

Good practices in visualising geo-spatial disease data

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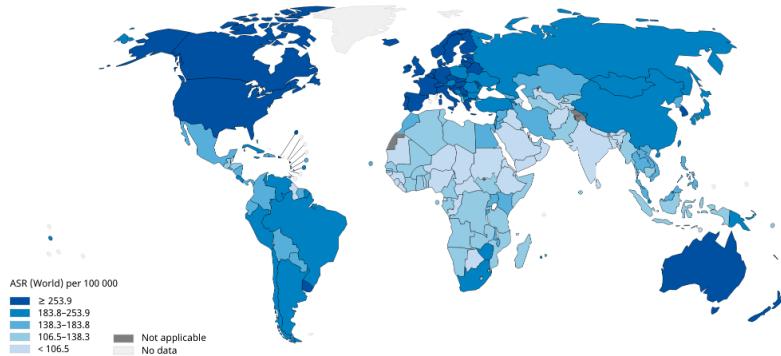
Australian Cancer Atlas



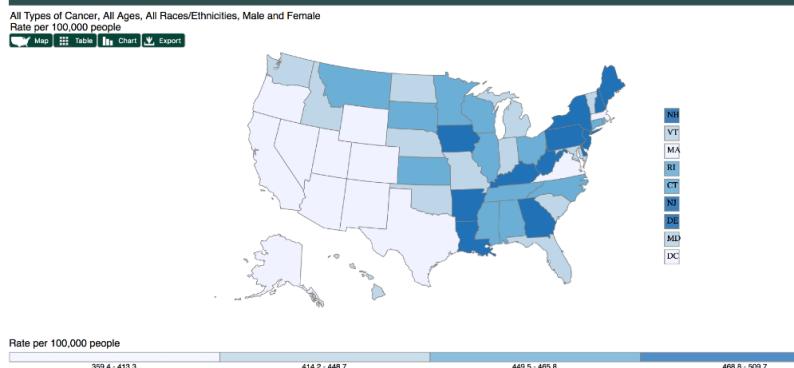
The screenshot shows the homepage of the Australian Cancer Atlas. At the top left is the logo 'AUSTRALIAN CANCER ATLAS' with three overlapping colored circles (red, blue, and yellow). The top navigation bar includes links for Overview, The Data, Methodology, Resources, About, and Atlas, along with a search icon. The main title 'AUSTRALIAN CANCER ATLAS' is prominently displayed in large white letters against a blue background featuring a map of Australia. Below the title is a green button labeled 'LAUNCH ATLAS'. To the left of the button are several small links: 'Launch Atlas', 'What is the Australian Cancer Atlas?', 'More information', 'Guided Tours', and 'Statistics'. The overall design is clean and modern.

Global Atlases

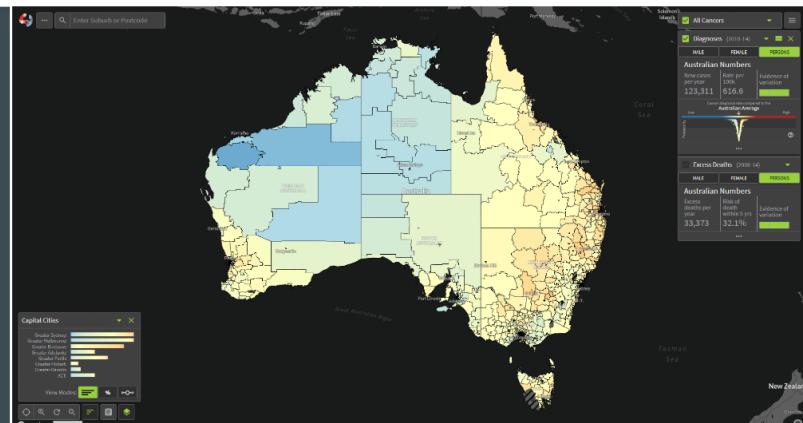
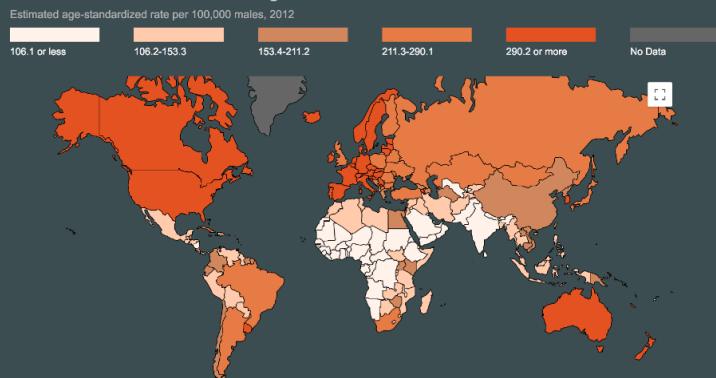
Estimated age-standardized incidence rates (World) in 2018, all cancers, both sexes, all ages



Rate of New Cancers in the United States

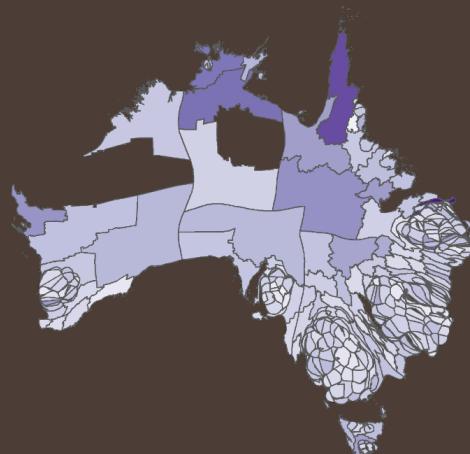


All cancers incidence (excluding non-melanoma skin cancers), males



Alternative displays of Australia

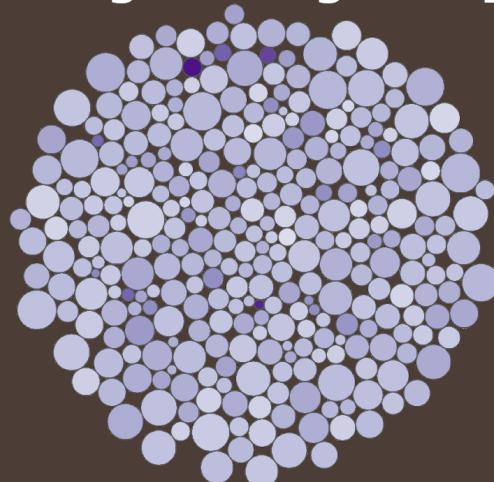
a. Contiguous Cartogram [1]



