
From lockdown and back

A .nz DNS data story

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Introduction

InternetNZ, the .nz registry, has historically stored all DNS queries since 2012

In the last two years, covers international traffic from one of our anycast providers

- Thanks CIRA for making our life easier

Recently we moved all the data from Hadoop to AWS

And started using ENTRADA for DNS traffic processing

- Thank you Maarten and SIDN



What is this presentation about?

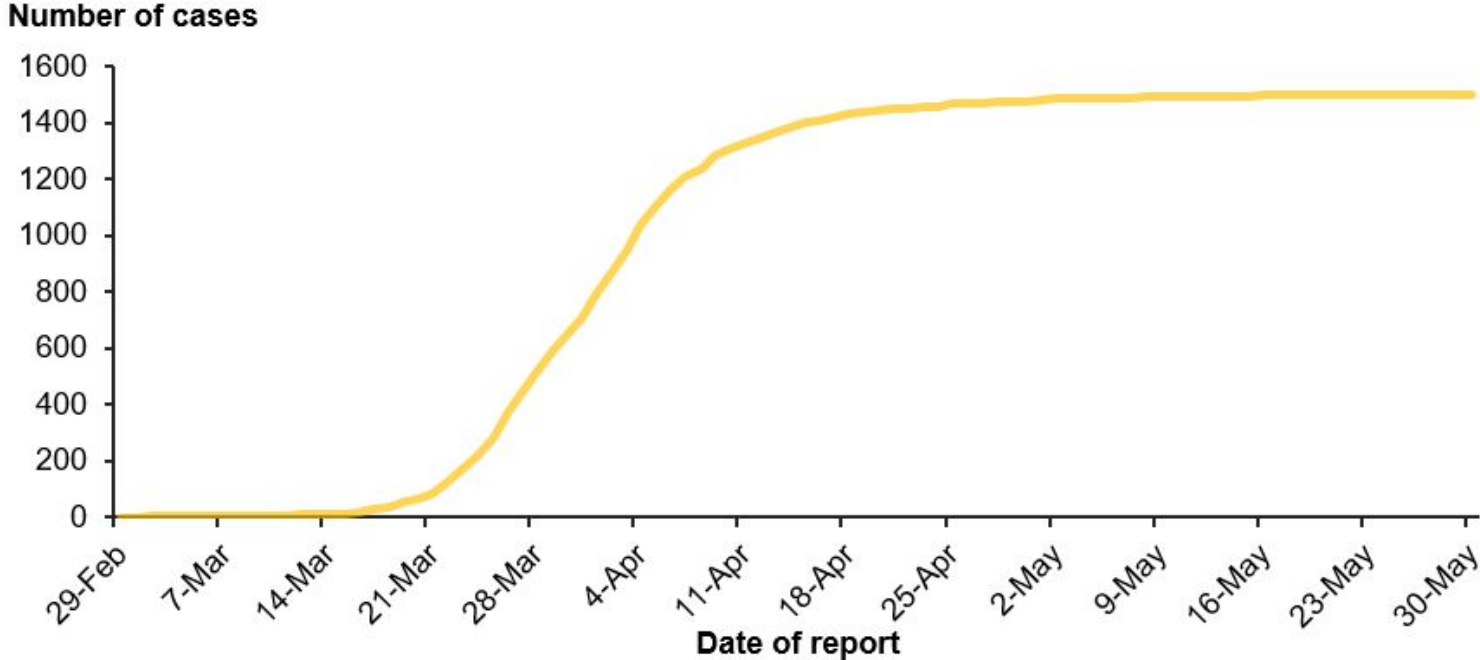
By using access to the .nz traffic

How the different stages of New Zealand response to CoVid changed the DNS traffic patterns



CoVid19 and New Zealand

Cumulative confirmed and Probable cases



The NZ CoVid-19 alert level system

Level 1	Prepare	Physical distancing encouraged No restrictions on gatherings
Level 2	Reduce	Socializing is allowed, go shopping, travel domestically, mass gathering restrictions
Level 3	Restrict	Socializing is restricted to a minimum, shopping can happen online with contactless pickup, no mass gatherings
Level 4	Lockdown	Stay at home Only one person per household for essential travel (groceries and medicine)



