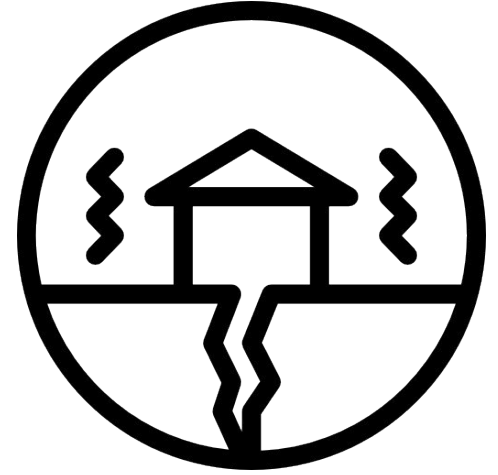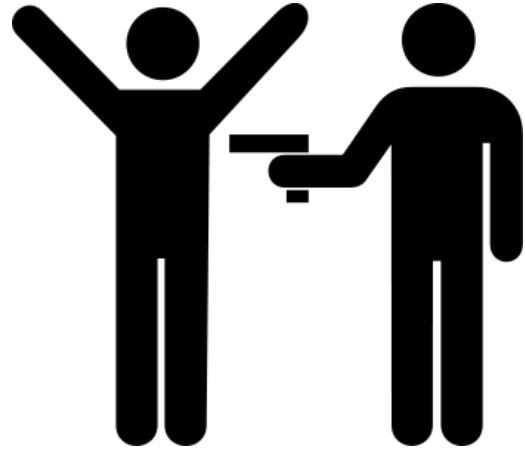# DATA 201 Presentation

Group A
Team RawData
Andre, Jacob, Jerry and John

Is the frequency of crimes increased after a significant earthquake?

Why did we choose this Topic?

★ We thought…

      ○ Getting data for this would be accurate due to having local data from Canterbury.

      ○ It was a relevant topic due to living in Christchurch, which suffered from big E.Q's

Why choose a crime data set?

There have been many incidents where crime has taken place following an earthquake

◆ " The home of Donna Manning, a producer and presenter at Canterbury Television, was burgled while her children waited for news on their mother"

◆ "Two men - were arrested after allegedly stealing three $6000 emergency power generators"

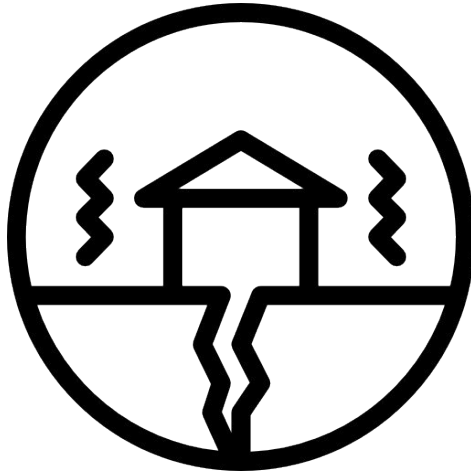◆ "A looter was caught red handed by police stealing a pearl drum set from a music store "

- OpenScript Java library for Interactive maps
- It Compose maps using arbitrary combinations of:
  - Markers
  - Map Tiles
  - Lines & Shapes
    - We used 'Circles' to visualise our earthquake data (which will be shown further on)
  - Pop-Ups
  - Polygons
- Overall a great tool to help visualise your data in an expressive way

RGL Module & Magick Module

- RGL is used to produce interactive 3-D Plots
  - Uses high level graphics in 3 Dimensions
  - Uses geometric objects to plot functions
- Magick Module is an open source advanced image processor for 'r'
  - Supports many common formats
   - (png, jpeg, tiff, pdf, etc)