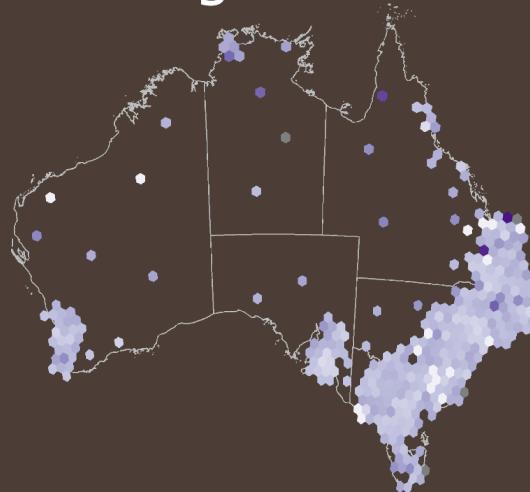
b. Non-contiguous Cartogram [2]



c. Dorling Cartogram [3]



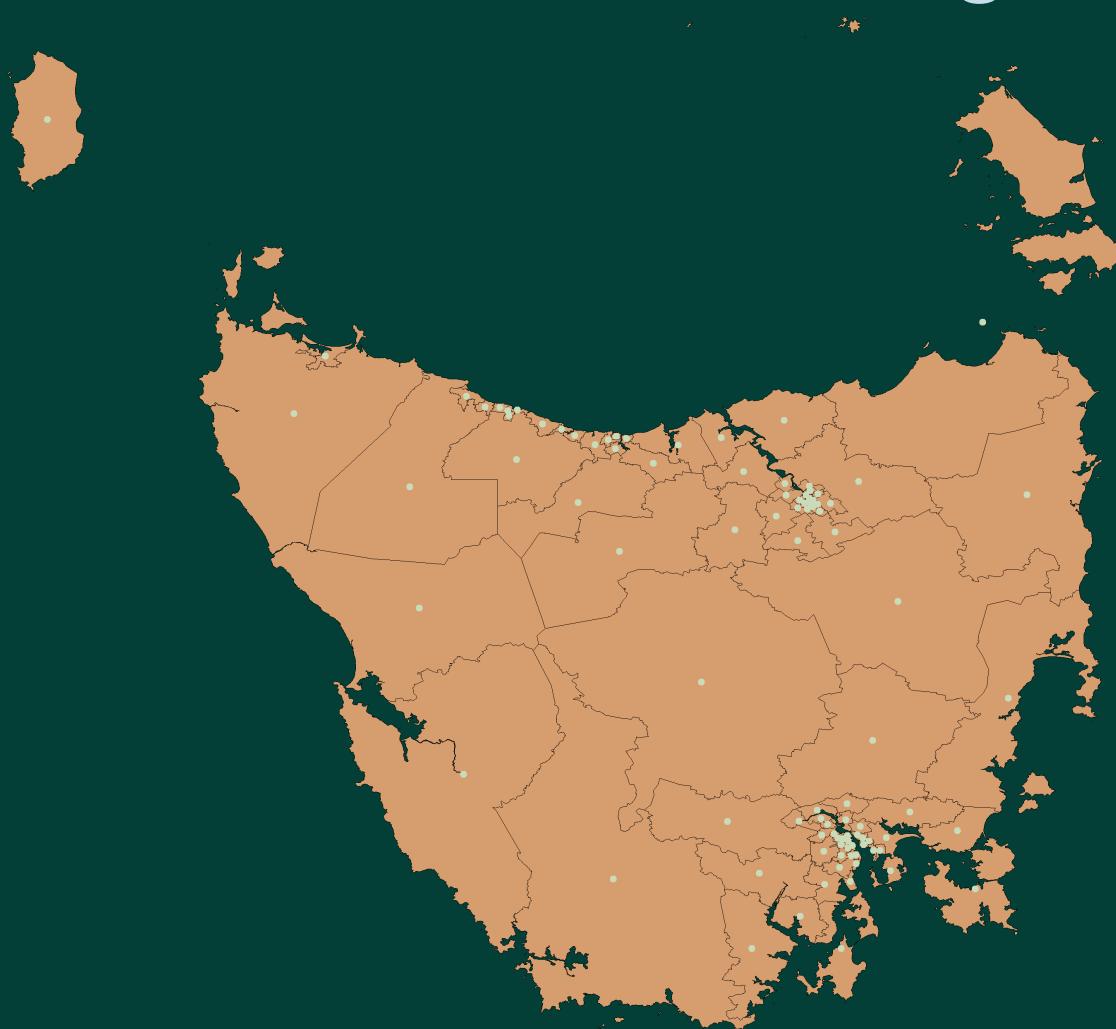
d. Hexagon tile map



Aims

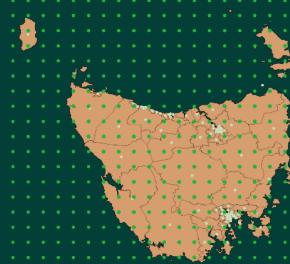
- 1: Algorithm for hexmapping Australia
- 2: Animate between the hexagon tile map and choropleth map
- 3: Test the effectiveness of the hexagon tile map