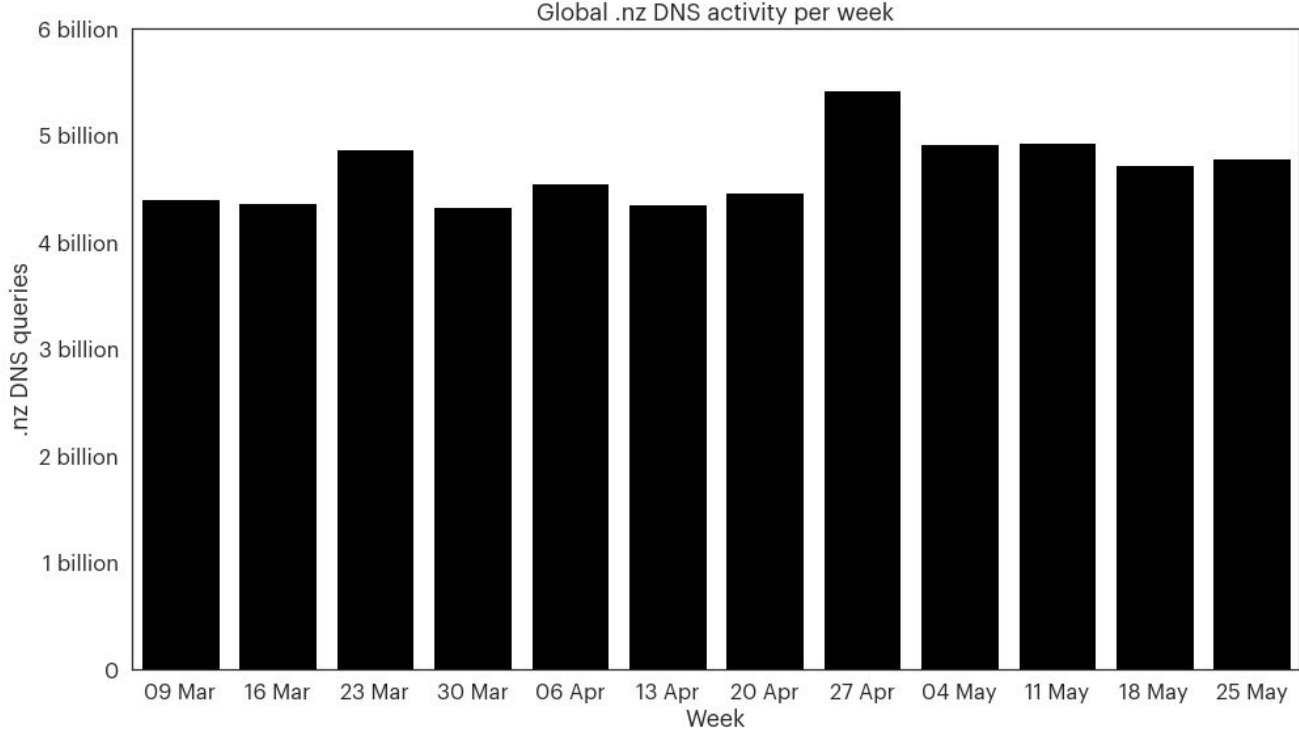
Scope

We analyze the DNS traffic for .nz between March 9 2020 and 31 May 2020

- Traffic from all over the world, with a focus on traffic originated from New Zealand
- Pay attention to certain domains related to recognizable human activities
- Very close focus to a specific domain born during the pandemic



