


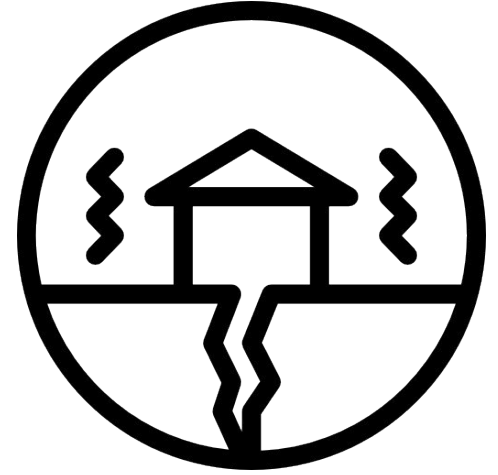
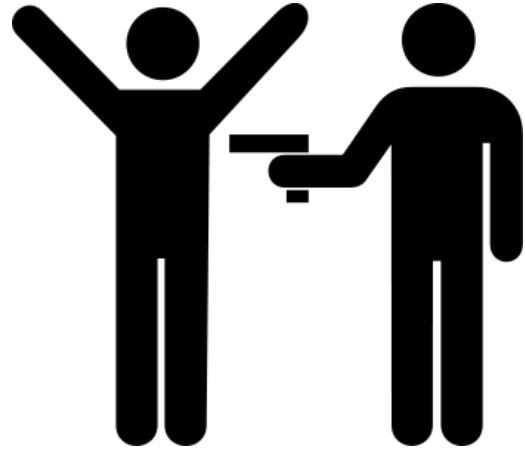


# DATA 201

## 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 “



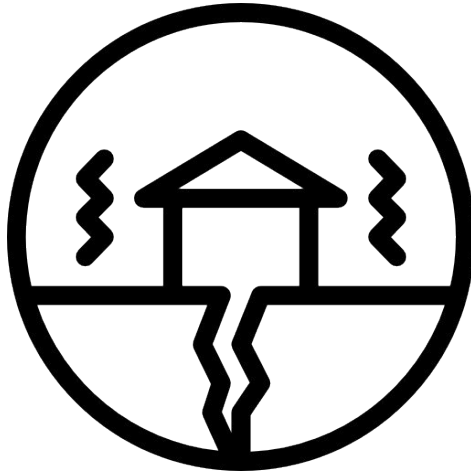
- OpenScript Java library for **Interactive maps**
- It Compose maps using arbitrary combinations of:
  - Markers
  - Map Tiles
  - Lines & Shapes
    - We **used 'Circles'** to visualise our earthquake data (which will be shown further on)
  - Pop-Ups
  - Polygons
- Overall a great tool to help **visualise**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