Tasmania: 98 SA2 regions



Choosing a hexagon

Step 1: Create grid



Step 2: Shift grid



Step 3: Apply buffer



Step 4: Square distance



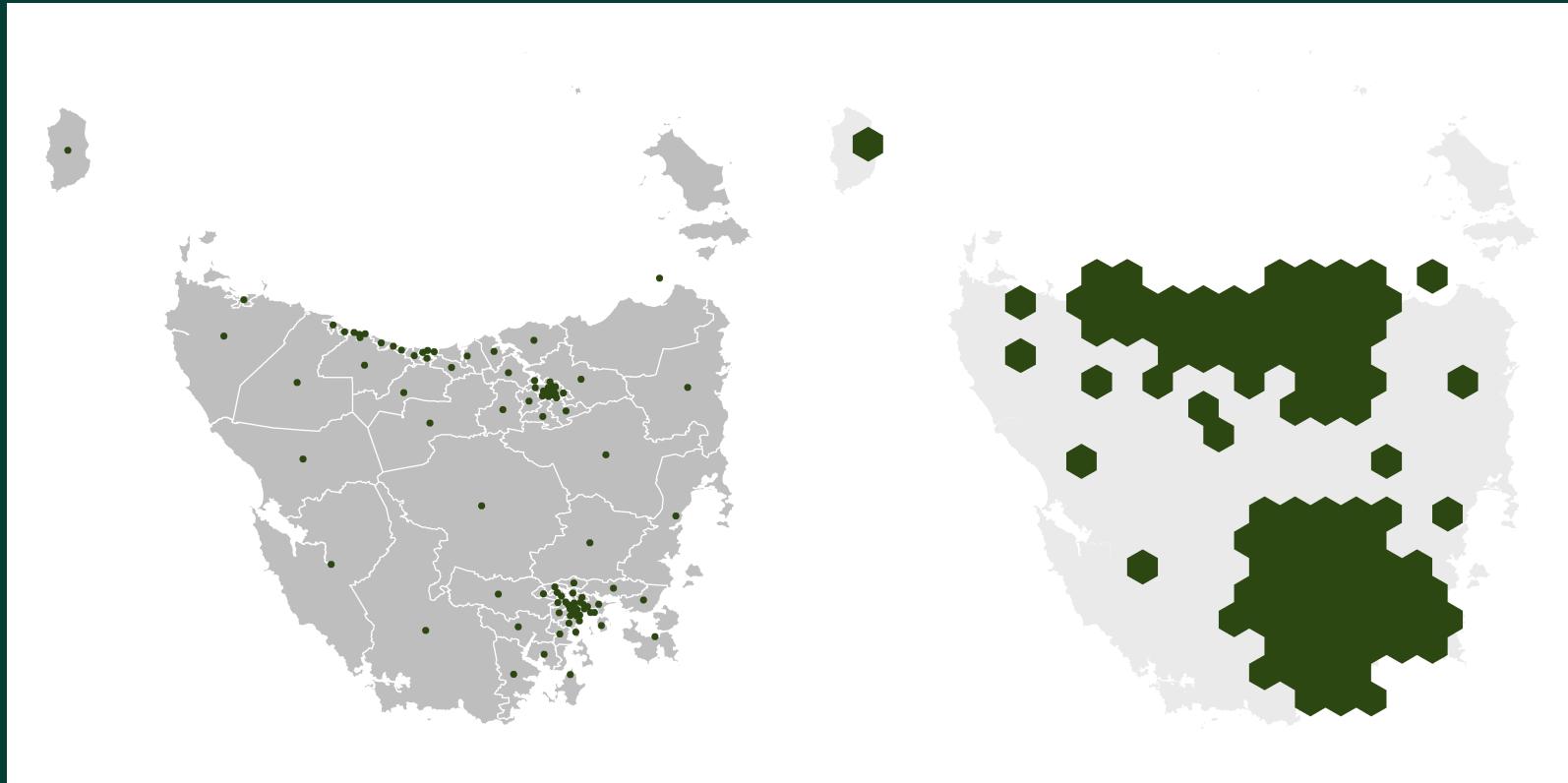
Step 5: Circle distance



