Understanding transient population movements and their exposure to disaster risk

LINZ Brown Bag Resilience Talk
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The challenge

Good disaster risk reduction initiatives require →
Good disaster risk assessments which require →
Representative exposure data

Our current understanding

Measure	Estimated arrivals into Queenstown 16/17	
International Visitors Survey (Stats NZ)	1.4 million	Scaled up as IVS as does not allow for children. High Margin of Error
Accommodation Survey (Stats NZ)	1.8 million	Assumes non-commercial visits are the same as commercial visits, but they are twice as long. High Margin of error
Monthly Regional Tourism Estimate	1.5 million	Assumes same average fuel spend per day for all < 90 day visitors
Cellular Data (Qrious, Spark NZ)	1.3 million	Assumes 70/30 split of international and domestics
Arrivals at Queenstown Airport	0.9 million	Unknown international/domestic split

After Byett, Welvaert, Stroombergen and Patterson (2018)
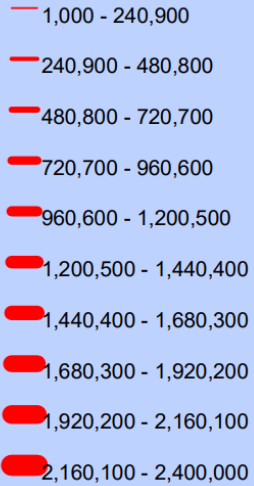
Defining Transients?

o   Transient Populations
o   Temporary Residents
o   Semi Permanent Residents
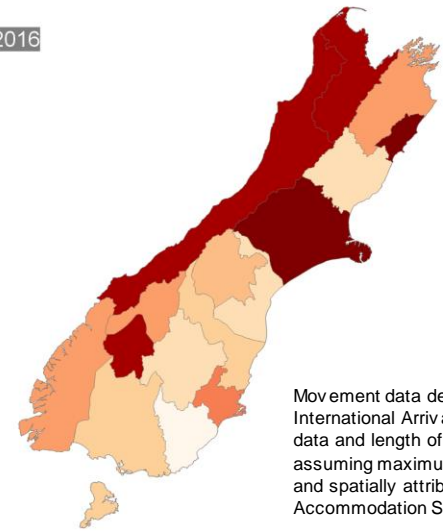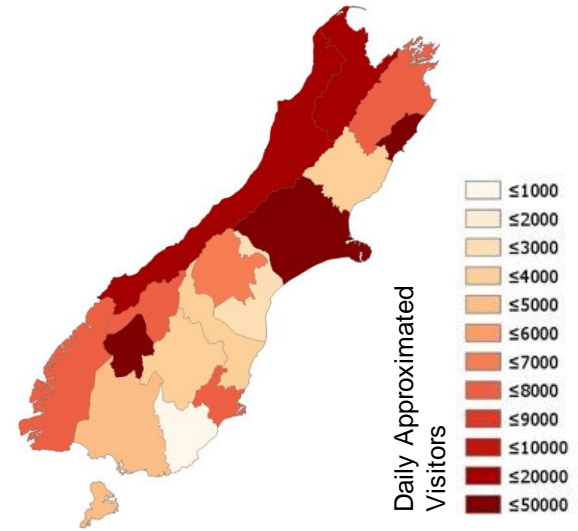o   Permanent Residents

Wilson and Simmons (2019)

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People move through space

Analysis Key:

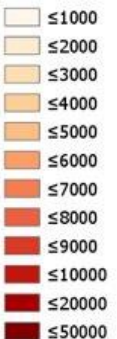|	
⎯	1,000 - 240,900
▬	240,900 - 480,800
▬	480,800 - 720,700
▬	720,700 - 960,600
▬	960,600 - 1,200,500
▬	1,200,500 - 1,440,400
▬	1,440,400 - 1,680,300
▬	1,680,300 - 1,920,200
▬	1,920,200 - 2,160,100
▬	2,160,100 - 2,400,000