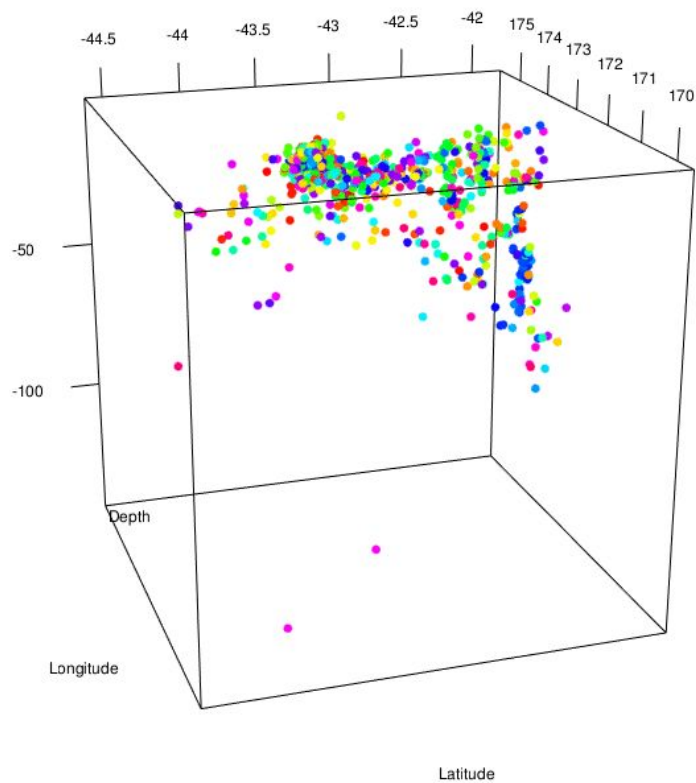
fx	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V
1	publicid	eventtype	origintime	modificationtime	longitude	latitude	magnitude	depth	magnitude	depthtype	evaluationmethod	evaluationstatus	evaluationmode	earthmodel	usedphasecount	usedstationcount	magnitude	stationcount	minimumdistance	azimuthgap	originerror	magnitudeuncertainty
2	2015p686126		2015-12-31T20:40:15-12-31T20:40:15		172.4208625	-43.83824827	2.115245817	8.984375 M			NonLinLoc		automatic	n23dxx	18	18	6	0.2124154942	130.4105005	0.4701863144	0	
3	2015p689015		2015-12-31T19:40:15-12-31T19:40:15		173.8174779	-42.40701322	2.12091888	59.5625 M			NonLinLoc		automatic	n23dxx	20	20	7	0.2058333872	150.7153796	0.9148338012	0	
4	2015p685702		2015-12-31T17:40:15-12-31T17:40:15		173.0585578	-43.18447171	2.451800888	12.03125 M			NonLinLoc		automatic	n23dxx	22	22	6	0.1977734506	136.9095322	1.168121916	0	
5	2015p685421		2015-12-31T14:40:15-12-31T14:40:15		173.0774401	-43.1850136	2.288203254	12.03125 M			NonLinLoc		automatic	n23dxx	15	15	4	0.1969714132	153.8544878	0.7444889251	0	
6	2015p684584	earthquake	2015-12-31T07:40:15-01-01T10:10:10		171.3983028	-43.48345669	3.003803423	11.328125 M			NonLinLoc	confirmed	manual	n23dxx	42	32	13	0.1329497459	51.74348688	0.7349355759	0	
7	2015p684121		2015-12-31T02:40:15-12-31T03:00:00		172.7827859	-43.47984805	2.092232791	9.21875 M			NonLinLoc		automatic	n23dxx	10	10	6	0.2407818302	153.6887831	0.5455649037	0	
8	2015p683846		2015-12-31T00:40:15-12-31T01:00:00		173.5358412	-42.29359813	2.103155306	40.15625 M			NonLinLoc		automatic	n23dxx	12	12	4	0.1222878371	118.5179476	0.5183668835	0	
9	2015p683474	earthquake	2015-12-30T21:10:15-01-01T10:10:10		172.7843531	-43.48907403	2.906709025	9.921875 M			NonLinLoc	confirmed	manual	n23dxx	19	14	9	0.08730782288	109.5957539	0.4988073159	0	
10	2015p683417	earthquake	2015-12-30T20:40:15-01-01T22:24:00		172.8192902	-43.42850113	2.583224485	10.0605148 M			LOCSTAT	confirmed	manual	iasp91	23	18	9	0.2800762951	121.6085202	0.4318879318	0	
11	2015p682933		2015-12-30T18:16:20-12-30T18:16:20		172.3429183	-43.74088006	2.08165641	8.04875 M			NonLinLoc		automatic	n23dxx	14	14	6	0.1473808495	114.5754312	0.4850223111	0	
12	2015p681164	earthquake	2015-12-30T00:40:15-01-01T09:40:15		171.771338	-43.03314335	2.113398601	9.921875 M			NonLinLoc	confirmed	manual	n23dxx	18	13	3	0.3535195599	104.9038901	0.7920279017	0	
13	2015p680894	earthquake	2015-12-29T22:20:15-01-01T20:40:15		172.7478027	-42.18306351	1.938404119	38.2231238 M			LOCSTAT	confirmed	manual	iasp91	24	13	1	0.4363853595	61.30351257	0.8127460817	0	
14	2015p678938	earthquake	2015-12-29T04:40:15-01-01T12:24:00		172.0530538	-43.23959788	2.43631732	10.0390625 M			NonLinLoc	confirmed	manual	n23dxx	33	24	9	0.08869628036	41.85107709	0.825123374	0	
15	2015p677028		2015-12-28T12:40:15-12-28T12:40:15		172.0448523	-43.27480644	2.206406676	10.859375 M			NonLinLoc		automatic	n23dxx	17	17	7	0.05126967494	44.4485844	0.3537502783	0	
