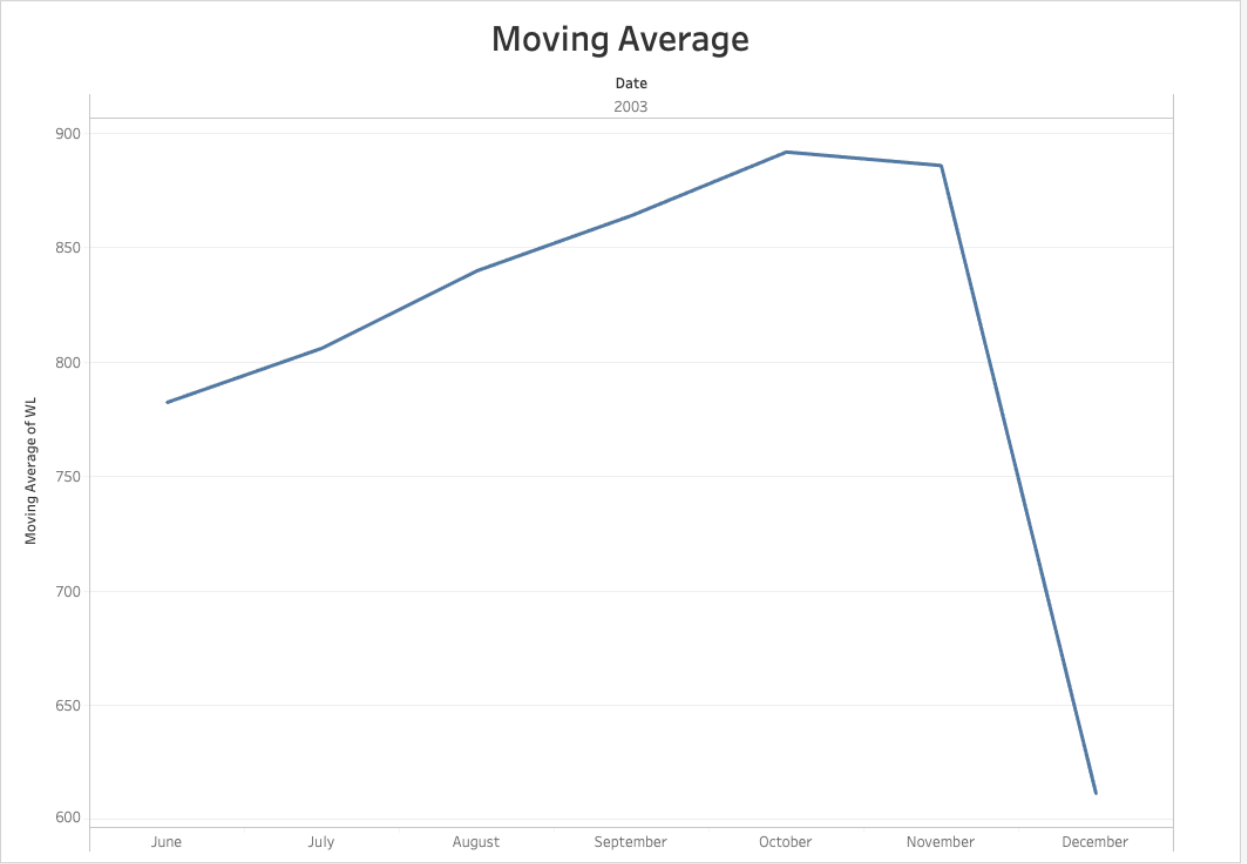

Chicago Crashes Accidents Occur
CNT(Injuries Total)
0
20
40
60
80
100
120
Evanston
Elk Grove Village
Park Ridge
Lincolnwood
ORD
Bensenville
Elmwood
Maywood
Cicero
Brookfield
Stickney
Grove
Darien
Hickory Hills
Oak Lawn
Palos Hills
Alsip
Calumet Park
Whiting
Dolton
1 null
© 2020 Mapbox © OpenStreetMap

[2b]



