



Building better disaster risk models: Understanding the role of transient populations in disaster risk modelling

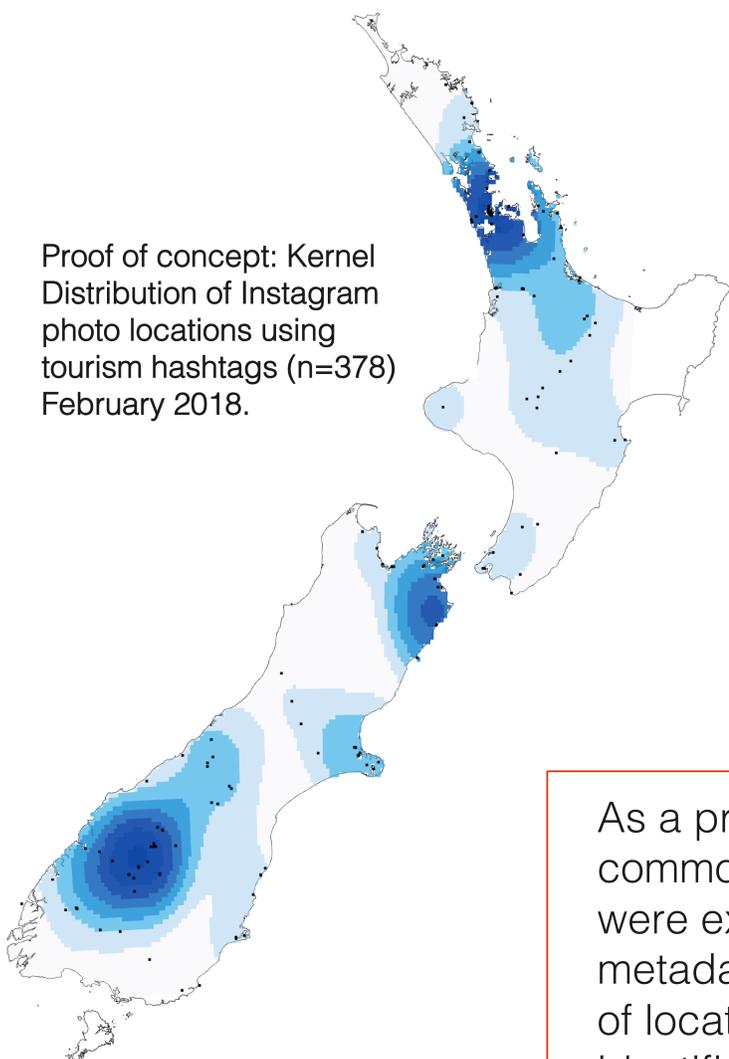
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It is widely understood that risk modelling has limitations, particularly when it comes to understanding exposure to a disaster. Transient populations are often ignored in traditional disaster models (Couling 2014). We proposed to develop new novel methods to understanding the distribution of transients, through space and time.



Proof of concept: Kernel Distribution of Instagram photo locations using tourism hashtags (n=378) February 2018.

Two main groupings of transient populations: 'tourists' and 'short term workers'. Each group has a different travel behaviour and different set of vulnerabilities and needs following a disaster.

There are three main methods to understanding population movement: **infrastructure** data (i.e. reticulated networks, cellular), **volunteered 'app'** data (i.e. social media) or **remote sensing**. Big data type sources have been successfully used in New Zealand to understand population movements following a disaster (Newel *et al.* 2012) and internationally (Li *et al.* 2017). However, these have never focused on transient populations.

As a proof of concept, 378 instagram posts which used one of four common NZ tourism hashtag reference (e.g. #newzealandfinds) were extracted from a two week period in February 2018. The metadata of these posts locations was extracted, and distributions of location is shown. While a crude method, with limitations (as identified by Meier 2011) the resultant spatial distribution, is very similar to other MBIE tourism indicators. These methods need to be assessed further.

There is not 'one' solution to better understand transient populations distributions, instead a variety of data types and methods can be applied to build greater confidence in a baseline model. As such ongoing research as part of this project will consider [1] what data and (spatial/temporal) resolutions of data are needed [2] how existing datasets are being used by decision makers and [3] what gaps exist in data availability and why.

References:

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