16	2015p676839		2015-12-28T10:10:15-12-28T10:10:15		173.2576793	-43.59912382	2.02854635	30.3125 M			NonLinLoc		automatic	n23dxx	12	12	2	0.1884731979	193.8249655	0.5885747154	0	
17	2015p676759		2015-12-28T09:20:15-12-28T09:20:15		173.083174	-42.018490	2.202042699	24.8875 M			NonLinLoc		automatic	n23dxx	21	21	8	0.2897325031	78.79788418	0.5537801686	0	
18	2015p675952		2015-12-27T23:40:15-12-27T23:40:15		172.0827627	-43.46323353	1.382654008	8.28125 M			NonLinLoc		automatic	n23dxx	13	13	4	0.1558430276	90.51688764	0.6043880693	0	
19	2015p675430	earthquake	2015-12-27T21:40:15-01-01T22:20:15		173.3187714	-43.56254623	2.039912544	19.74288398 M			LOCSTAT	confirmed	manual	iasp91	15	11	3	0.2349421352	217.5504498	0.4639966813	0	
20	2015p675354	earthquake	2015-12-27T21:40:15-01-01T21:12:12		173.290741	-43.56250983	2.34889786	22.18877721 M			LOCSTAT	confirmed	manual	iasp91	13	9	4	0.2187917593	214.5860358	0.4111773973	0	
21	2015p675328	earthquake	2015-12-27T20:40:15-01-01T21:12:12		173.28892	-43.57825059	2.81933052	21.83356425 M			LOCSTAT	confirmed	manual	iasp91	19	14	6	0.2226988514	213.67700393	0.4210530695	0	
22	2015p672239		2015-12-28T17:40:15-12-28T17:40:15		172.724159	-43.53804092	1.905943932	9.451125 M			NonLinLoc		automatic	n23dxx	15	15	7	0.1785110022	100.3852939	0.8454989049	0	
23	2015p671165		2015-12-28T08:40:15-12-28T08:40:15		169.8221757	-44.39547548	1.580608316	10.15625 M			NonLinLoc		automatic	n23dxx	10	10	2	0.2853309186	84.51298498	0.6302135954	0	
24	2015p669237	earthquake	2015-12-25T14:40:15-01-01T07:10:10		173.1415558	-42.72557497	0.987373913	24.0222443 M			LOCSTAT	confirmed	manual	iasp91	42	30	17	0.3095111403	129.0248187	0.5871368804	0	
25	2015p667341		2015-12-24T21:40:15-12-24T22:00:00		173.0774401	-43.1850136	2.292738248	12.03125 M			NonLinLoc		automatic	n23dxx	14	14	6	0.1999714132	156.8405843	0.60778676204	0	
26	2015p665465	earthquake	2015-12-24T14:40:15-01-01T07:10:10		172.8025502	-43.71223354	2.526959635	34.785625 M			NonLinLoc	confirmed	manual	n23dxx	29	22	9	0.1883427735	84.82784081	0.4853786804	0	
27	2015p665108		2015-12-24T02:40:15-12-24T02:10:10		171.8562491	-43.57173333	2.110049657	8.515625 M			NonLinLoc		automatic	n23dxx	21	21	6	0.214725181	54.29713967	0.8574716688	0	
28	2015p664498	earthquake	2015-12-23T20:40:15-01-01T07:40:15		173.2186584	-43.42733795	1.877235403	5 M			operator assigne	LOCSTAT	confirmed	manual	iasp91	15	10	2	0.3176177144	188.0098454	0.771804131	0
29	2015p663907	earthquake	2015-12-23T16:40:15-12-23T17:10:10		172.4277954	-43.80042572	2.396558022	5.140413791 M			LOCSTAT	confirmed	manual	iasp91	14	12	2	0.195081970	108.2118547	0.3210621846	0	
30	2015p662347		2015-12-23T01:40:15-12-23T01:40:15		172.0484341	-43.17137391	2.271932958	11.798875 M			NonLinLoc		automatic	n23dxx	18	18	8	0.154605878	72.1507993	0.7215796204	0	