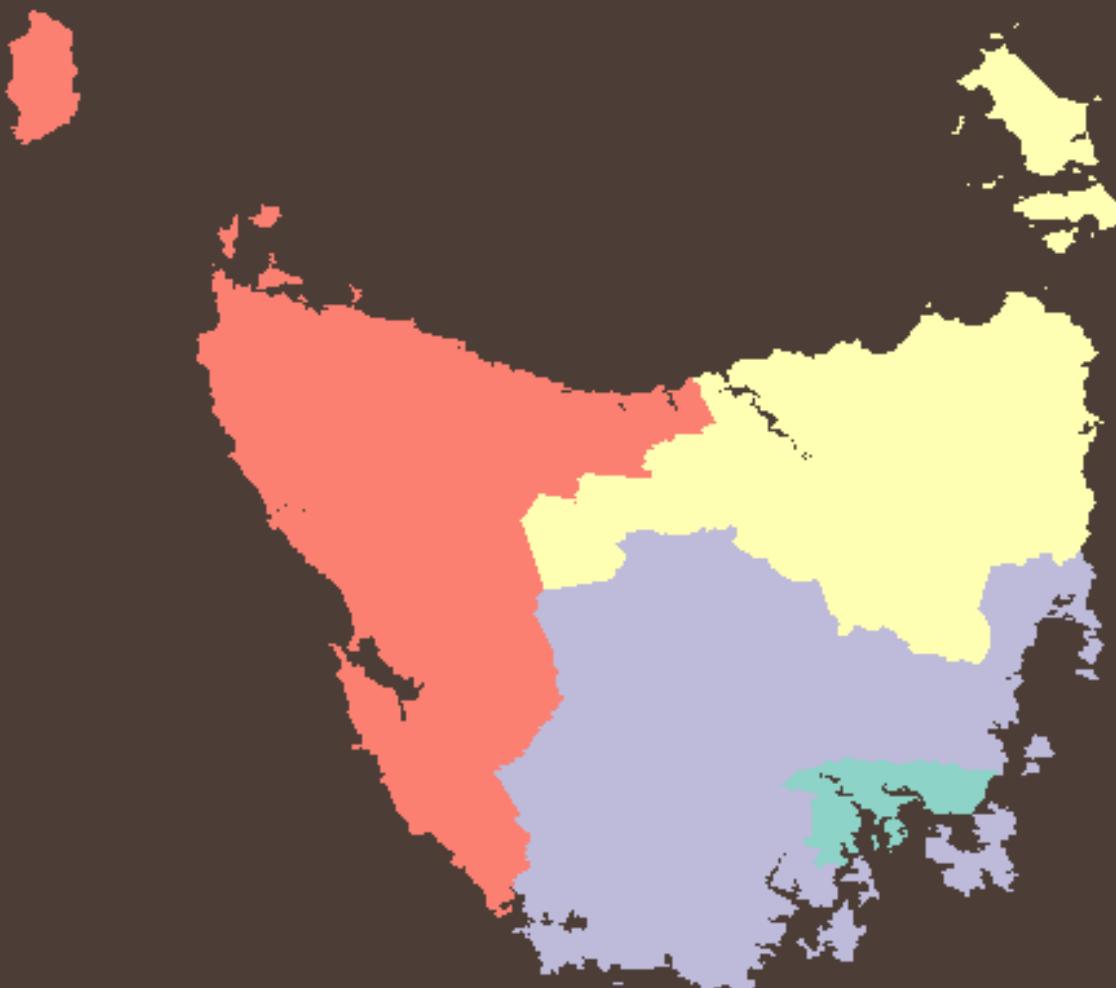
Step 6: Pie slice



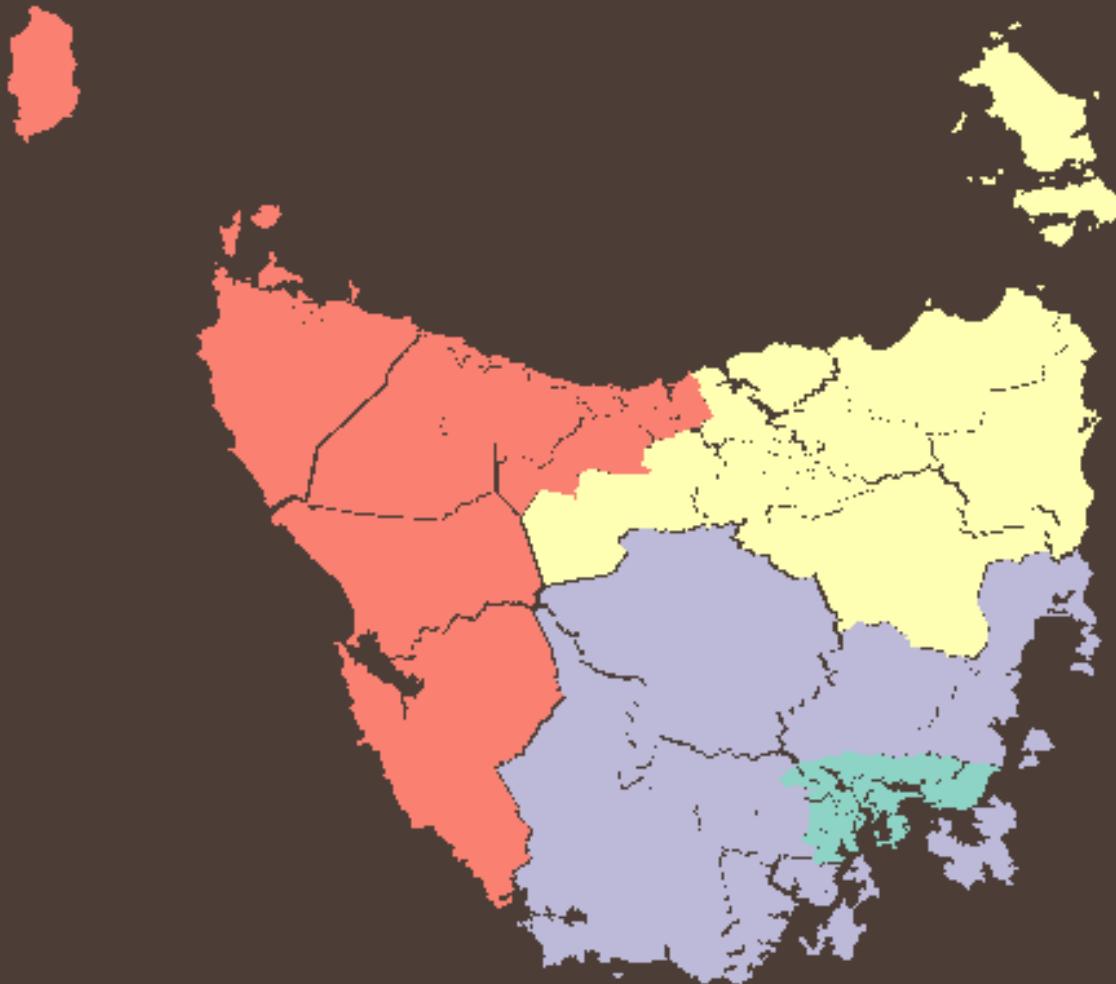
Final product



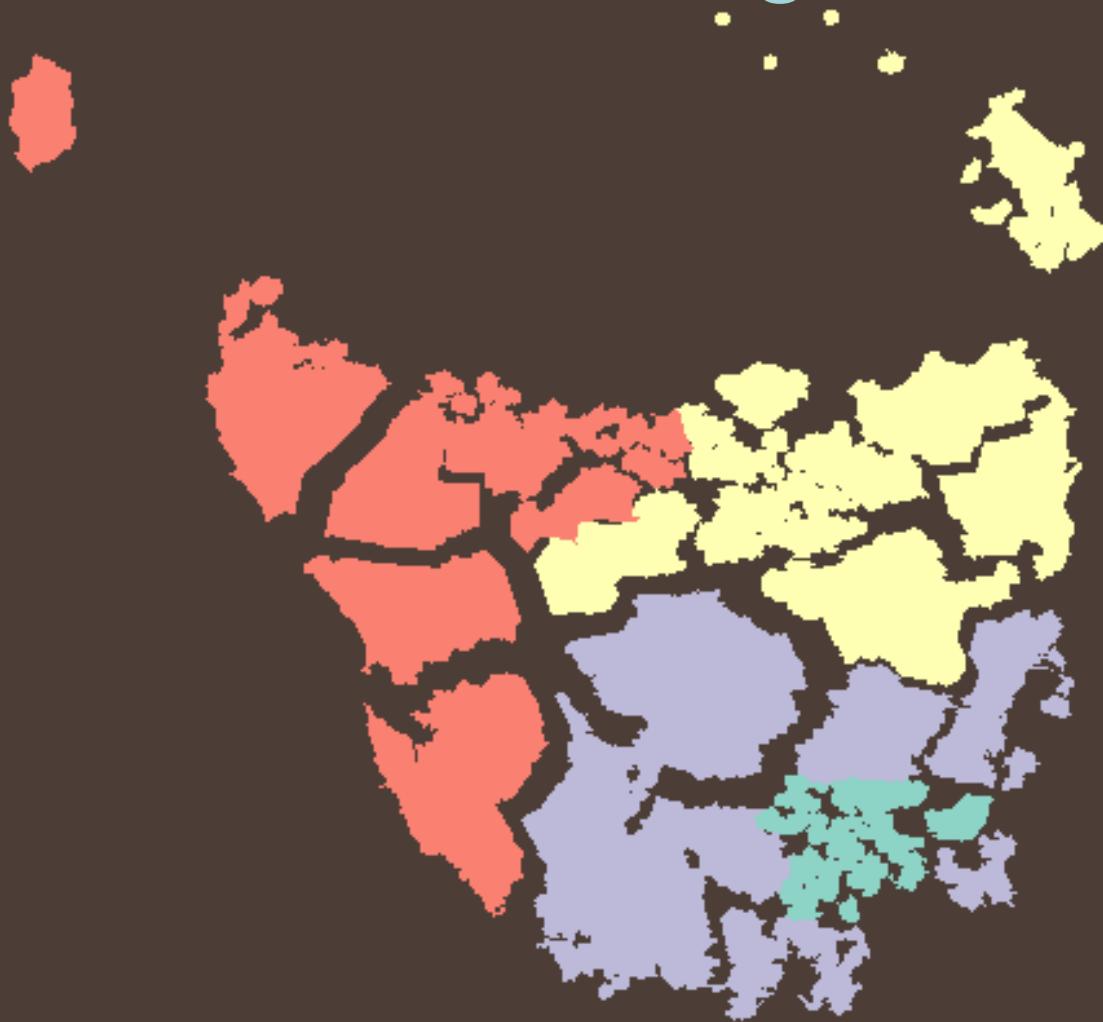
Animating



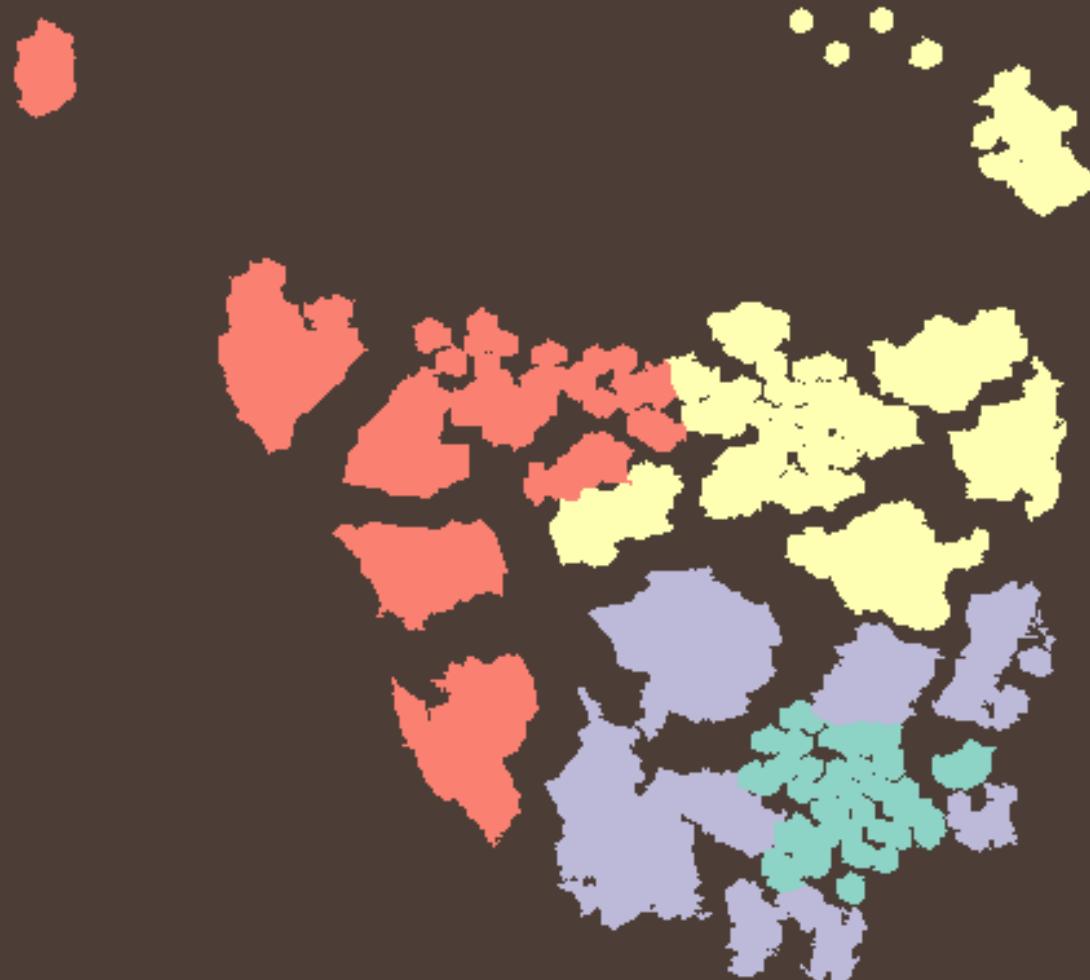