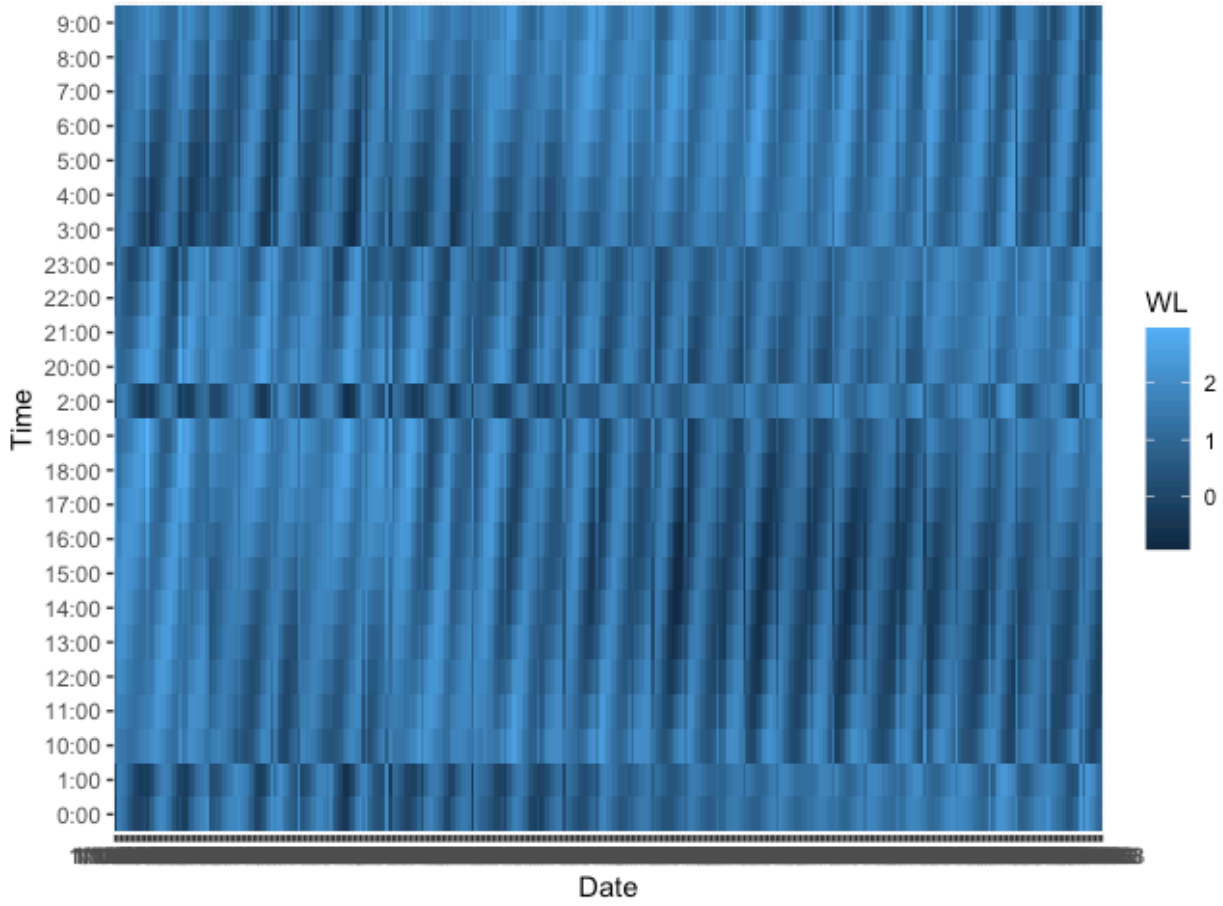
Regardless of the time of day, the density of traffic accidents in the city center is higher. Different time periods determine the tidal direction of commuting. In that case locations of traffic accidents are also different.

[3a]


Moving Average
Date
2003
900
850
800
750
700
650
600
Moving Average of WL
June
July
August
September
October
November
December

[3b]

```
ggplot(PortlandWaterLevel2003, aes(x=Date, y=Time,
                    fill=WL),
       na.rm=TRUE) +
  geom_tile()
```



[3c]

Figure [3b] can more intuitively express the trend of changes throughout the year, because the contrast of light and dark in the level plot is more obvious. Figure [3a] illustrates the information from a general perspective, and it is more abstract.

