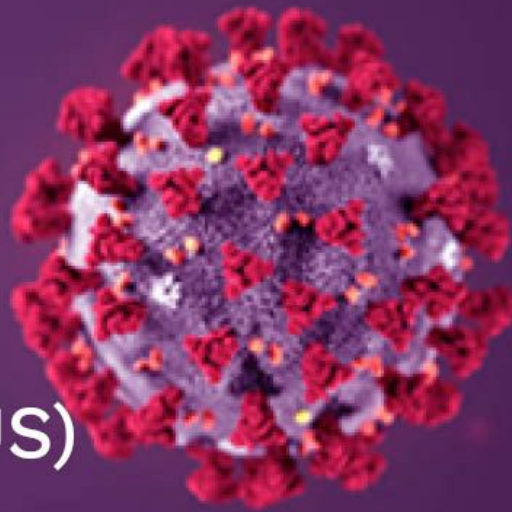


DATA201

Group project

By Oscar Toohey, Jamie Barnes, Seth Gunn, Bach vu Viet and Angus Loader

COVID-19 (CORONAVIRUS)



Has COVID-19 impacted the cost of living in New Zealand?

Reasons for choosing the impact of Covid-19

- This subject is very topical
- Relevant to all our lives
- The data is very accurate due to it being it being under extreme scrutiny
- The data is readily available from trusted sources

Version control and Release

- Version control to work as a team
- Keep track of who's done what
- Release to the public and accessible by R



Graph	Description	Date	Author
	BachV origin Merge branch 'main' into BachV	26 Oct 2021 00:59	Bach Vu
	Merge branch 'BachV' of https://github.com/oscar-toohey/DATA201-group-proj...	26 Oct 2021 00:58	Bach Vu
	Add default plot save size	26 Oct 2021 00:57	Bach Vu
	Update Notebook_Final.ipynb	26 Oct 2021 00:51	Bach Vu
	main origin AngusL origin origin/HEAD Merge branch 'mai...	26 Oct 2021 00:00	Angus L
	Uploading draft presentation and report	25 Oct 2021 23:56	Angus L
	Update save plot function	25 Oct 2021 23:38	Bach Vu
	Fixed a number of issues and added more comments	25 Oct 2021 19:41	JamieBarnes964
	JamieB origin Created Wrangled_covid.csv	25 Oct 2021 17:26	JamieBarnes964

Difficulties

- Confusing Raw Data
- Information regarding data was limited
- Import/Export Graphs hard to interpret
- Date conversion of COVID dataset
- Rows of missing data

Data Acquisition

- We used Stats New Zealand's API to gather current Covid Data and shipping costs in and out of New Zealand
- Downloaded CSV data that includes the Consumer price index

Overseas Cargo Raw

Rows: 39,592

Columns: 24

```
$ ResourceID <chr> "OSC1.1", "OSC1.1", "OSC1.1", "OSC1.1", "OSC1.1", "OSC1.1"...
```

```
$ Subject      <chr> "Overseas Cargo Statistics", "Overseas Cargo Statistics", ...
```

```
$ Title      <chr> "Overseas cargo exports and imports by New Zealand port", ...
```

```
$ Description <chr> "Overseas cargo records all goods, value and gross weight,...
```

\$ Notes <chr> "These figures will differ from those of merchandise trade...

```
$ Caveats      <chr> "Overseas trade and cargo data is provided by exporters/im...
```

```
$ Source      <chr> "Stats NZ", "Stats NZ", "Stats NZ", "Stats NZ", "Stats NZ"...
```

```
$ SourceURL      <chr> "www.stats.govt.nz", "www.stats.govt.nz", "www.stats.govt....
```

```
$ Modified      <chr> "2021-09-23T22:45:00Z", "2021-09-23T22:45:00Z", "2021-09-2..."
```

```
$ Frequency <chr> "Monthly", "Monthly", "Monthly", "Monthly", "Monthly", "Mo...
```

```
$ Var1      <chr> "Trade Class", "Trade Class", "Trade Class", "Trade Class"...
```

```
$ Var2      <chr> "New Zealand Port", "New Zealand Port", "New Zealand Port"...
```

```
$ Var3      <chr> "Treatment", "Treatment", "Treatment", "Treatment", "Treat..."
```

```
$ id      <chr> "e01d2165-0d2d-4519-952e-4d2f91830d91", "2cf18e26-fe21-41d...
```

```
$ Period      <chr> "2005-01-31", "2005-01-31", "2005-01-31", "2005-01-31", "2..."
```

```
$ Duration      <chr> "P1M", "P1M", "P1M", "P1M", "P1M", "P1M", "P1M", "P1M", "P...
```

```
$ Label1 <chr> "Imports", "Imports", "Imports", "Imports", "Imports", "Im...
```

```
$ Label2      <chr> "Christchurch Airport", "Gisborne (sea)", "Dunedin Airport..."
```

```
$ Label3      <chr> "Actual", "Actual", "Actual", "Actual", "Actual", "Actual"...
```

```
$ Value      <int> 584, 6, 1, 205799, 0, 0, 16923, 0, 132559, 4087, 60333, 16...
```

```
$ Unit      <chr> "t", "NZD", "NZD", "NZD", "t", "NZD", "NZD", "t", "t", "t"...
```

```
$ Measure      <chr> "Gross weight value", "Cost, insurance and freight value",...
```

```
$ Multiplier <int> 0, 3, 3, 3, 0, 3, 3, 0, 0, 0, 3, 0, 0, 3, 3, 0, 0, 3, 3, 3...
```

```
$ Status      <chr> "F", "F", "F", "F", "F", "F", "F", "F", "F", "F", "F", "F"...
```