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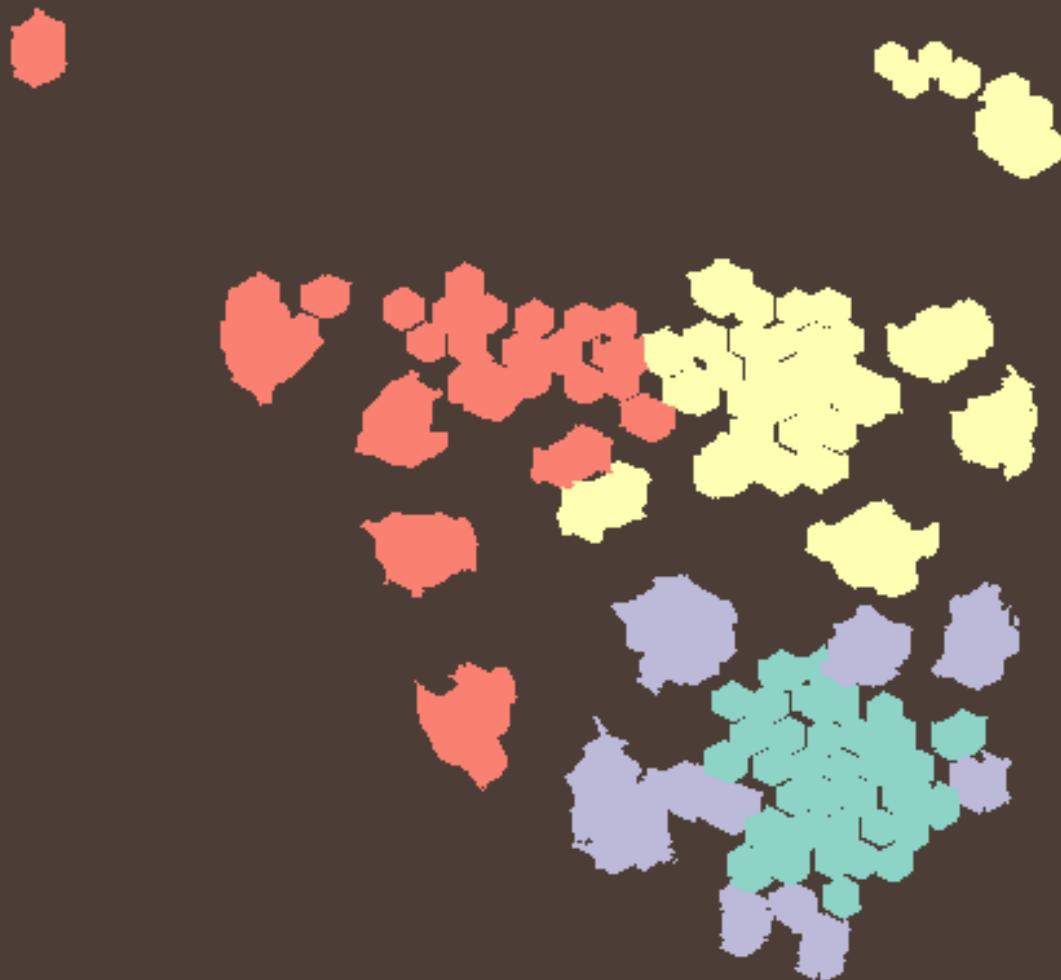
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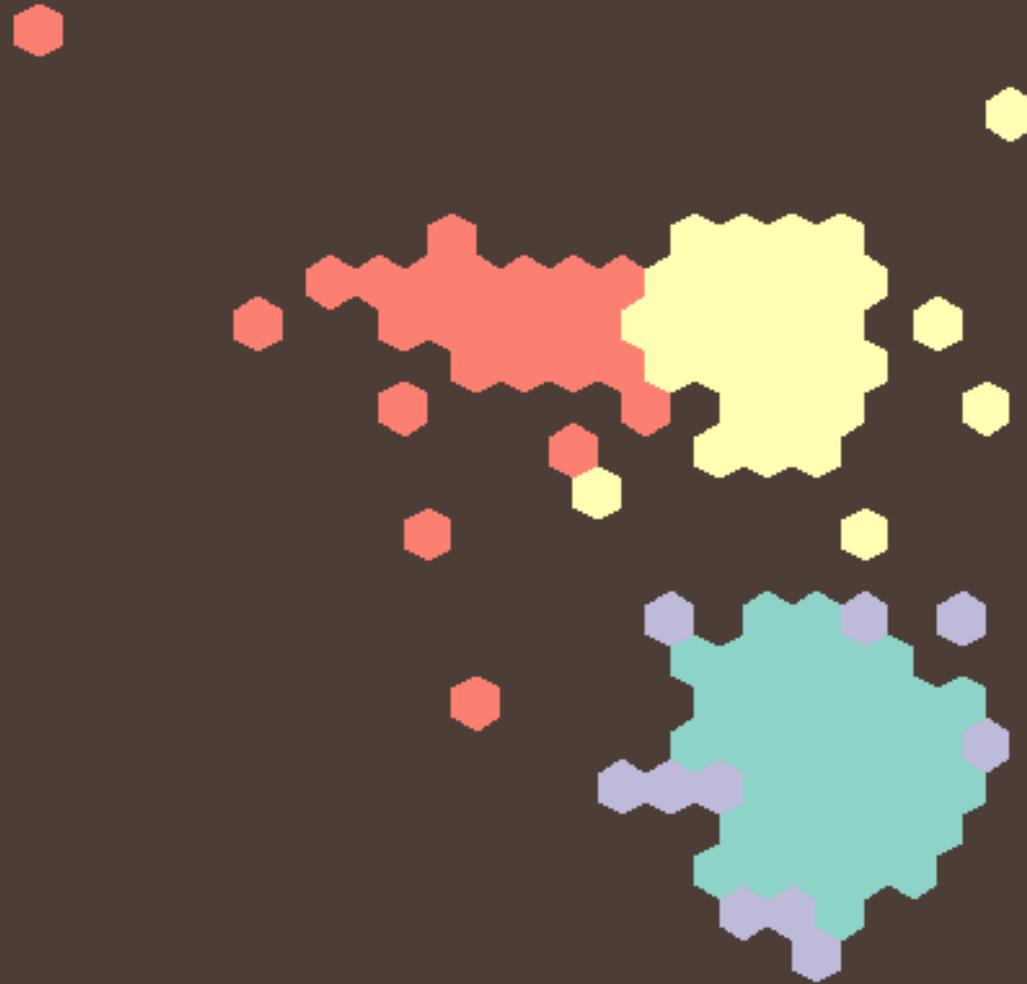
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