Earthquake Data

Earthquake Raw Data

Wrangled Data

	A	B	C	D	E	F	G	H	I
1		Date	Time	eventtype	longitude	latitude	magnitude	depth	
2	1	2015-12-31	20:48:01	NA	172.4208625	-43.83824827	2.115245817	8.984375	
3	2	2015-12-31	19:48:48	NA	173.8174779	-42.40701322	2.12091868	56.5625	
4	3	2015-12-31	17:02:06	NA	173.0585576	-43.16447171	2.451800868	12.03125	
5	4	2015-12-31	14:32:41	NA	173.0774401	-43.1650136	2.268203254	12.03125	
6	5	2015-12-31	7:06:37	earthquake	171.3983028	-43.48345989	3.003803423	11.328125	
7	6	2015-12-31	2:59:43	NA	172.7627859	-43.47984805	2.092232791	9.21875	
8	7	2015-12-31	0:33:08	NA	173.5358412	-42.29369813	2.103156306	40.15625	
9	8	2015-12-30	21:15:06	earthquake	172.7643351	-43.48907403	2.906709025	9.921875	
10	9	2015-12-30	20:45:00	earthquake	172.8192902	-43.42850113	2.583224485	10.06605148	
11	10	2015-12-30	16:26:49	NA	172.3429183	-43.74086006	2.06165641	8.046875	
12	11	2015-12-30	0:44:21	earthquake	171.771336	-43.03314335	2.112366601	9.921875	
13	12	2015-12-29	22:20:34	earthquake	172.7478027	-42.18306351	1.938404116	36.22331238	
14	13	2015-12-29	4:58:40	earthquake	172.0530536	-43.23955768	2.43631732	10.0390625	
15	14	2015-12-28	12:00:59	NA	172.0448523	-43.27480944	2.206406676	10.859375	
16	15	2015-12-28	10:19:58	NA	173.2576793	-43.59912382	2.02854835	30.3125	
17	16	2015-12-28	9:37:30	NA	173.083174	-42.018466	2.202042899	24.6875	
18	17	2015-12-27	23:47:44	NA	172.0627827	-43.48323353	1.382654008	8.28125	
19	18	2015-12-27	21:49:24	earthquake	173.3187714	-43.58254623	2.639912544	19.74288368	
20	19	2015-12-27	21:09:08	earthquake	173.290741	-43.58290863	2.34889758	22.16577721	
21	20	2015-12-27	20:53:57	earthquake	173.28862	-43.57825089	2.81603913	21.63656425	
22	21	2015-12-26	17:28:59	NA	172.724159	-43.53634082	1.905044362	9.453125	
23	22	2015-12-26	8:13:08	NA	169.8221757	-44.39547546	1.560606316	10.15625	
24	23	2015-12-25	14:49:50	earthquake	173.1415558	-42.72567749	2.967373913	24.02222443	
25	24	2015-12-24	21:59:39	NA	173.0774401	-43.1650136	2.292736246	12.03125	
26	25	2015-12-24	14:12:53	earthquake	172.8025052	-42.71223354	2.529695935	34.765625	
27	26	2015-12-24	2:08:34	NA	171.8582491	-43.57175333	2.110004957	8.515625	
28	27	2015-12-23	20:43:50	earthquake	173.2186584	-43.42733765	2.167225403	5	
29	28	2015-12-23	15:29:58	earthquake	172.4277954	-43.60042572	2.396528022	5.140413761	
30	29	2015-12-23	1:38:33	NA	172.0484341	-43.17137391	2.271932958	11.796875	
31	30	2015-12-22	15:34:48	NA	173.3169314	-42.03197395	2.385998206	24.6875	
32	31	2015-12-20	22:00:48	NA	171.6230916	-43.48821111	1.956750222	15.078125	
33	32	2015-12-20	17:09:09	NA	171.6048223	-43.53278803	1.556223404	6.640625	
34	33	2015-12-20	6:15:30	earthquake	175.2760925	-42.79623032	2.440063901	33	
35	34	2015-12-19	7:14:54	earthquake	172.7706299	-42.38644028	2.506566983	40.56319046	