Overall picture

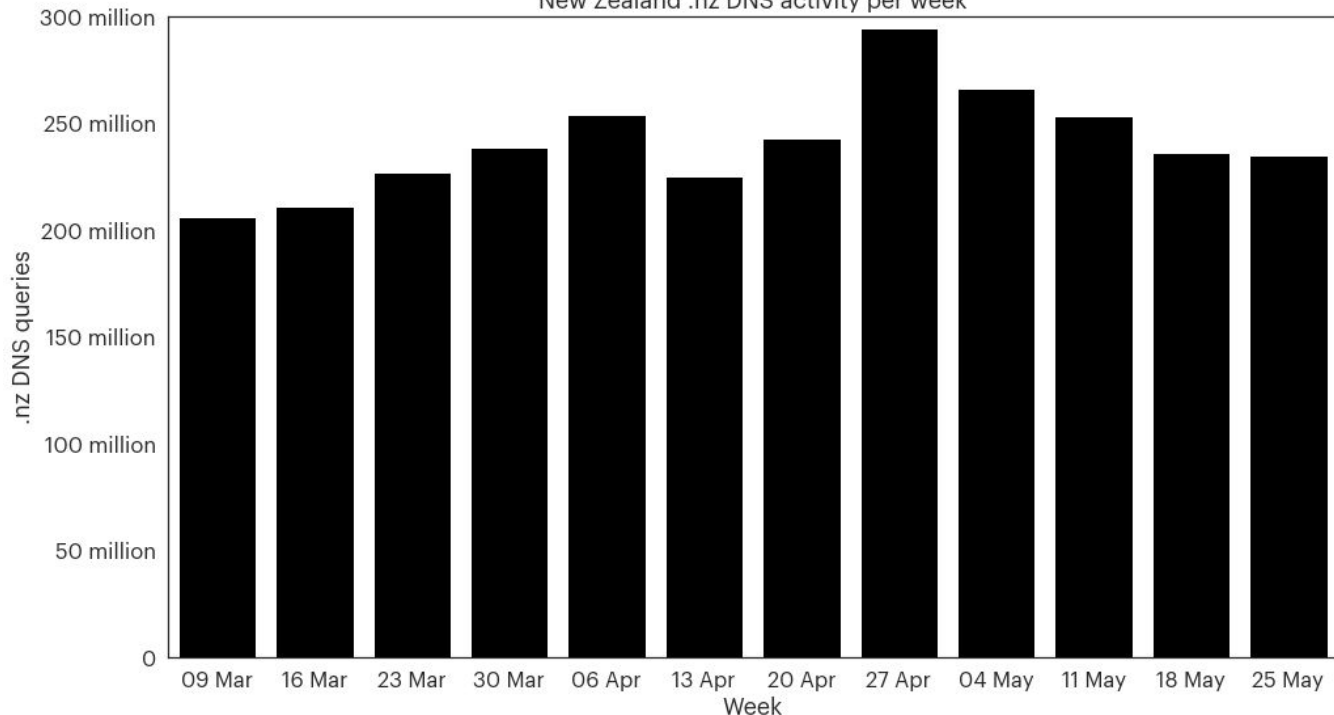


Weekly traffic doesn't change much across weeks when counting all countries



New Zealand's view

New Zealand .nz DNS activity per week

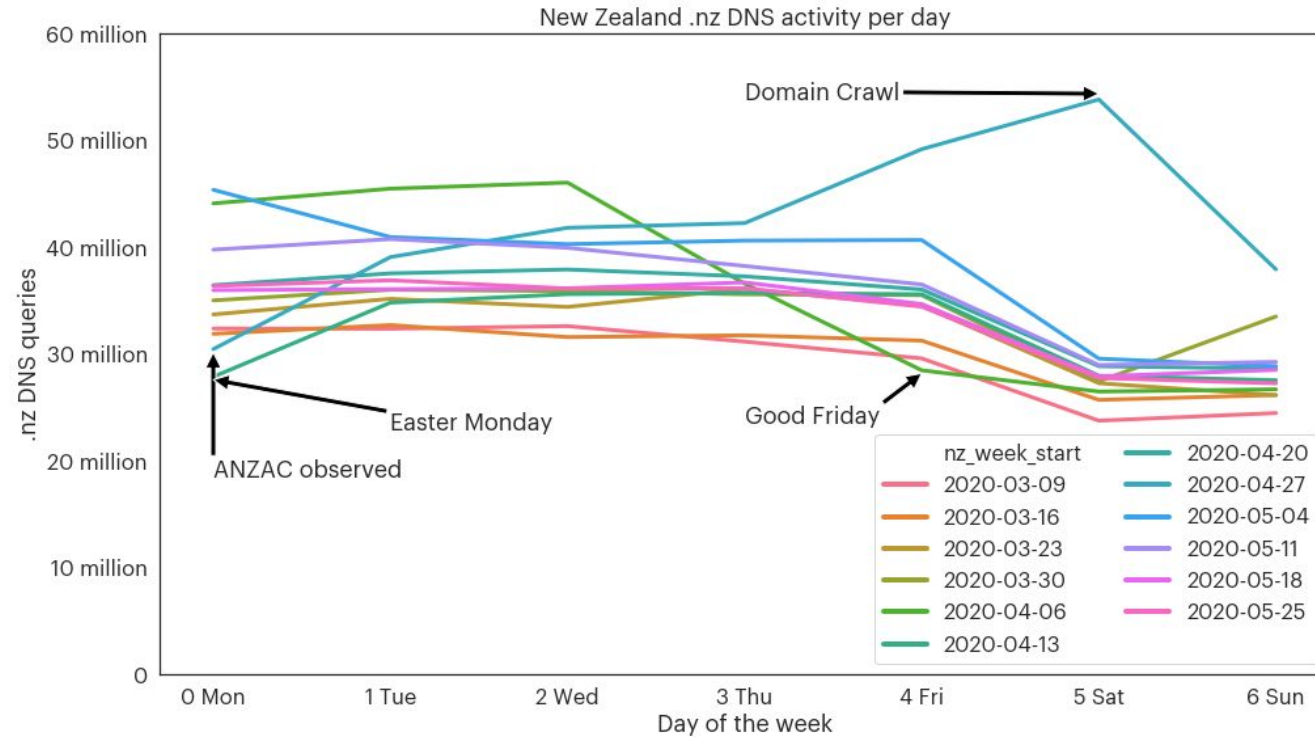