31	2015p661213		2015-12-22T16:40:15-12-22T16:15:00		173.3169314	-42.03197395	2.389968206	24.8875 M			NonLinLoc		automatic	n23dxx	12	12	2	0.4087402686	205.8964387	0.8893983679	0	
32	2015p659533		2015-12-20T22:40:15-12-20T22:40:15		171.6230918	-43.48821111	1.958750222	15.078125 M			NonLinLoc		automatic	n23dxx	16	16	5	0.05847835568	47.06224027	0.9740552217	0	
33	2015p655985		2015-12-20T17:40:15-12-20T17:17:10		171.6048223	-43.53278803	1.588223404	8.840625 M			NonLinLoc		automatic	n23dxx	12	12	3	0.20273702877	119.897559	0.3805861121	0	
34	2015p654759	earthquake	2015-12-20T09:10:15-01-01T07:03:30		175.2780825	-42.79820332	2.440053901	33 M			operator assigne	LOCSTAT	confirmed	manual	iasp91	34	21	10	1.228320505	223.2845817	0.8409520642	0
35	2015p652197	earthquake	2015-12-19T07:10:15-01-01T07:03:30		172.7706290	-42.38844028	2.38844028	40.59319048 M			LOCSTAT	confirmed	manual	iasp91	28	17	6	0.1437116331	88.31649729	0.793372195	0	
36	2015p650726		2015-12-18T18:20:15-12-18T18:20:15		172.0235932	-43.60852383	1.704388198	9.921875 M			NonLinLoc		automatic	n23dxx	14	14	6	0.1478030749	59.35167817	0.5583042495	0	
37	2015p650602		2015-12-18T17:40:15-12-18T17:40:15		173.0831679	-43.16851629	2.184081013	12.06875 M			NonLinLoc		automatic	n23dxx	13	13	6	0.2041071038	147.8455559	0.5876726425	0	
38	2015p650448		2015-12-18T15:40:15-12-18T15:40:15		172.1841335	-43.58271695	2.27490418	10.390625 M			NonLinLoc		automatic	n23dxx	20	20	11	0.1475351981	73.0971479	0.4833349257	0	
39	2015p650334		2015-12-18T14:40:15-12-18T15:40:15		172.3769832	-43.55823688	2.079063383	9.921875 M			NonLinLoc		automatic	n23dxx	18	18	9	0.2400488895	80.0079678	0.4455602873	0	
40	2015p649906	earthquake	2015-12-18T11:50:15-01-01T07:02:30		173.0446862	-43.02389120	2.506937201	35.46875 M			NonLinLoc	confirmed	manual	n23dxx	30	19	8	0.2553997844	148.1208848	0.6091958531	0	
41	2015p648590	earthquake	2015-12-17T23:40:15-01-01T07:01:10		172.3766327	-43.6565459	2.820039612	8.78720047 M			LOCSTAT	confirmed	manual	iasp91	19	15	11	0.1847463259	114.3398995	0.4468101073	0	
42	2015p645706	earthquake	2015-12-16T21:40:15-01-01T07:04:15		172.3913845	-43.59864353	2.418449339	10.859375 M			NonLinLoc	confirmed	manual	n23dxx	18	12	7	0.2195839329	102.9279695	0.6110564482	0	
43	2015p645634		2015-12-16T21:10:15-12-16T21:10:15		172.3757882	-43.544798	1.939079916	9.921875 M			NonLinLoc		automatic	n23dxx	13	13	6	0.2485713708	88.7181233	0.4420196406	0	
44	2015p643901		2015-12-16T05:40:15-12-16T05:40:15		172.7796955	-43.49284796	1.896091732	9.921875 M			NonLinLoc		automatic	n23dxx	12	12	3	0.2320721897	111.1872429	0.4045135122	0	
45	2015p643884		2015-12-16T05:40:15-12-16T05:40:15		172.7881792	-43.4681017	1.914588025	10.390625 M			NonLinLoc		automatic	n23dxx	13	13	5	0.2308408268	111.7999038	0.393957249	0	
46	2015p643226	earthquake	2015-12-15T23:40:15-01-01T07:02:30		170.757422	-43.85898002	2.752779022	6.171875 M			NonLinLoc	confirmed	manual	n23dxx	18	17	9	0.2233428839	72.16280846	0.4934015409	0	