RGL & Magick Module
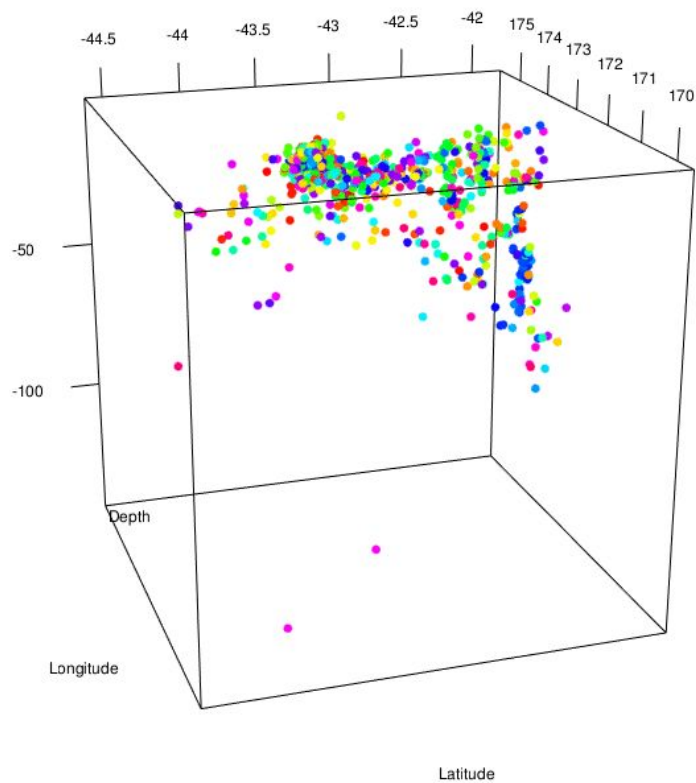
Earthquakes registered in Canterbury region
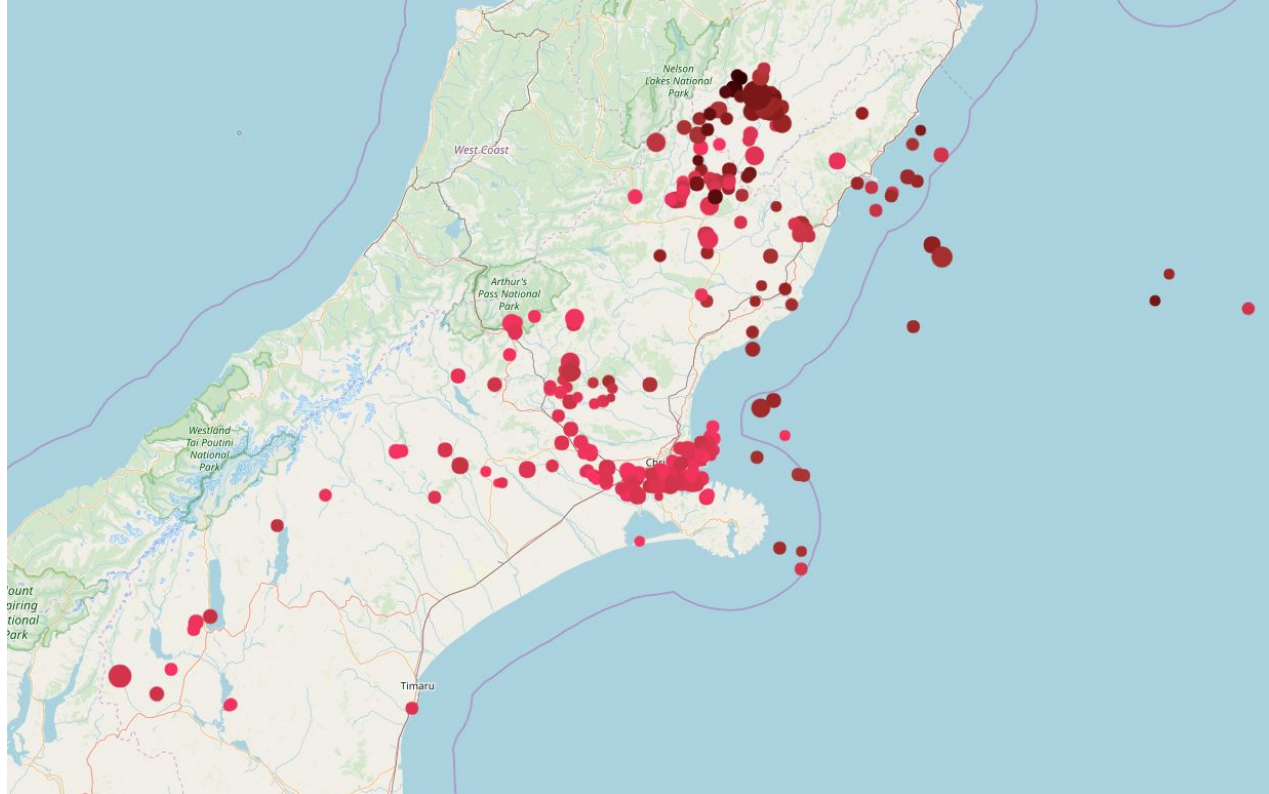
Lighter colour : *Shallow*