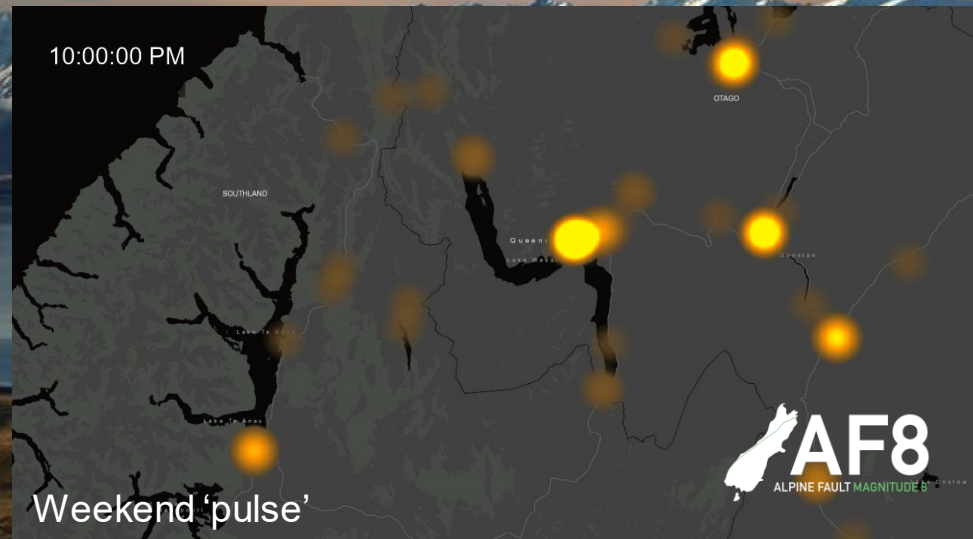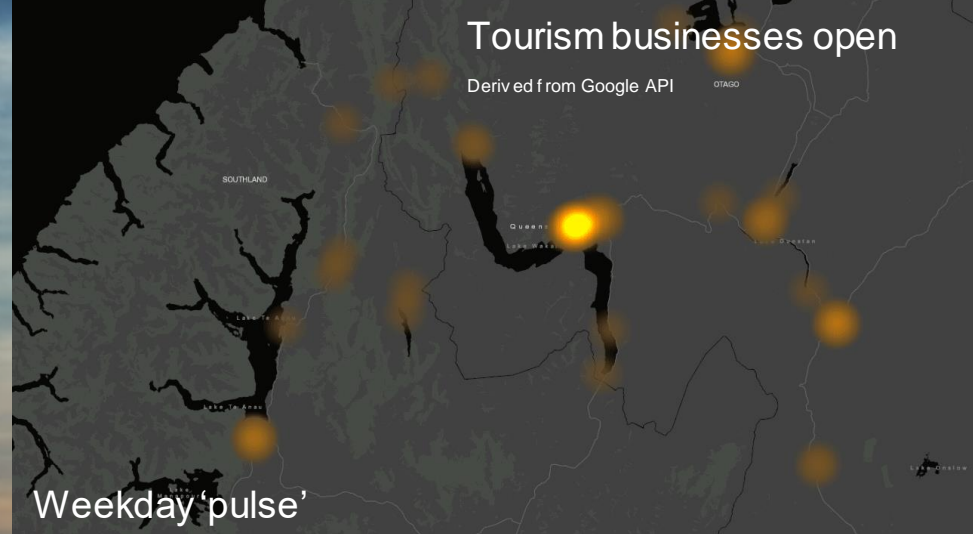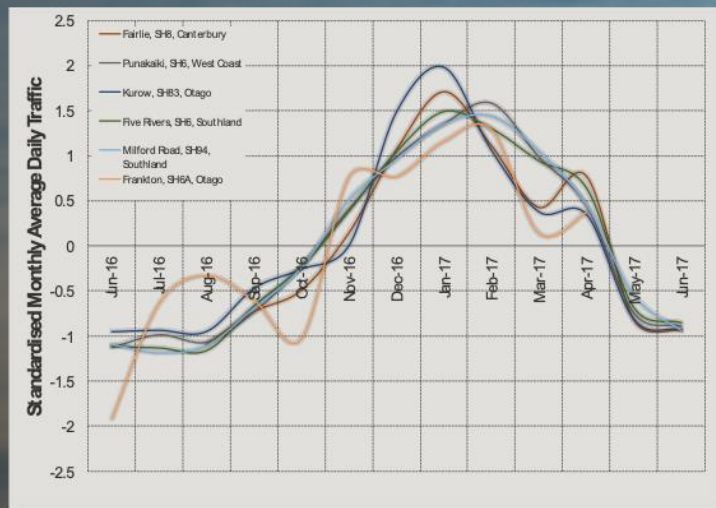*Vuletich and Becken (2006)*