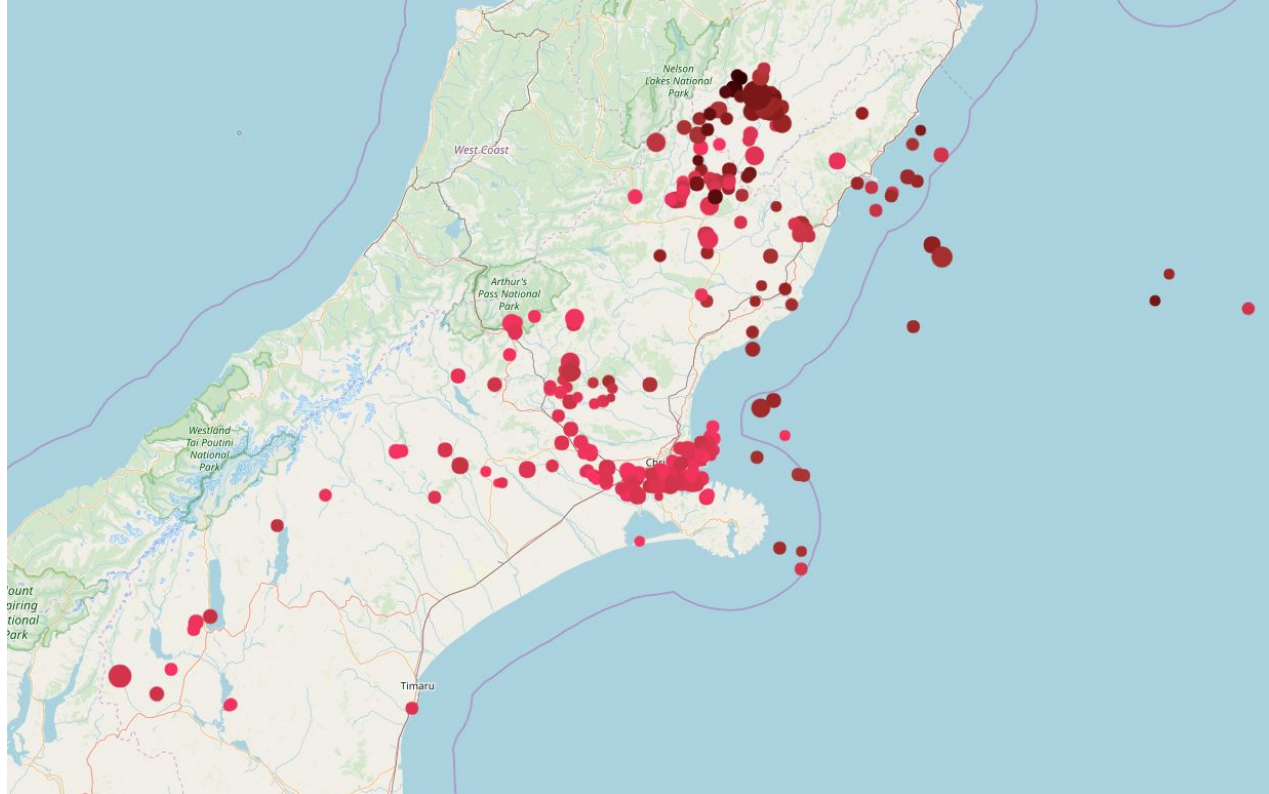
# Wrangled Data

fx									
	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

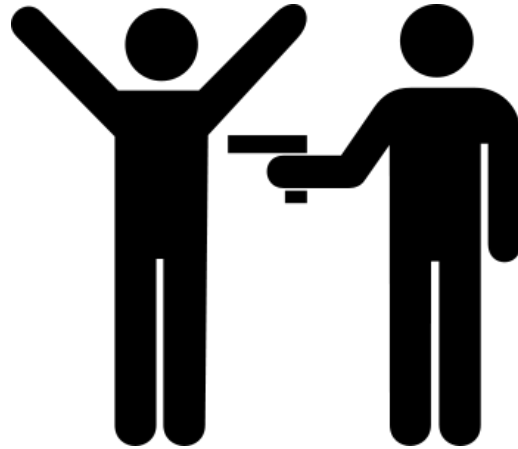


Lighter colour : *Shallow*

Darker colour : *Deeper*

Size(Radius) : *Magnitude*