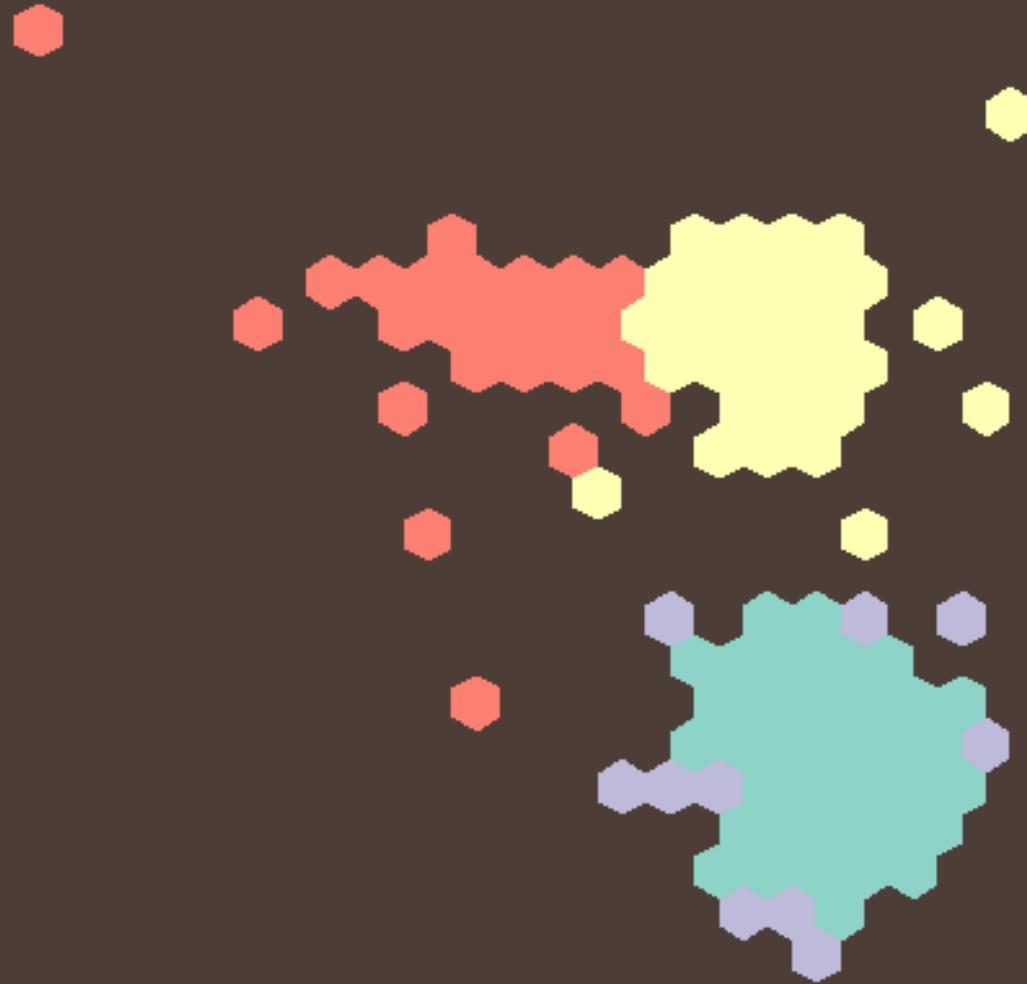
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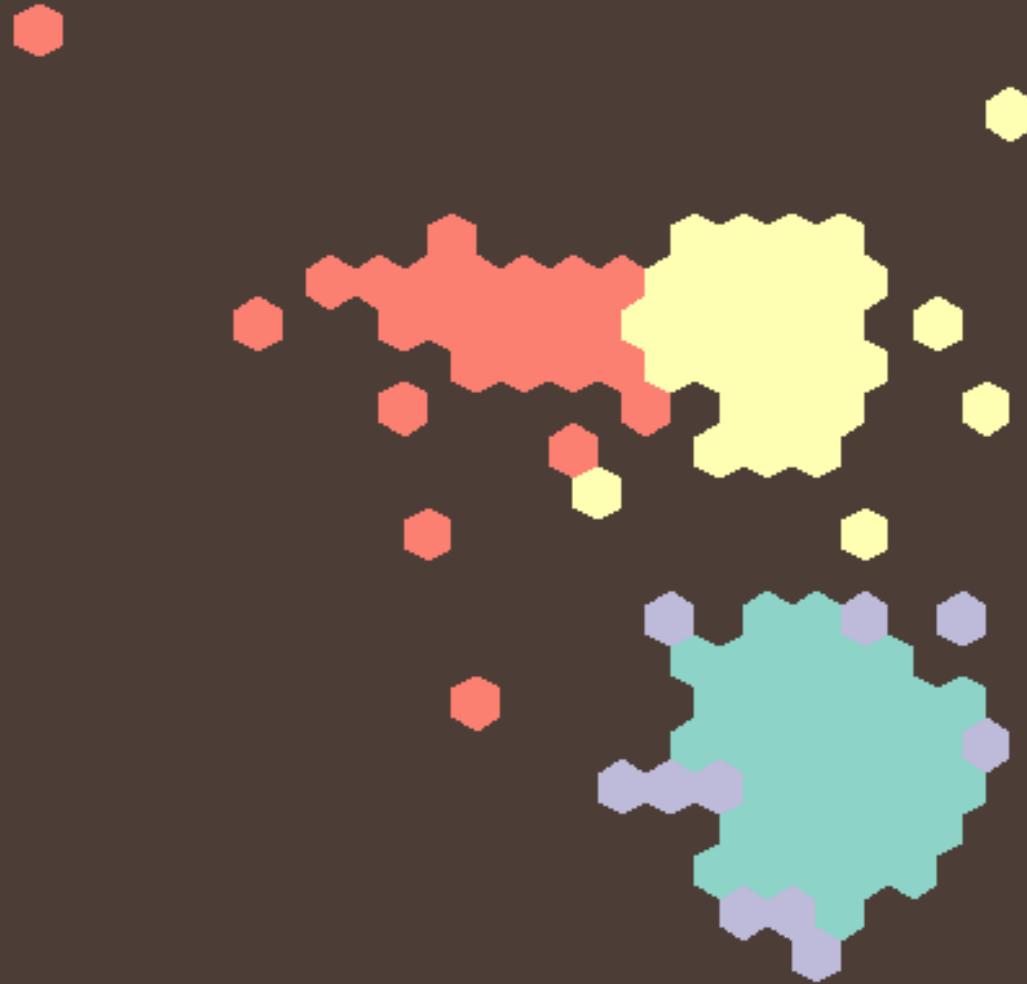
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Animating