Darker colour : *Deeper*

Size(Radius) : *Magnitude*

Police Data

Victimisations Raw Data

Wrangled Data

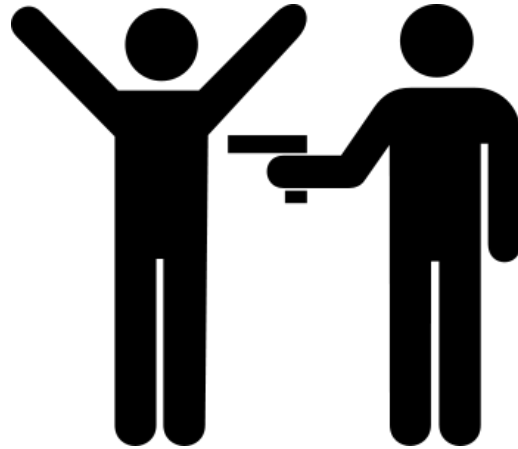|	A	B	C	D	E	F	G	H	I
1		Year Month	Hour	Victimisations	Territorial Authority	Area Unit	Crimes type	ANZSOC Division	ANZSOC Group
2	1	01/02/15	14	1	Christchurch City.	St Albans East.	property crimes	Theft and Related Offences	Illegal Use of Property (Except Motor Vehicles)
3	2	01/02/15	21	1	Christchurch City.	Addington.	violent crimes	Abduction, Harassment and Other Related Offences Against a Person	Abduction and Kidnapping
4	3	01/02/15	10	1	Christchurch City.	Sydenham.	violent crimes	Acts Intended to Cause Injury	Common Assault
5	4	01/02/15	16	1	Christchurch City.	Cathedral Square	violent crimes	Acts Intended to Cause Injury	Common Assault
6	5	01/02/15	17	1	Waimakariri District.	Rangiora East.	violent crimes	Acts Intended to Cause Injury	Common Assault
7	6	01/02/15	19	1	Christchurch City.	Sydenham.	violent crimes	Acts Intended to Cause Injury	Common Assault
8	7	01/02/15	7	1	Christchurch City.	Riccarton.	violent crimes	Acts Intended to Cause Injury	Common Assault
9	8	01/05/15	99	1	Christchurch City.	Riccarton.	property crimes	Theft and Related Offences	Illegal Use of Property (Except Motor Vehicles)
10	9	01/07/15	15	1	Christchurch City.	Mairehau North.	violent crimes	Acts Intended to Cause Injury	Common Assault
11	10	01/04/15	12	1	Waitaki District.	Aviemore.	property crimes	Unlawful Entry With Intent/Burglary, Break and Enter	Unlawful Entry With Intent/Burglary, Break and Enter
12	11	01/02/15	99	1	Christchurch City.	Belfast.	property crimes	Theft and Related Offences	Illegal Use of Property (Except Motor Vehicles)
13	12	01/04/15	12	1	Christchurch City.	Addington.	property crimes	Theft and Related Offences	Illegal Use of Property (Except Motor Vehicles)
14	13	01/02/15	99	1	Christchurch City.	Upper Riccarton.	property crimes	Theft and Related Offences	Illegal Use of Property (Except Motor Vehicles)
15	14	01/03/15	99	1	Christchurch City.	Avon Loop.	property crimes	Theft and Related Offences	Illegal Use of Property (Except Motor Vehicles)
16	15	01/03/15	99	1	Christchurch City.	Hagley Park.	property crimes	Theft and Related Offences	Illegal Use of Property (Except Motor Vehicles)
17	16	01/06/15	0	1	Christchurch City.	Riccarton South.	property crimes	Theft and Related Offences	Theft (Except Motor Vehicles), N.E.C.