When focusing on NZ traffic, there is a clear growth across weeks

If we add color to this, it's even clearer



New Zealand's daily activity



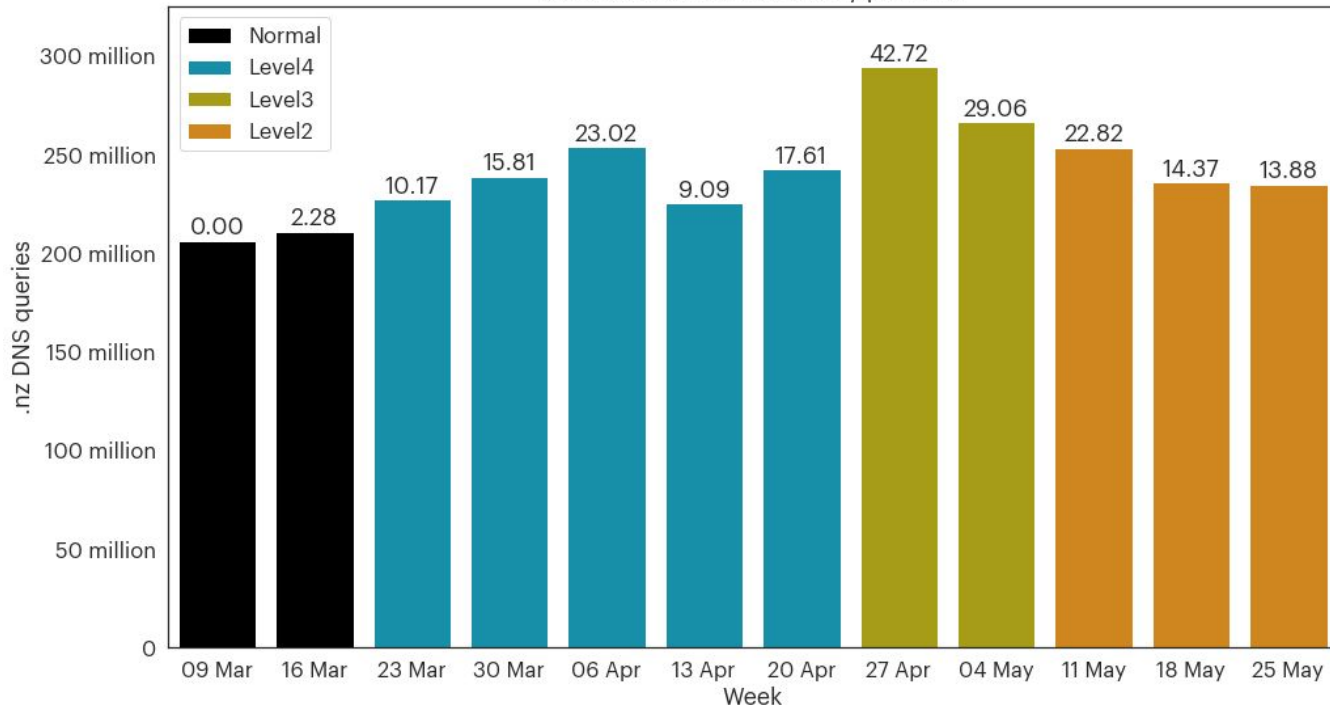
Certain weeks see drops because of national holidays, specially around April.