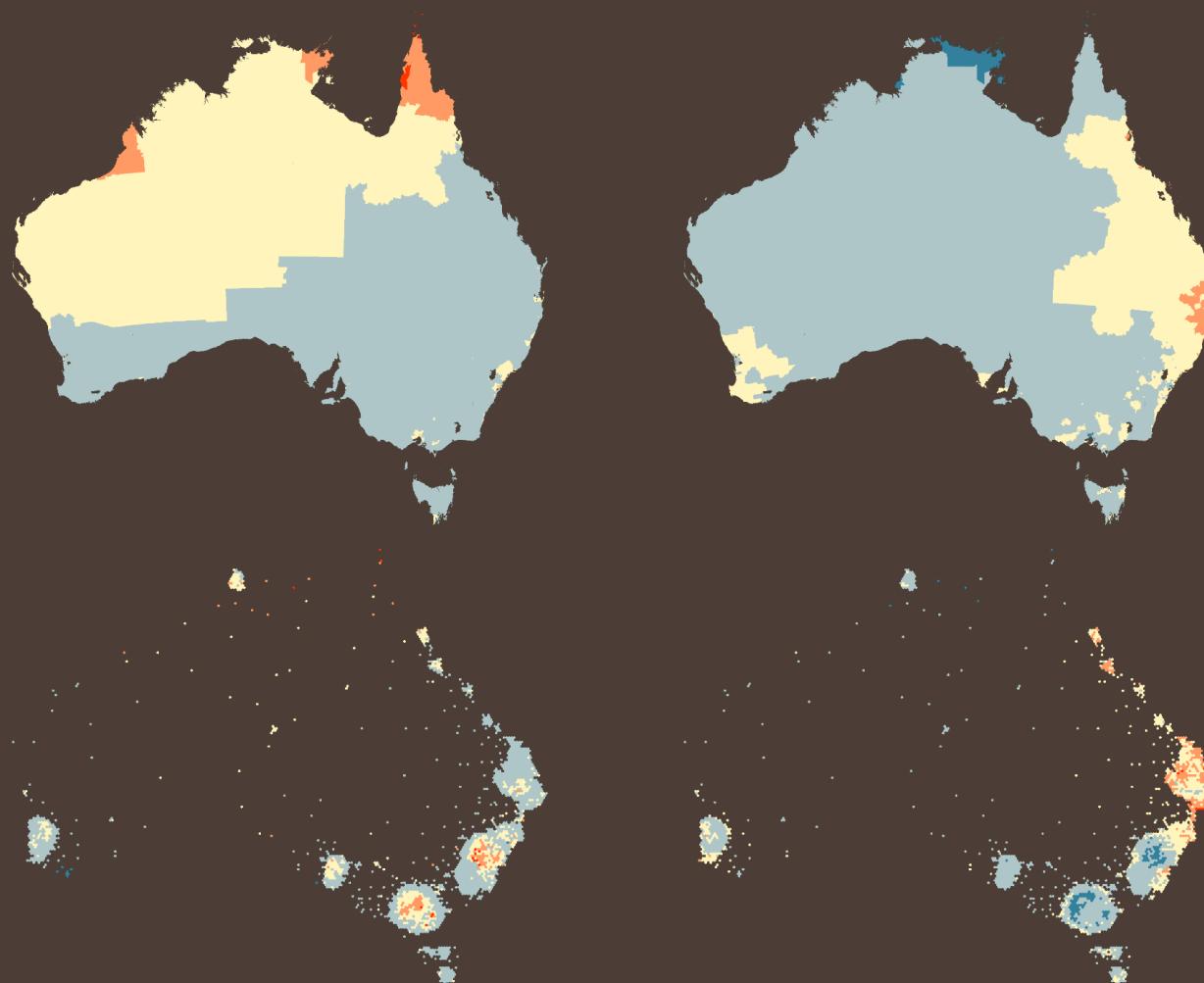
Animating



What can we learn?