18	17	01/07/15	15	1	Christchurch City.	Shirley East.	violent crimes	Acts Intended to Cause Injury	Common Assault
19	18	01/05/15	16	1	Christchurch City.	Casebrook.	property crimes	Theft and Related Offences	Illegal Use of Property (Except Motor Vehicles)
20	19	01/06/15	99	2	Selwyn District.	Taitapu.	violent crimes	Abduction, Harassment and Other Related Offences Against a Person	Abduction and Kidnapping
21	20	01/02/15	99	1	Selwyn District.	Darfield.	violent crimes	Acts Intended to Cause Injury	Common Assault
22	21	01/02/15	13	1	Mackenzie District.	Fairlie.	violent crimes	Acts Intended to Cause Injury	Common Assault
23	22	01/02/15	20	1	Christchurch City.	Upper Riccarton.	violent crimes	Acts Intended to Cause Injury	Serious Assault Not Resulting in Injury
24	23	01/02/15	17	1	Ashburton District.	Tinwald.	violent crimes	Acts Intended to Cause Injury	Serious Assault Not Resulting in Injury
25	24	01/02/15	19	1	Ashburton District.	Ashburton Central	violent crimes	Acts Intended to Cause Injury	Serious Assault Not Resulting in Injury
26	25	01/04/15	16	1	Christchurch City.	Northcote.	property crimes	Theft and Related Offences	Illegal Use of Property (Except Motor Vehicles)
27	26	01/03/15	12	1	Christchurch City.	Shirley East.	property crimes	Theft and Related Offences	Illegal Use of a Motor Vehicle
28	27	01/06/15	10	1	Christchurch City.	Mona Vale.	property crimes	Theft and Related Offences	Theft (Except Motor Vehicles), N.E.C.
29	28	01/06/15	0	1	Christchurch City.	Rawhiti.	violent crimes	Acts Intended to Cause Injury	Common Assault
30	29	01/05/15	99	1	Christchurch City.	Cathedral Square	property crimes	Theft and Related Offences	Illegal Use of Property (Except Motor Vehicles)
31	30	01/05/15	11	1	Christchurch City.	Mona Vale.	property crimes	Theft and Related Offences	Theft of Motor Vehicle Parts or Contents
32	31	01/05/15	10	1	Christchurch City.	Cathedral Square	property crimes	Theft and Related Offences	Illegal Use of a Motor Vehicle
33	32	01/06/15	10	1	Christchurch City.	Belfast South.	property crimes	Theft and Related Offences	Theft (Except Motor Vehicles), N.E.C.
34	33	01/06/15	12	1	Christchurch City.	Hornby North.	property crimes	Theft and Related Offences	Theft (Except Motor Vehicles), N.E.C.
35	34	01/06/15	13	1	Christchurch City.	Bromley.	property crimes	Theft and Related Offences	Theft (Except Motor Vehicles), N.E.C.