But day by day activity is fairly stable across weeks



New Zealand's weekly activity, coloured

New Zealand .nz DNS activity per week



When each week is aligned with their alert level, the contrast is very clear.

On Level 4, more people working from home

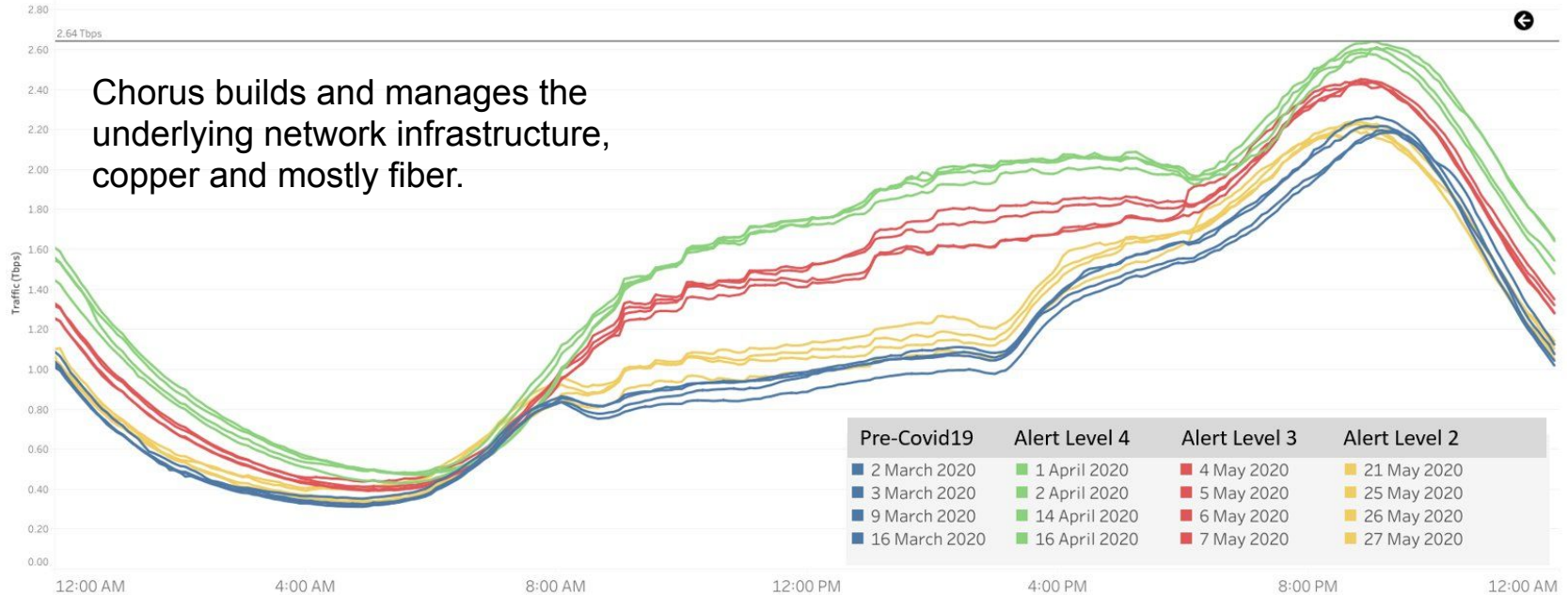
On Level 3, online order and pick up of take aways was possible!