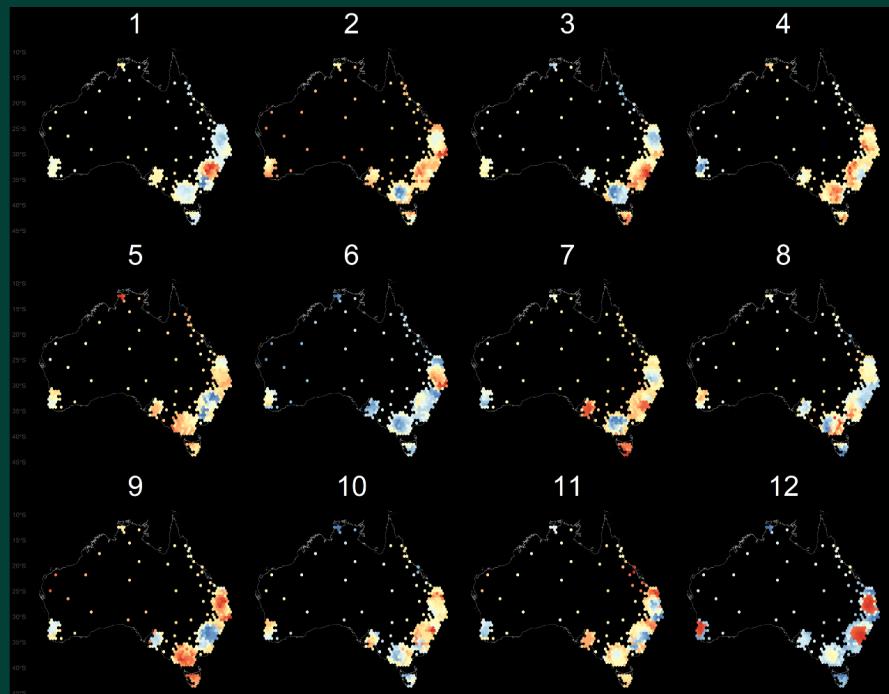
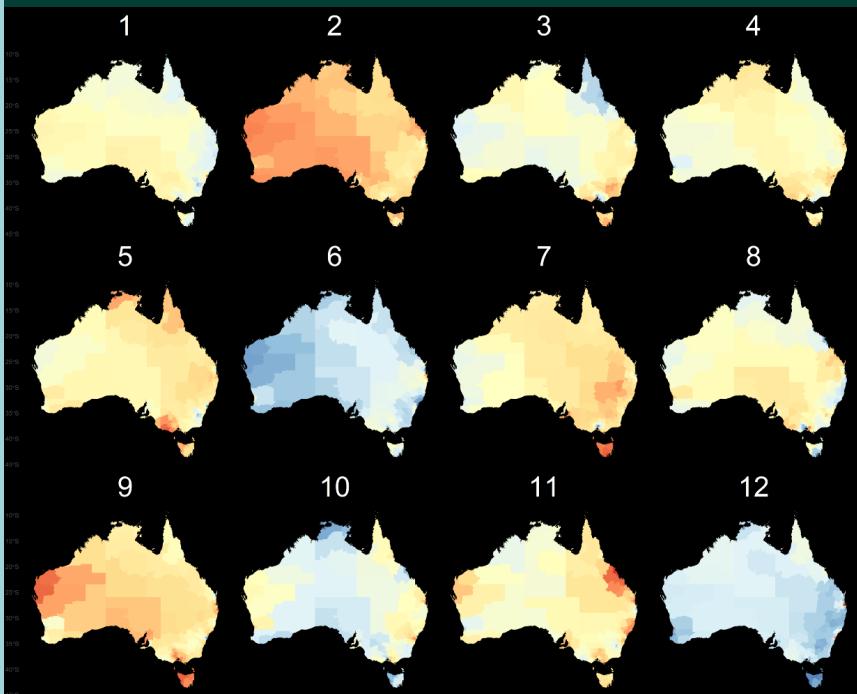
Liver (F)

Melanoma (P)

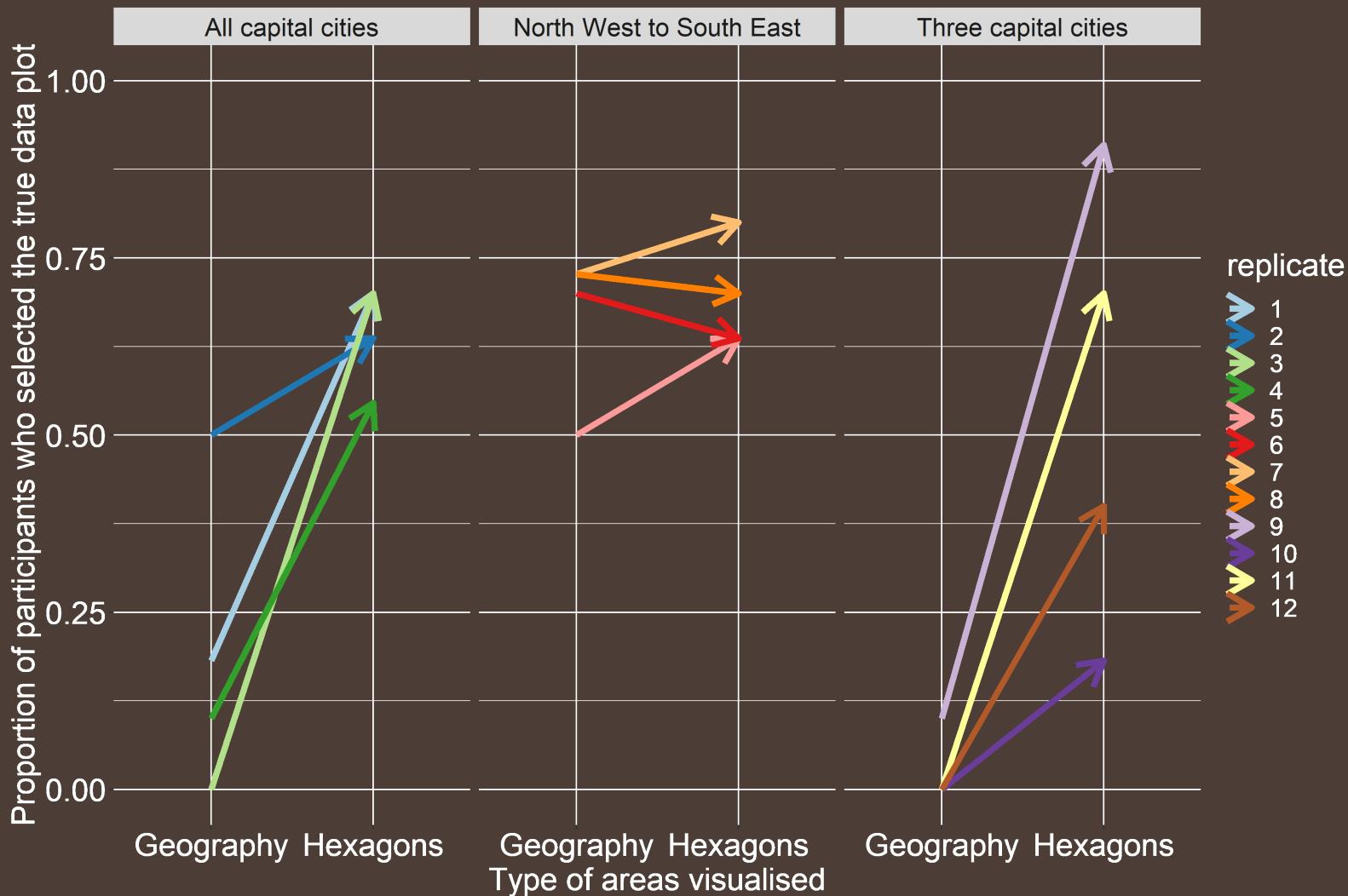


Line up experiment

Same data, different display



Probability of detection



References

- [1] Dougenik JA, Chrisman NR, Niemeyer DR. An Algorithm to Construct Continuous Area Cartograms. *The Professional Geographer* 1985;37:75–81. doi:10.1111/j.0033-0124.1985.00075.x.
- [2] Olson JM. Noncontiguous Area Cartograms. *The Professional Geographer* 1976;28:371–80. doi:10.1111/j.0033-0124.1976.00371.x.
- [3] Dorling D. Area Cartograms: Their Use and Creation. In: Concepts and techniques in modern geography (catmog), vol. 59, 2011, pp. 252–60. doi:10.1002/9780470979587.ch33.
- [4] Buja, A., D. Cook, and D. Swayne. (1999). “Inference for Data Visualization.” In Talk given at Joint Statistical Meetings. Baltimore, Maryland. Accessed 11 November 2019 from <http://www-stat.wharton.upenn.edu/~buja/PAPERS/visual-inference.pdf>.

Thank you!

Prof. Kerrie Mengersen, Dr Earl Duncan, Prof. Di Cook

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