

# Predicting catastrophic loss from social data

## Background:

**Aon:** Risk consulting firm: Analytics division specialising in natural catastrophe risk

**Service:** Reinsurance placements; exposure and portfolio management; **event response...**

**Clients:** Insurance companies, state/local government, commercial organisations

## Audience:



Emergency  
New South Wales

What does **our audience** want to know during a catastrophe?

What is the total loss I can expect from the event?

Which regions experienced the most damage?

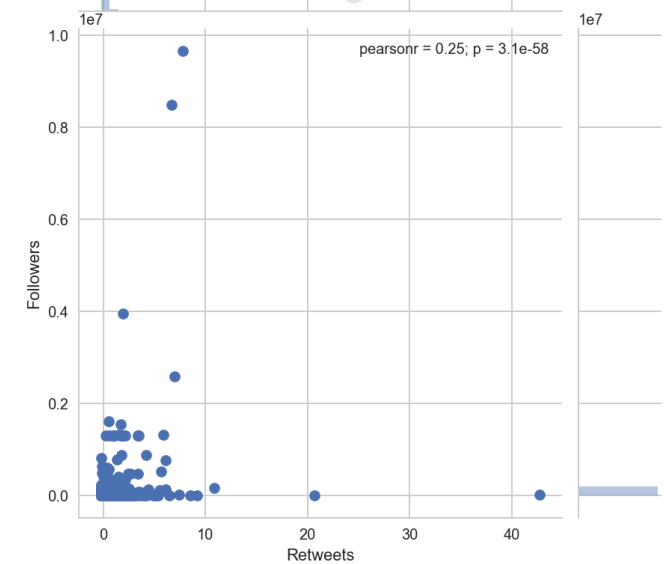
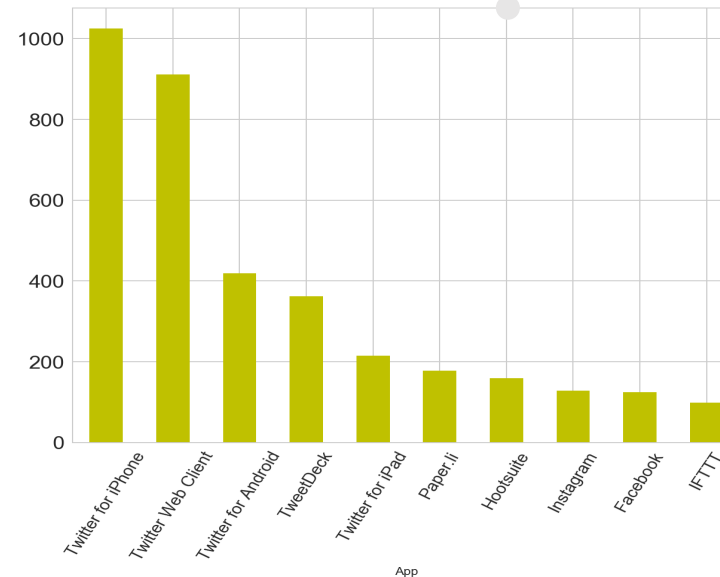
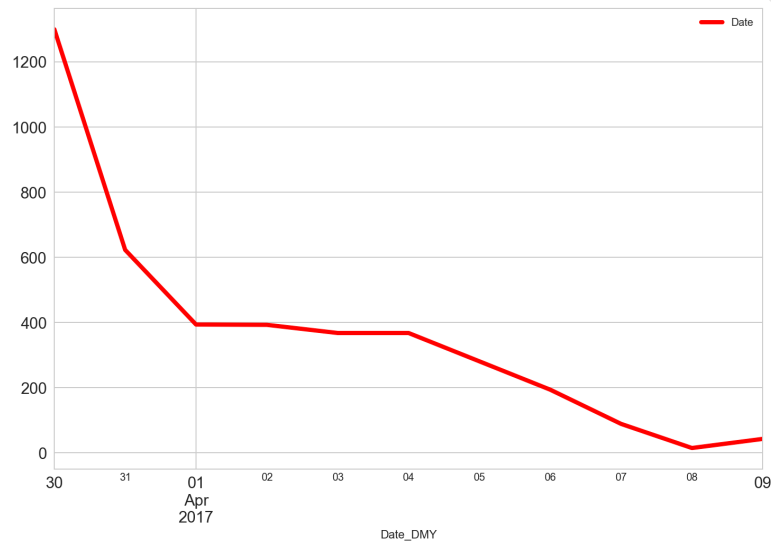
How many claims can I expect?



# Data behind the Science

## Historical Twitter data from periods of major natural catastrophes

- Two major hail events:
  - Brisbane 2014, Sydney 2015
- Cyclone Debbie data for preliminary exploratory data analysis



```
csv = './data/cyclonedebbie_30Mar.csv'
```

```
cy_deb = pd.read_csv(csv, encoding = "ISO-8859-1")  
cy_deb = pd.DataFrame(cy_deb)  
print (cy_deb.head(5))  
print (cy_deb.shape)
```

	Date	Screen Name	Full Name	\
0	3/30/2017 3:30:07	@Paul4Eva25	Symantha Martin	
1	3/30/2017 3:30:17	@tan2tlc	Tania Lucey	
2	3/30/2017 3:30:32	@SaxonTheHound	SaxonTheHound	
3	3/30/2017 3:30:51	@lmars111	Luke Marshall	
4	3/30/2017 3:30:53	@spellscribe	Amy Hopkins	

	Tweet Text	Tweet ID	\
0	Welcome To Sydney #CycloneDebbie .... <a href="https://...">https://...</a>	8.473960e+17	
1	MISSING HORSES Please share! #CycloneDebbie #U...	8.473960e+17	
2	RT @ABCemergency: Ex-#CycloneDebbie has hit so...	8.473960e+17	
3	Oh well. Luckily for me i haven't been majorly...	8.473960e+17	
4	RT @sweirmint: Sharknado; this is how it start...	8.473960e+17	

#cyclonedebbie

# How will I measure success?

Success will be developing a **predictive model** that uses social data to indicate the **severity** of a natural catastrophe:

- Language
- Volume
- Connectivity

## Framing the Hypothesis:

- H0: Social data has **no indication** of the severity of a natural catastrophe
- H1..n: Social data can **predict the severity** of a natural catastrophe:
- Financial Loss
  - Claims
  - Geography