On Level 2, restrictions on physical gatherings. Kids back to school.



A view from the bytes

CHORUS Network Traffic - Downstream



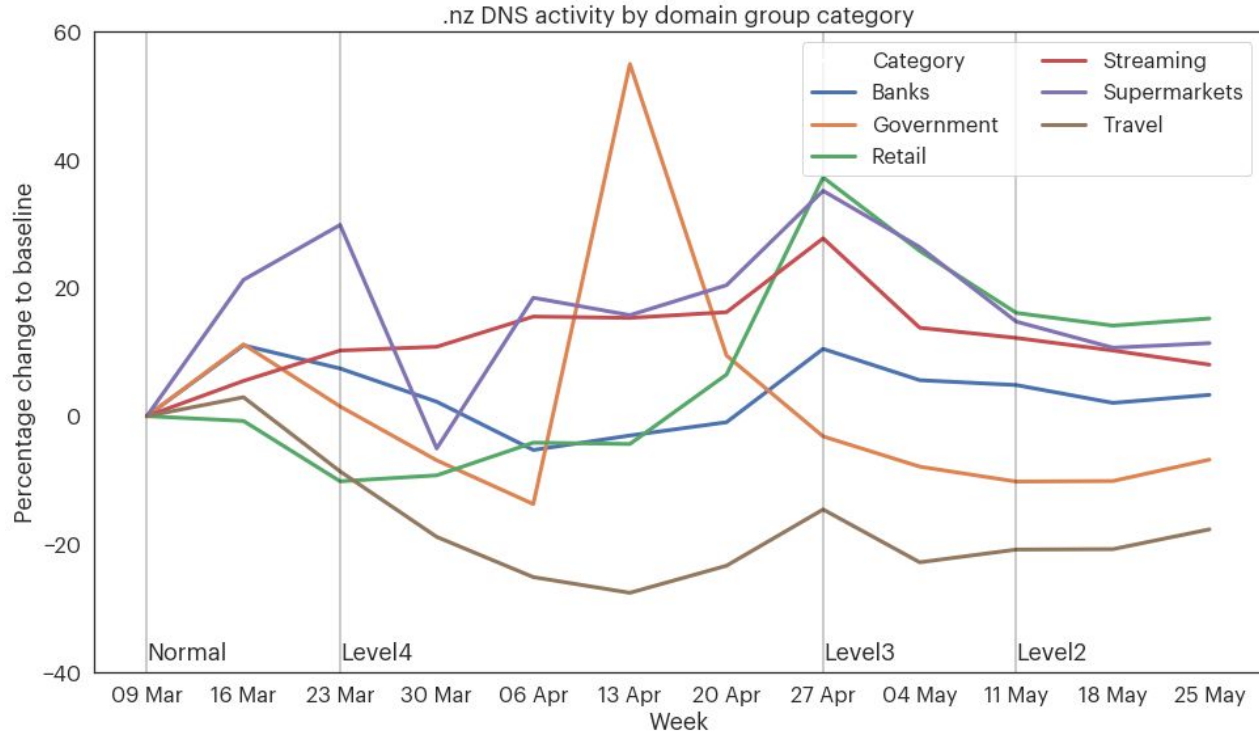
A view per category

Selecting recognizable domains per category, take a look at changes

Category	Domains included
Banks	asb.co.nz, bnz.co.nz, westpac.co.nz, kiwibank.co.nz, anz.co.nz
Government	covid19.govt.nz, mbie.govt.nz, police.govt.nz, treasury.govt.nz, ird.govt.nz, health.govt.nz, msd.govt.nz, studylink.govt.nz
Retail	thewarehouse.co.nz, briscoes.co.nz, kmart.co.nz
Streaming	netflix.co.nz, tvnz.co.nz, neontv.co.nz, sparksport.co.nz, lightbox.co.nz
Supermarket	countdown.co.nz, newworld.co.nz, paknsave.co.nz
Travel	houseoftravel.co.nz, flightcentre.co.nz, airnewzealand.co.nz, safetravel.govt.nz, statravel.co.nz, helloworld.co.nz, airnz.co.nz



Category activity change



During Level 4, people rushed to do online shopping at supermarkets

Travel restrictions killed many travel agencies activity. Domestic travel allowed during L3.