Overseas Cargo dataset Wrangled

		Period	Trade	Gross_Weight_kt	NZD_Value_mil
1	1	1988-01-31	Exports	550.458	799.476
2	2	1988-01-31	Imports	794.129	892.909
3	3	1988-02-29	Exports	906.514	1140.441
4	4	1988-02-29	Imports	726.047	940.189
5	5	1988-03-31	Exports	971.862	1236.02
6	6	1988-03-31	Imports	516.128	883.951
7	7	1988-04-30	Exports	961.191	1022.018
8	8	1988-04-30	Imports	640.725	867.439
9	9	1988-05-31	Exports	814.132	1228.317
10	10	1988-05-31	Imports	423.866	873.175
11	11	1988-06-30	Exports	1206.279	1149.823
12	12	1988-06-30	Imports	630.422	892.652
13	13	1988-07-31	Exports	623.617	1013.311
14	14	1988-07-31	Imports	566.105	937.825
15	15	1988-08-31	Exports	1003.688	1109.338
16	16	1988-08-31	Imports	486.561	968.512
17	17	1988-09-30	Exports	887.493	1211.466
18	18	1988-09-30	Imports	560.077	956.184
19	19	1988-10-31	Exports	603.559	936.548
20	20	1988-10-31	Imports	754.459	1017.792
21	21	1988-11-30	Exports	940.689	1250.357
22	22	1988-11-30	Imports	451.242	1102.52
23	23	1988-12-31	Exports	919.924	1418.46
24	24	1988-12-31	Imports	412.6	963.705
25	25	1989-01-31	Exports	683.431	1103.328
26	26	1989-01-31	Imports	434.779	971.877
27	27	1989-02-28	Exports	1014.208	1262.023
28	28	1989-02-28	Imports	930.546	1020.254
29	29	1989-03-31	Exports	1112.113	1389.911
30	30	1989-03-31	Imports	596.526	1095.46
31	31	1989-04-30	Exports	903.935	1269.705
32	32	1989-04-30	Imports	711.495	1096.943
33	33	1989-05-31	Exports	1102.542	1574.855