wDay	Average_Victimisations
Monday	1.047844
Tuesday	1.042322
Wednesday	1.054247
Thursday	1.064805
Friday	1.051593
Saturday	1.072795
Sunday	1.073966

Average Victimisations per Day of Week
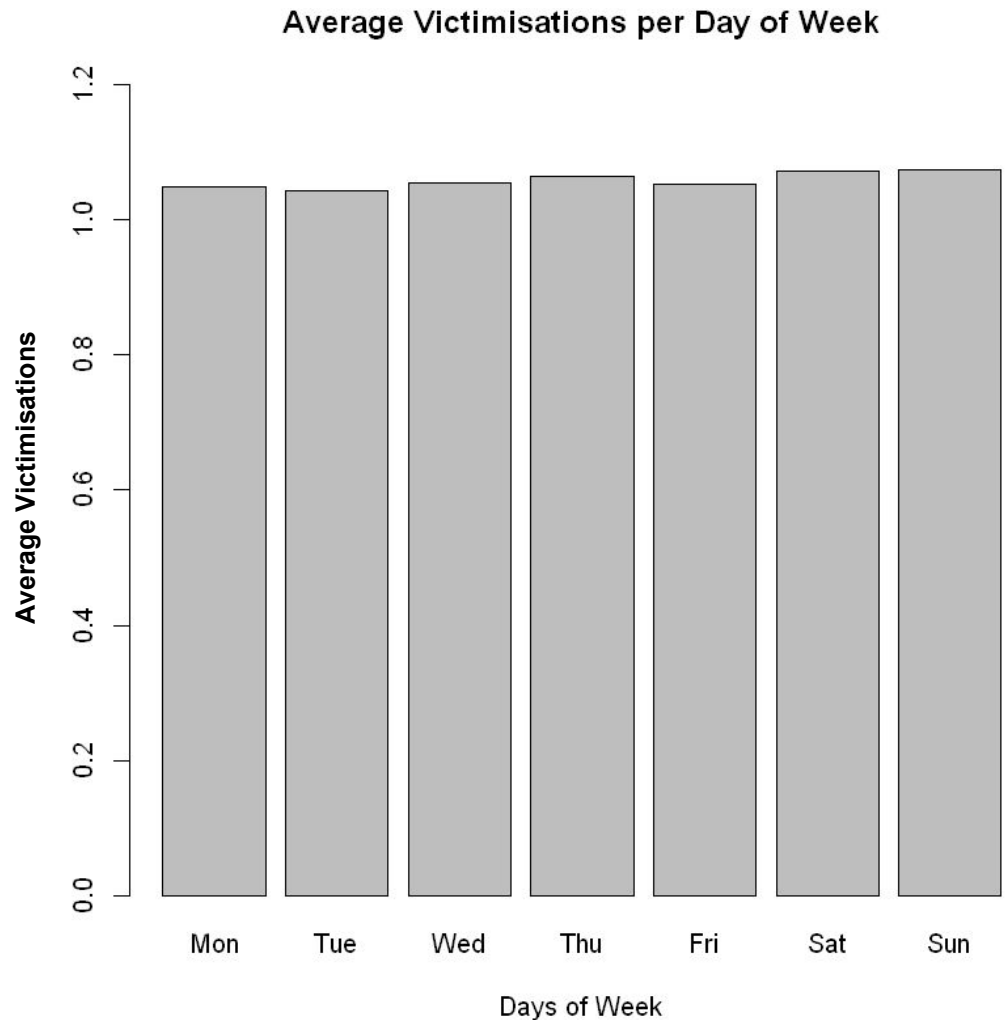
RIP GROUP A :'(

There was a <u>crucial error</u>…

- We assume that the Police department has censored a specific part of the day.
- This made it nearly impossible to compare 'Crime's & 'Earthquakes'

But **Team Raw Data** does not give up so easily!

Newly Reformed Question

Does the ratio of crimes correspond to the ratio of earthquakes for each day of the week in Canterbury 2015?

Number of Crimes and Earthquakes by Day

Date	Victimisations	Num Quakes	Mean Magnitude	Mean Depth
Mon	1993	45	2.779115	17.56715
Tue	1921	50	2.862623	15.41727
Wed	1924	48	2.777747	18.77362
Thu	2021	37	2.651080	12.22597
Fri	2079	49	2.660788	14.93448
Sat	2299	54	3.086621	23.45195
Sun	2207	40	2.722031	18.47197

