Flattening the Curve

Links to statistical or modelling content about CoViD-19

An initial note: the CoViD-19 situation is still affecting our day-to-day lives here in Aotearoa and around the world. We are aware that some students, teachers, or their whanau may have been adversely affected, in terms of health or finances. Some teachers may prefer to avoid negative topics. So please feel free to ignore this, park it for later, check it for your own interest, or make use of it.

Monitoring the spread of CoViD-19 and related situations has provided a wealth of data to utilise in the teaching and learning of statistics and mathematics. Behind what we see in the media sits plenty of statistical and mathematical thinking. This includes sampling, probability, time series, and opportunities for graphics. This document provides links that will take you to some main sites from NZ, from the International Statistical Institute, and from the rest of the world. The sites contain some datasets and plenty of graphics, as well as health, economic, and social data. In some cases, the resources might not be immediately suitable for the teaching and learning of the Aotearoa NZ Curriculum. Of course, there are plenty more sites that students or teachers could find.

The New Zealand Statistical Association's Education Committee is providing this document, with the intention that teachers and students will find statistical issues, with contexts, that are relevant to them.

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A Good Places to Start:

- **Our World in Data** (Graphs): https://ourworldindata.org/coronavirus
    - Or click here to see it is as a slide deck.
- **Worldometer** (Graphs and datasets): https://www.worldometers.info/coronavirus/

NZ-Based Sources:

- **Ministry of Health Manatu Hauora**: https://www.health.govt.nz/covid-19-novel-coronavirus/covid-19-data-and-statistics
    - Keywords: reports, graphs, tables, data, maps
    - Try: *CoViD-19 – current cases* (link)
- **Stats NZ Tatauranga Aotearoa**: https://www.stats.govt.nz/topics/covid-19
    - Keywords: data, API, graphs, tables
- **Flu Tracking**: https://info.flutracking.net/
    - This is an online health surveillance system with weekly reports on flu and CoViD-19 symptom presence; you can join up and become a weekly contributor to this piece of citizen statistics
    - Keywords: data, graphs, reports
- **Te Tai Ohanga The Treasury**: https://treasury.govt.nz/information-and-services/nz-economy/covid-19-economic-response
    - Keywords: reports, graphs, tables
- **Public Health Expert**: https://blogs.otago.ac.nz/pubhealthexpert/

    - Keywords: commentary, graphs, critical thinking
    - See: *CoViD-19 Case-Fatality Risk & Infection-Fatality Risk – important measures to help guide the pandemic response* (link)
    - See numerous blogs that address current epidemiological issues, as the issues arise
- **The Spinoff**: https://thespinoff.co.nz/covid-19
    - Keywords: media, commentary
    - The Spinoff makes a point of well-designed data graphics
- **New Zealand Herald**: https://www.nzherald.co.nz/nz/news/article.cfm?c_id=1&objectid=12322890
    - Keywords: infographics, graphs, tables
- **Radio NZ**: https://www.rnz.co.nz/news/covid-19
    - Keywords: media, commentary, infographics, graphs
- Thomas Lumley's **Statschat** (NZ): https://www.statschat.org.nz/
    - Try: *Another reason why we don't know the CoViD-19 mortality rate* (link)

Further Afield:

- The **International Statistical Institute (ISI)**: https://www.isi-web.org/index.php/covid-19
    - Keywords: links, news articles
    - This takes you to five major international sources
- **Johns Hopkins University: Coronavirus resource centre:** https://coronavirus.jhu.edu/
    - Keywords: articles, commentary, infographics, graphs, maps, API
    - Try: *Global Map* (link)
- **Financial Times:** *Coronavirus tracked: the latest figures as the pandemic spreads*: https://www.ft.com/content/a2901ce8-5eb7-4633-b89c-cbdf5b386938
    - Keywords: graphs, commentary, links
- **Yale's Medical Library**: *2019 Novel Coronavirus (CoViD-19): Latest Research*: https://library.medicine.yale.edu/covid-19-clinician-resource-consumer-health-information
- **United Nations Statistics Office**: https://covid-19-response.unstatshub.org/
    - Keywords: information, links, data, articles
- **The Visual and Data Journalism Team BBC News**: https://www.bbc.com/news/world-51235105?intlink_from_url=https://www.bbc.com/news//uk&link_location=live-reporting-story
    - Keywords: graphs, maps, infographics, commentary

The Time Vault: for less up to date but still valuable resources

- **Medium:** *Coronavirus: The Hammer and the Dance* (link)
- **Ministry of Health Manatu Hauora:** *CoViD-19 Modelling reports* (link)
- **Te Tai Ohanga The Treasury:** *CoViD-19 Economic Dashboard* (link)
- **Public Health Expert**: *The maths and ethics of minimising CoViD-19 deaths in NZ* (link)

- From NZ Modeller **Sean Hendy** on **Radio NZ**'s Checkpoint 26/3/20 (link) and **The Spinoff:** *CoViD-19: The maths that explains why we're locking down* (link)
- From NZ Modeller **Alex James** on **Radio NZ**'s Our Changing World 2020: *Maths, models & insights into the coronavirus pandemic* (link)
- NZ's **Science Media Centre** (link)
- **Radio NZ** on the exponential function (link)
- **Numberphile** YouTube (link)
- **Sylvia Richarson and David Spiegelhalter** in **The Guardian**, 12 Apr 2020: *Coronavirus statistics: what can we trust and what should we ignore?* (link)
- **David Spiegelhater** in **Medium**, 12 April 2020: *Does CoViD raise everyone's relative risk of dying by a similar amount? More evidence.* (link)
- **Nicholas Fisher** and **Dennis Trewin** webinar: *Learning about the knowns and unknowns: The essential role of statisticians* (link)
- Nicholas P. Jewell, Joseph A. Lewnard, Britta L. Jewell in the **Journal of the American Medical Association** (JASA): *Predictive Mathematical Models of the CoViD-19 Pandemic. Underlying Principles and Value of Projections* (link)
- **Journal Article:** *Impact of non-pharmaceutical interventions (NPIs) to reduce CoViD19 mortality and healthcare demand* (link)
- **Tom Britton** explains the susceptible-infected-removed (SIR) epidemic model (link)
- A talk by **Xihong Lin**, Harvard Biostat, presenting lessons learned from Wuhan (link)
- By Nicholas LePan of **VisualCapitalist**: *Visualising the history of Pandemics:* https://www.visualcapitalist.com/history-of-pandemics-deadliest/