CPI dataset raw

	hpi_name	series_ref	quarter	hpi	nzhec	nzhec_name	nzhec_short	level	index	change.q	change.a
1	All households	HPIQ.SALL01	2008Q2	allhh	1	Food	Food	group	870	NA	NA
2	All households	HPIQ.SALL01	2008Q3	allhh	1	Food	Food	group	903	3.8	NA
3	All households	HPIQ.SALL01	2008Q4	allhh	1	Food	Food	group	918	1.7	NA
4	All households	HPIQ.SALL01	2009Q1	allhh	1	Food	Food	group	927	1	NA
5	All households	HPIQ.SALL01	2009Q2	allhh	1	Food	Food	group	935	0.9	7.5
6	All households	HPIQ.SALL01	2009Q3	allhh	1	Food	Food	group	949	1.5	5.1
7	All households	HPIQ.SALL01	2009Q4	allhh	1	Food	Food	group	929	-2.1	1.2
8	All households	HPIQ.SALL01	2010Q1	allhh	1	Food	Food	group	938	1	1.2
9	All households	HPIQ.SALL01	2010Q2	allhh	1	Food	Food	group	929	-1	-0.6
10	All households	HPIQ.SALL01	2010Q3	allhh	1	Food	Food	group	952	2.5	0.3
11	All households	HPIQ.SALL01	2010Q4	allhh	1	Food	Food	group	974	2.3	4.8
12	All households	HPIQ.SALL01	2011Q1	allhh	1	Food	Food	group	985	1.1	5
13	All households	HPIQ.SALL01	2011Q2	allhh	1	Food	Food	group	996	1.1	7.2
14	All households	HPIQ.SALL01	2011Q3	allhh	1	Food	Food	group	1013	1.7	6.4
15	All households	HPIQ.SALL01	2011Q4	allhh	1	Food	Food	group	990	-2.3	1.6
16	All households	HPIQ.SALL01	2012Q1	allhh	1	Food	Food	group	991	0.1	0.6
17	All households	HPIQ.SALL01	2012Q2	allhh	1	Food	Food	group	990	-0.1	-0.6
18	All households	HPIQ.SALL01	2012Q3	allhh	1	Food	Food	group	1001	1.1	-1.2
19	All households	HPIQ.SALL01	2012Q4	allhh	1	Food	Food	group	985	-1.6	-0.5
20	All households	HPIQ.SALL01	2013Q1	allhh	1	Food	Food	group	992	0.7	0.1
21	All households	HPIQ.SALL01	2013Q2	allhh	1	Food	Food	group	992	0	0.2
22	All households	HPIQ.SALL01	2013Q3	allhh	1	Food	Food	group	1010	1.8	0.9
23	All households	HPIQ.SALL01	2013Q4	allhh	1	Food	Food	group	998	-1.2	1.3
24	All households	HPIQ.SALL01	2014Q1	allhh	1	Food	Food	group	999	0.1	0.7
25	All households	HPIQ.SALL01	2014Q2	allhh	1	Food	Food	group	1000	0.1	0.8
26	All households	HPIQ.SALL01	2014Q3	allhh	1	Food	Food	group	1002	0.2	-0.8
27	All households	HPIQ.SALL01	2014Q4	allhh	1	Food	Food	group	995	-0.7	-0.3
28	All households	HPIQ.SALL01	2015Q1	allhh	1	Food	Food	group	1006	1.1	0.7
29	All households	HPIQ.SALL01	2015Q2	allhh	1	Food	Food	group	1003	-0.3	0.3
30	All households	HPIQ.SALL01	2015Q3	allhh	1	Food	Food	group	1008	0.5	0.6
31	All households	HPIQ.SALL01	2015Q4	allhh	1	Food	Food	group	985	-2.3	-1
32	All households	HPIQ.SALL01	2016Q1	allhh	1	Food	Food	group	998	1.3	-0.8
33	All households	HPIQ.SALL01	2016Q2	allhh	1	Food	Food	group	1000	0.2	-0.3

CPI dataset wrangled

		quarter	All groups	Food	Petrol	Rent
1	1	2008Q2	898	870	915	895
2	2	2008Q3	911	903	957	902
3	3	2008Q4	906	918	743	906
4	4	2009Q1	903	927	736	908
5	5	2009Q2	905	935	760	910
6	6	2009Q3	914	949	775	912
7	7	2009Q4	911	929	768	914
8	8	2010Q1	914	938	821	917
9	9	2010Q2	915	929	832	922
10	10	2010Q3	926	952	821	926
11	11	2010Q4	946	974	876	928
12	12	2011Q1	955	985	961	933
13	13	2011Q2	962	996	999	938
14	14	2011Q3	966	1013	966	943
15	15	2011Q4	963	990	974	946
16	16	2012Q1	969	991	997	954
17	17	2012Q2	971	990	1001	959
18	18	2012Q3	975	1001	991	965
19	19	2012Q4	973	985	984	969
20	20	2013Q1	978	992	999	975
21	21	2013Q2	980	992	973	979
22	22	2013Q3	991	1010	1028	984
23	23	2013Q4	992	998	992	989
24	24	2014Q1	996	999	1002	994
25	25	2014Q2	1000	1000	1000	1000
26	26	2014Q3	1006	1002	1010	1006
27	27	2014Q4	1004	995	953	1009
28	28	2015Q1	1005	1006	851	1016
29	29	2015Q2	1010	1003	926	1022
30	30	2015Q3	1013	1008	941	1028
31	31	2015Q4	1007	985	875	1034
32	32	2016Q1	1007	998	808	1039
33	33	2016Q2	1011	1000	851	1044