Local streaming platforms saw healthy growth

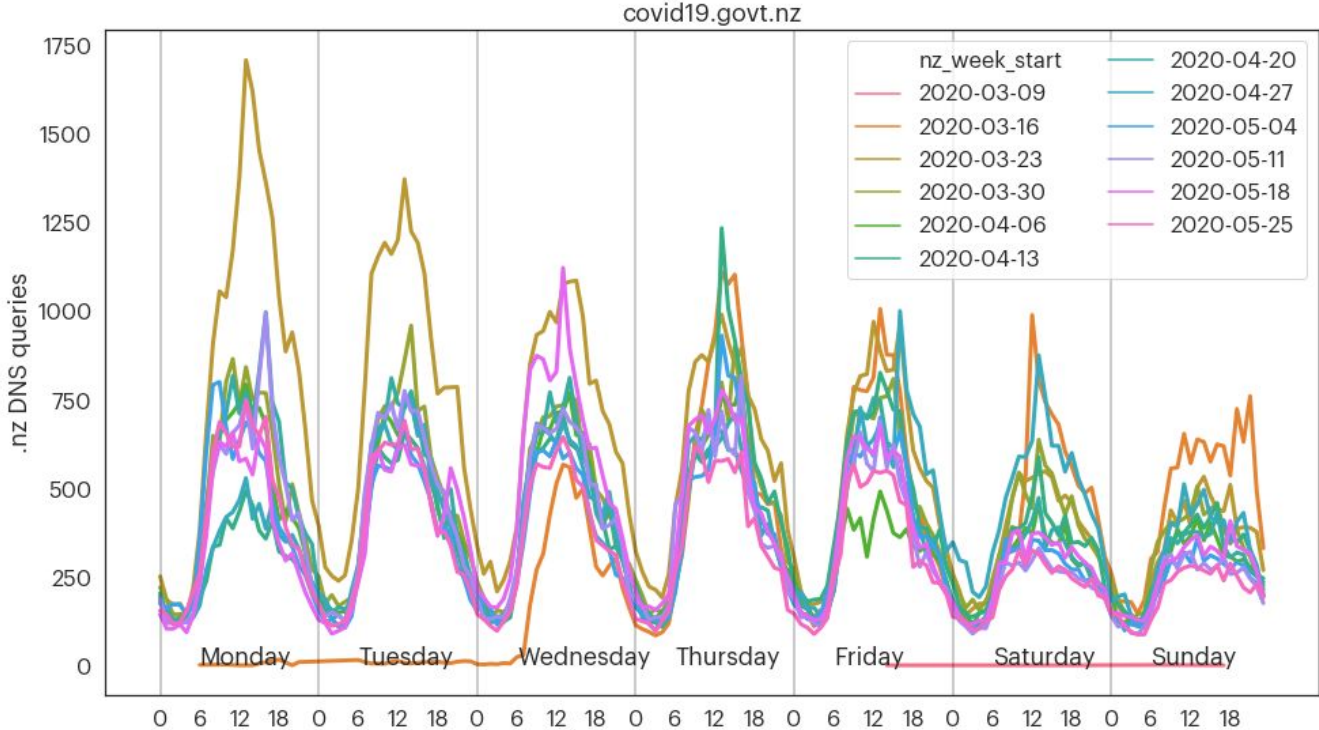


A domain born for CoVid

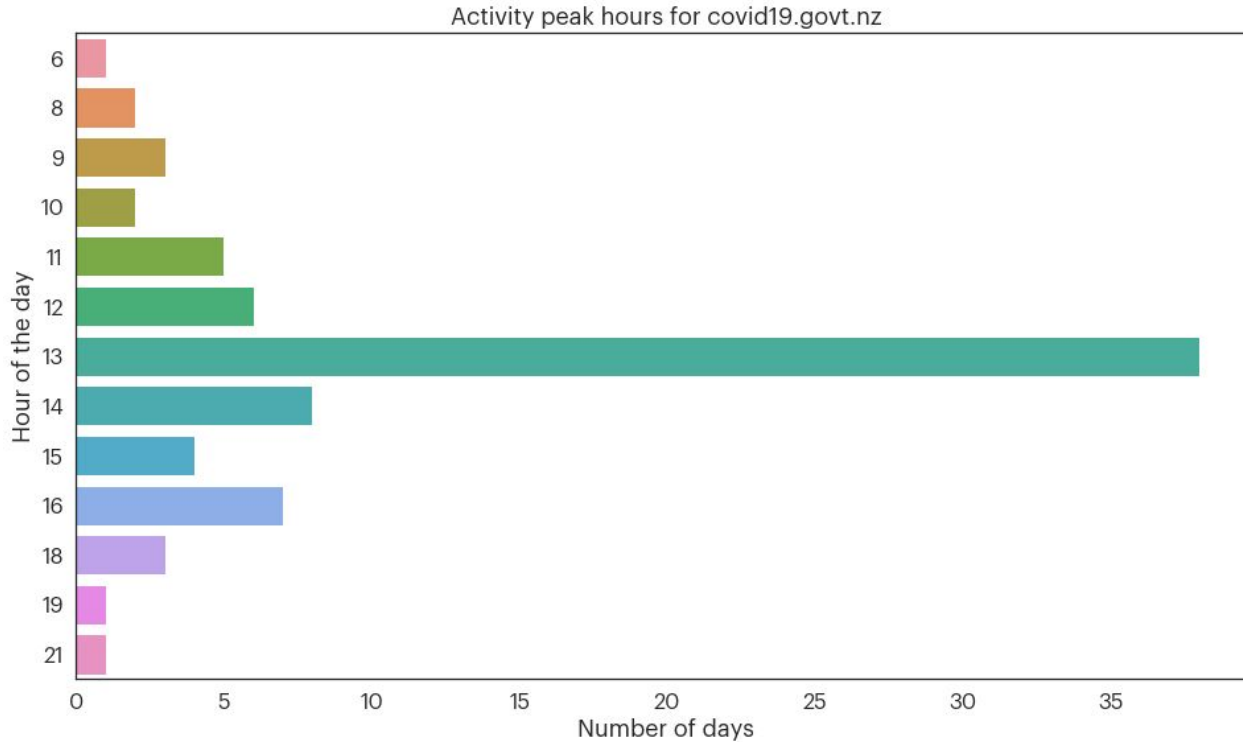
To centralize the information and message around CoVid, the New Zealand Government created a specific domain **covid19.govt.nz** before Level 4.



Covid19.govt.nz hourly activity



Did you see the spikes?



Most of the peaks are around 1pm and 2pm NZ time

Sometimes around 4pm NZ time

Why?



Introducing Dr Ashley Bloomfield



Dr Ashley Bloomfield, General Director of Health, has been the face of the NZ Govt response to CoVid-19

Every day at 1pm, Kiwis redirect their attention to the press conference where the nation gets the update on the number of cases, recovered, number of tests and other relevant information about CoVid-19



Conclusions

The life of New Zealanders was changed by CoVid-19

Fewer people visiting or traveling

More and more shops doing online activity

The introduction of a new normal