# Police Data



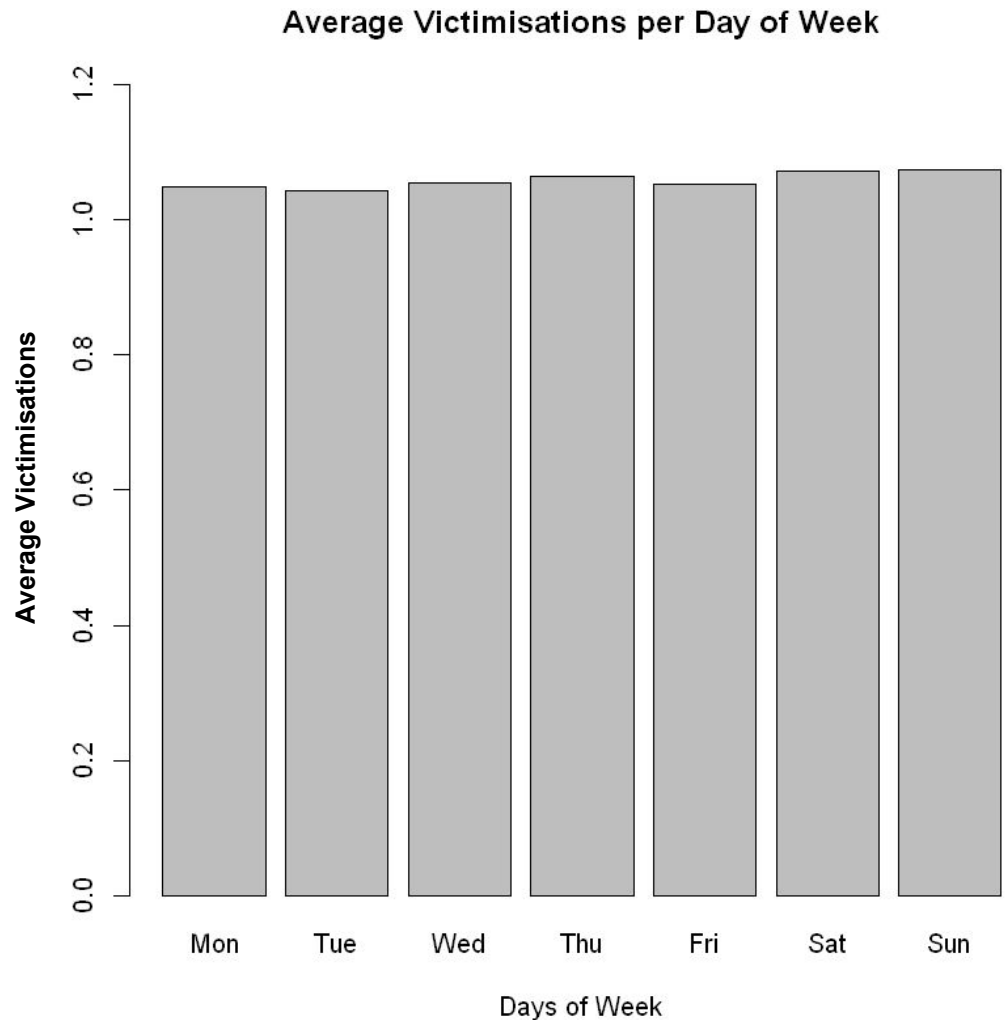


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# Wrangled Data

	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





# RIP GROUP A :'(

There was a crucial error...

- 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!