31/01/2016

Movement data derived from International Arrival and Departures data and length of stay (MBIE), assuming maximum visit of 30 days, and spatially attributed from Accommodation Survey

Daily Approximated Visitors

	≤1000
	≤2000
	≤3000
	≤4000
	≤5000
	≤6000
	≤7000
	≤8000
	≤9000
	≤10000
	≤20000
	≤50000

Tourism businesses open

Derived from Google API

Weekday 'pulse'

10:00:00 PM

Weekend 'pulse'

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Points of Interest

MMI
- ≤3
- ≤4
- ≤5
- ≤6
- ≤6
- ≤7
- ≤8
- ≤9
- ≤10

Bradley et al (2017)

Points of Interest, derived from
- OpenStreetMap
- Department of Conservation Assets
- TripAdvisor Reviews

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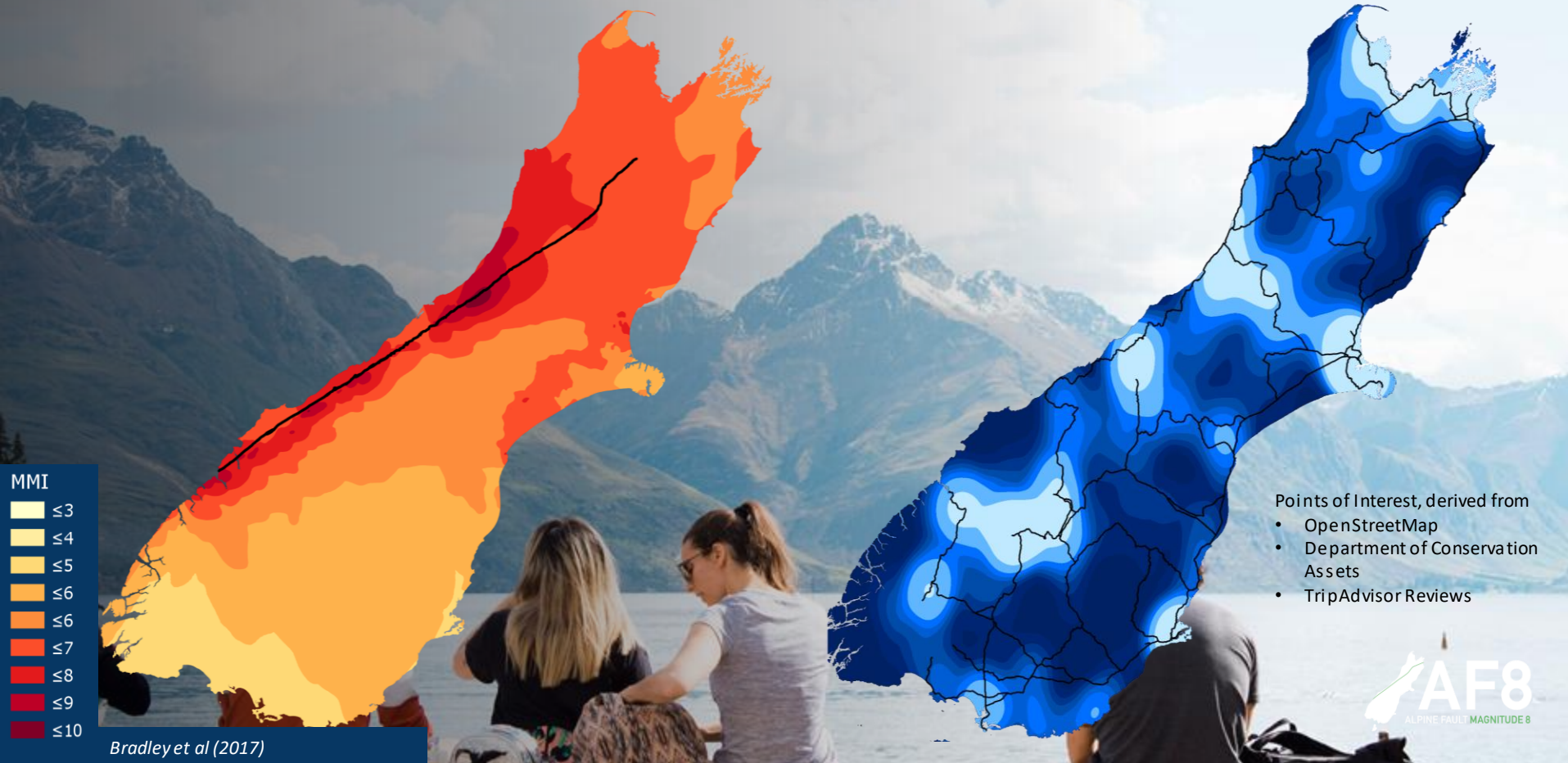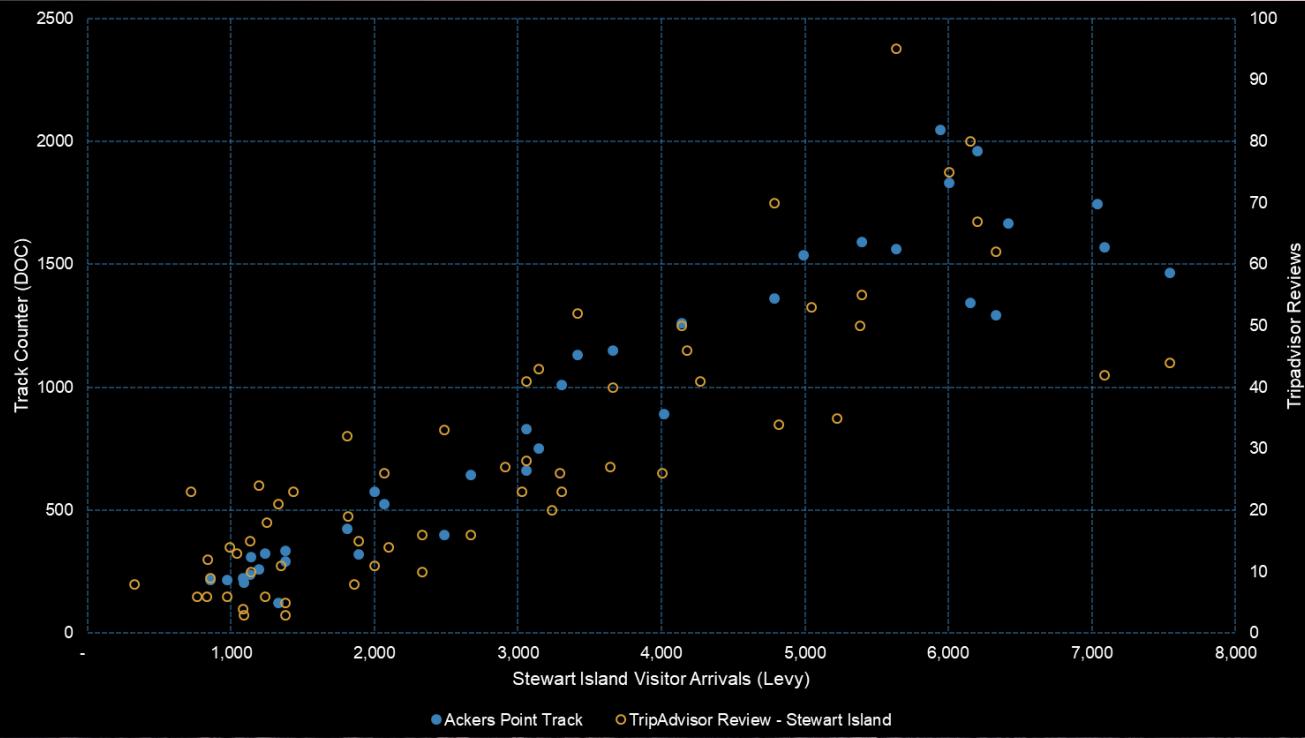
Opportunities to identify predictors of movement to understand disaster risk exposure

But - what really matters?

Actionable insights – how do you make decisions?

What accuracy of data is good enough?
- o In the heat of the moment -
- o Or taking a decision at/to the board table?

What types of insights are important?
- o Demographics
- o Total numbers
- o Those affected
- o Vulnerability
- o Limitations of modelling?

In an era of big data, apps, machine learning and buzz words –
How do we make good disaster risk reduction decisions?

Where are we heading?

1. **Ingredients** – Some shown, continually discovering more.

2. **Methods** - What can we do with our 'ingredients'

3. **Technique** – Underlying assumptions, what skillsets are needed/practical

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4. **Preference of decision makers** – The 'real world test', targeted interviews, experiences from past events –Stale ginger nut or delicious black forest gâteaux?

Thanks!

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Photographs by Unsplash

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