Earthquakes by day of the week
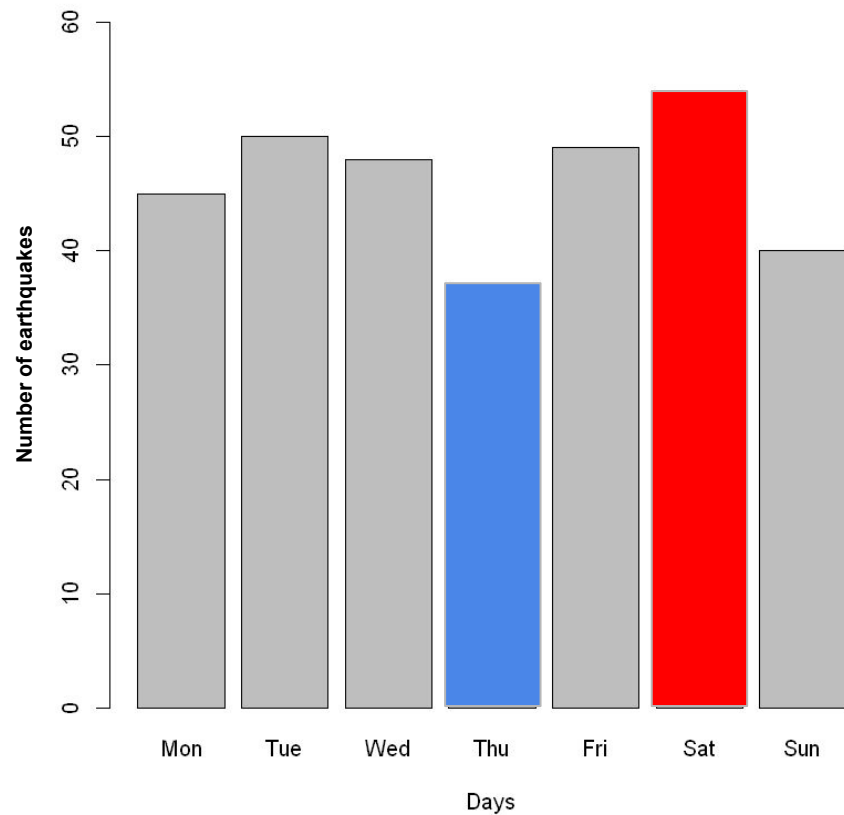
Crime by day of the week
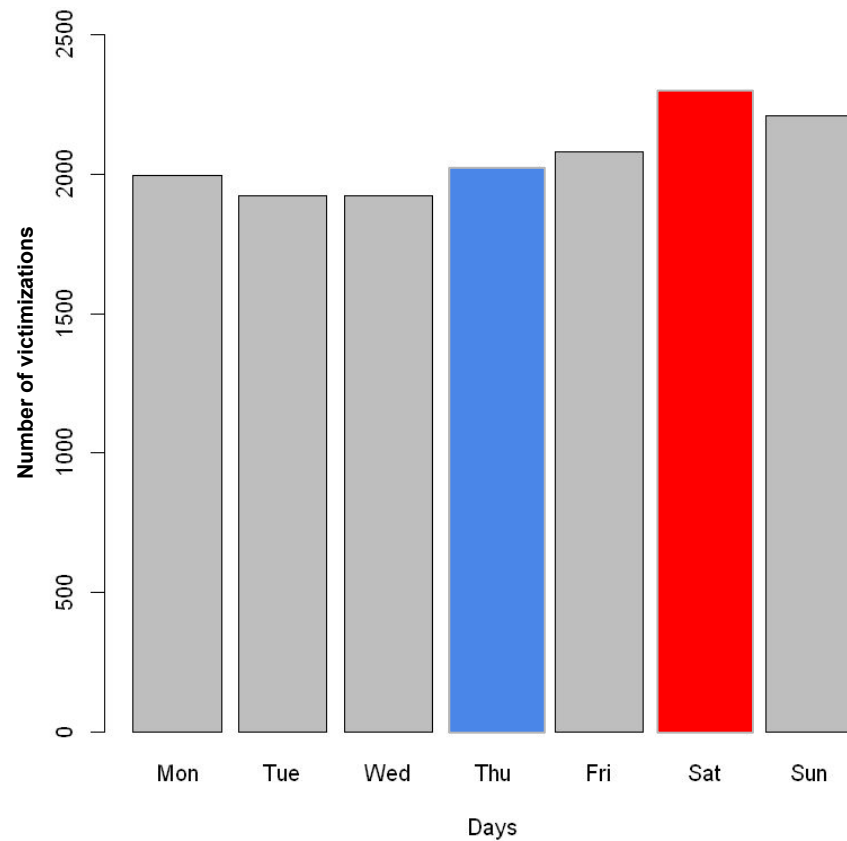
In Conclusion

- The Leaflet and RGL modules are effective in displaying specific data.

- While earthquakes and victimizations are more common on Saturday, this trend is contradicted by the low number of earthquakes and the high levels of victimizations on Thursdays.

- In order to come to a proper conclusion, either we need a more specific date or data that covers more than just 2015.

Questions