## 2012 MELBOURNE EARTHQUAKE





# Newly Reformed Question

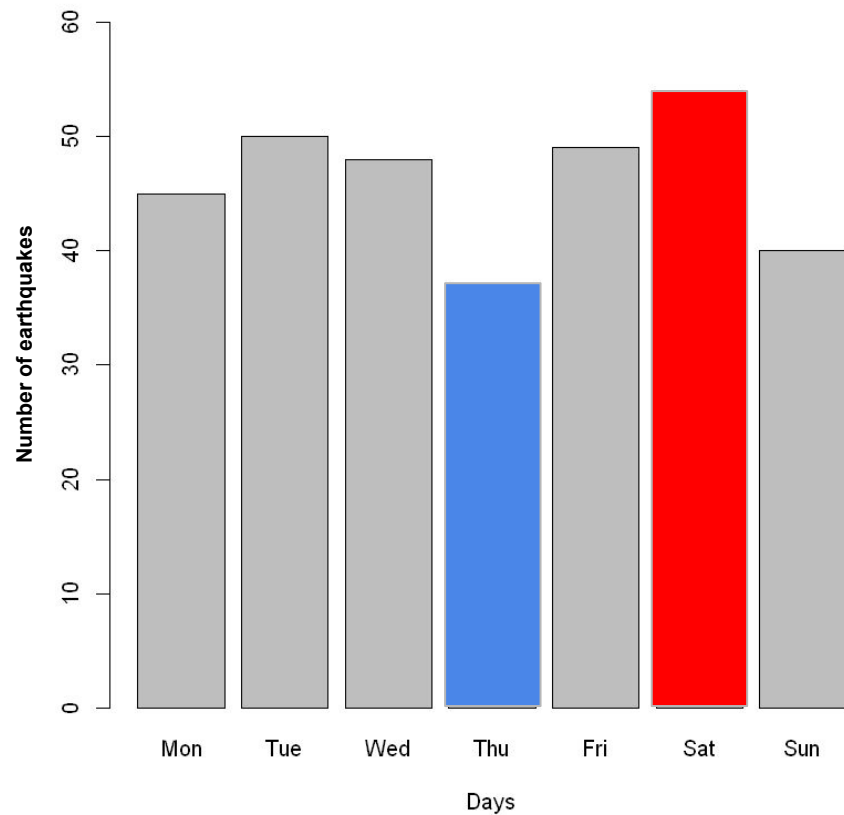
Does the **ratio of crimes**  
correspond to the **ratio of**  
**earthquakes** for each day of  
the week in Canterbury  
2015?



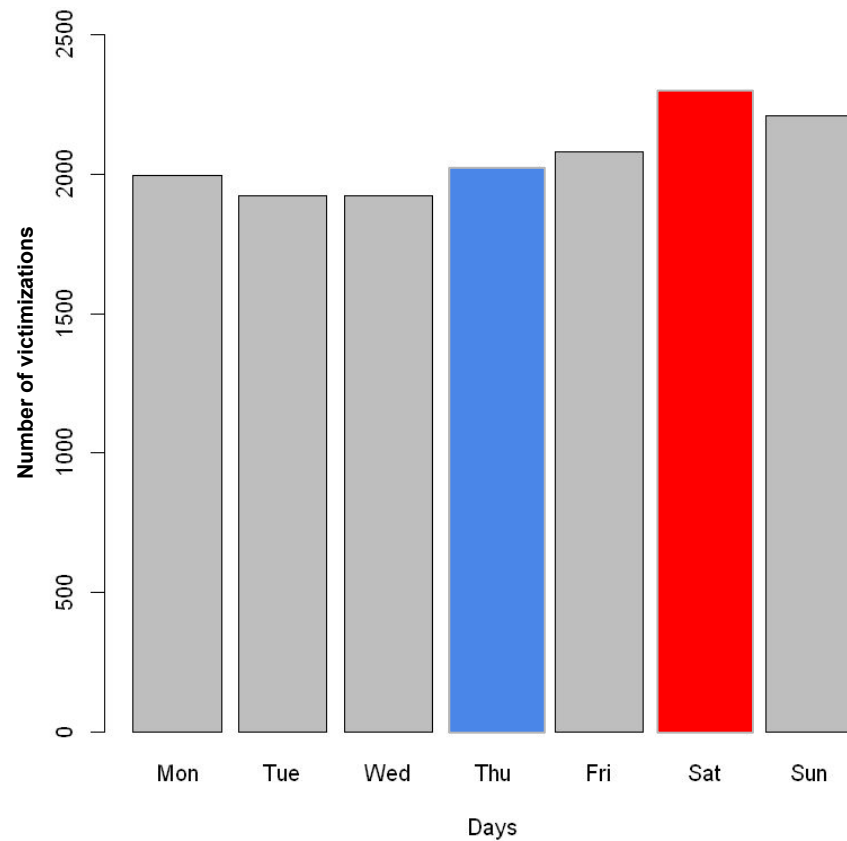
# Number of Crimes and Earthquakes by Day

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