[4]

Level Plot on Daily Portland Water Level 2003

Date

Day of Date	January	February	March	April	May	June	July	August	Septemb..	October	November	December
1	1.5346	1.2954	1.2238	1.1654	1.2288	1.0440	1.1248	1.1672	1.1130	1.1593	1.1446	1.3141
2	1.5970	1.1276	1.1845	1.2475	1.2717	0.9903	1.0946	1.1983	1.1933	1.1325	1.2217	
3	1.5236	1.0218	1.1694	1.1858	1.2840	0.9994	1.0734	1.1931	1.2257	1.1834	1.2238	
4	1.4793	0.9638	1.1657	1.2163	1.2317	1.0535	1.0578	1.2145	1.2498	1.2186	1.1942	
5	1.2823	1.0112	1.1185	1.1213	1.1358	1.1570	1.0696	1.2163	1.2513	1.1928	1.2524	
6	1.2738	1.0810	1.1307	1.1422	1.1814	1.1607	1.0933	1.2110	1.2695	1.2151	1.2567	
7	1.2529	1.1007	1.1667	1.1633	1.1469	1.1511	1.1186	1.2649	1.2627	1.2535	1.3266	
8	1.2859	1.1770	1.1677	1.2147	1.1474	1.1460	1.1095	1.2775	1.2309	1.3022	1.3802	
9	1.3110	1.1709	1.2366	1.2043	1.0752	1.1066	1.1173	1.2825	1.3170	1.2365	1.4018	
10	1.3700	1.1695	1.1918	1.2303	1.0303	1.1005	1.1084	1.2585	1.2256	1.2008	1.3016	
11	1.4557	1.2813	1.1985	1.2523	1.0450	1.1075	1.0936	1.2303	1.1473	1.2334	1.2073	
12	1.5163	1.3522	1.2987	1.3755	1.0708	1.1347	1.1416	1.2473	1.0910	1.1448	1.1273	
13	1.4530	1.4284	1.5573	1.4285	1.0989	1.1465	1.1262	1.2097	1.0690	1.1366	1.2289	
14	1.3703	1.3542	1.5306	1.3438	1.0949	1.1135	1.1158	1.1884	1.1338	1.1868	1.2805	
15	1.3187	1.4545	1.6055	1.3144	1.0337	1.0880	1.1261	1.1980	1.1473	1.2474	1.3133	
16	1.2930	1.4762	1.4577	1.2720	0.9860	1.0673	1.0959	1.1755	1.1757	1.2593	1.3238	
17	1.3089	1.3339	1.2636	1.2344	0.9612	1.0700	1.0808	1.1840	1.1175	1.2622	1.2332	
18	1.2790	1.2554	1.1338	1.1527	0.8813	1.0638	1.0566	1.1970	1.1025	1.3201	1.2289	
19	1.2502	1.2637	1.1873	1.1146	0.9072	1.0630	1.0681	1.1631	1.1236	1.3373	1.2710	
20	1.2595	1.1411	1.1323	1.1800	0.9289	1.0909	1.0811	1.1541	1.1058	1.3470	1.2019	
21	1.3073	1.1269	1.0924	1.2130	0.9770	1.0736	1.0813	1.2537	1.0778	1.3108	1.2017	
22	1.3909	1.1043	1.2012	1.1286	1.0262	1.0476	1.1343	1.2688	1.1551	1.3404	1.1263	
23	1.2911	1.1564	1.0925	1.2223	1.0683	1.0339	1.1239	1.2690	1.2289	1.2273	1.1272	
24	1.2978	1.2915	1.0973	1.3041	1.1217	0.9815	1.1029	1.2720	1.2436	1.1745	1.1904	
25	1.3205	1.3206	1.1400	1.3692	1.1488	0.9638	1.1399	1.2711	1.2111	1.1710	1.2351	
26	1.3425	1.3394	1.1595	1.3349	1.1206	1.0080	1.1531	1.2699	1.2246	1.2262	1.1715	
27	1.3285	1.3148	1.0650	1.2742	1.0930	1.0927	1.1456	1.2349	1.2615	1.2190	1.0887	
28	1.3013	1.2344	0.9981	1.3302	1.1106	1.1670	1.1767	1.2252	1.2460	1.1979	1.2244	
29	1.3234		1.0029	1.3558	1.1127	1.2044	1.1945	1.1925	1.2253	1.1925	1.3052	
30	1.3641		1.0189	1.2792	1.1004	1.1712	1.1999	1.1877	1.1945	1.2179	1.2803	
31	1.3662		1.1023		1.0705		1.1659	1.1334		1.1944		

AVG(WL)

0.8813 1.6055