COVID 19 Indicators Dataset Raw

Rows: 1,584

Columns: 17

```
$ ResourceID <chr> "CPCOV2", "CPCOV2", "CPCOV2", "CPCOV2", "CPCOV2", "CPCOV2"...
$ Subject    <chr> "COVID-19", "COVID-19", "COVID-19", "COVID-19", "COVID-19"...
$ Title      <chr> "Number of Cases", "Number of Cases", "Number of Cases", "...
$ Description <chr> "COVID-19 cases in New Zealand (cumulative)", "COVID-19 ca...
$ Source     <chr> "Ministry of Health", "Ministry of Health", "Ministry of H...
$ SourceURL  <chr> "https://www.health.govt.nz/our-work/diseases-and-conditions...
$ Modified   <chr> "2021-10-18T11:00:00Z", "2021-10-18T11:00:00Z", "2021-10-1...
$ Frequency  <chr> "Daily", "Daily", "Daily", "Daily", "Daily", "Daily", "Dai...
$ Var1       <chr> "Case status", "Case status", "Case status", "Case status"...
$ id         <chr> "64b6b274-4d39-49fb-868b-13dfaff4c6f9", "73b0c701-9be9-476...
$ Period     <chr> "2020-02-28", "2020-03-02", "2020-02-29", "2020-03-01", "2...
$ Duration   <chr> "P1D", "P1D", "P1D", "P1D", "P1D", "P1D", "P1D", "P1D", "P...
$ Label1     <chr> "Deceased", "Deceased", "Deceased", "Deceased", "Deceased"...
$ Value      <int> 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0...
$ Unit       <chr> "Number", "Number", "Number", "Number", "Number", "Number"...
$ Measure    <chr> "COVID-19 cases", "COVID-19 cases", "COVID-19 cases", "COV...
$ Multiplier <int> 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0...
```

COVID dataset wrangled

Monday	Status	Week	Value
<date>	<chr>	<chr>	<dbl>
2020-03-02	Active	09-2020	1.0000000
2020-03-02	Deceased	09-2020	0.0000000
2020-03-02	Recovered	09-2020	0.0000000
2020-03-09	Active	10-2020	3.1428571
2020-03-09	Deceased	10-2020	0.0000000
2020-03-09	Recovered	10-2020	0.0000000
2020-03-16	Active	11-2020	5.5714286
2020-03-16	Deceased	11-2020	0.0000000
2020-03-16	Recovered	11-2020	0.0000000
2020-03-23	Active	12-2020	32.1428571
2020-03-23	Deceased	12-2020	0.0000000
2020-03-23	Recovered	12-2020	0.0000000
2020-03-30	Active	13-2020	267.5714286
2020-03-30	Deceased	13-2020	0.1428571
2020-03-30	Recovered	13-2020	29.1428571
2020-04-06	Active	14-2020	699.1428571
2020-04-06	Deceased	14-2020	1.0000000
2020-04-06	Recovered	14-2020	99.5714286
2020-04-13	Active	15-2020	906.2857143
2020-04-13	Deceased	15-2020	2.0000000
2020-04-13	Recovered	15-2020	326.0000000
2020-04-20	Active	16-2020	633.0000000
2020-04-20	Deceased	16-2020	9.4285714
2020-04-20	Recovered	16-2020	752.4285714
2020-04-27	Active	17-2020	375.7142857

Notebook_...
 12 hours ago

README.md
 14 hours ago

SCRAPING_...
 14 hours ago

SCRAPING_...
 10 minutes ago

wrangled_C...
 4 days ago

wrangled_i...
 14 hours ago

wrangled_n...
 14 hours ago

A data.frame: 10 × 4

	Date	Deceased	Recovered	Active
	<date>	<dbl>	<dbl>	<dbl>
8	2020-04-11	4	422	886
2	2020-08-11	22	1526	22
7	2020-08-15	22	1531	56
10	2020-08-19	22	1531	96
5	2020-08-22	22	1538	111
1	2020-08-31	22	1585	131
6	2020-11-19	25	1948	37
9	2020-12-20	25	2036	55
4	2021-02-09	25	2230	67
3	2021-09-13	27	3308	614

Rows: 518
 Columns: 4
 \$ Date <date> 2020-02-28, 2020-02-2

Modulation

```

PLOT_SIZE <- c(14, 10) # in inches
# Size of graph display
options(repr.plot.width = PLOT_SIZE[1], repr.plot.height = PLOT_SIZE[2])
savePlot <- function(filename, df_plot, pwidth=14, pheight=10) {
  ggsave(paste("img", filename, sep="/"), plot = df_plot,
    width = pwidth, height = pheight,
    dpi = 300, units = "in", device='png')
}

```

Explore data

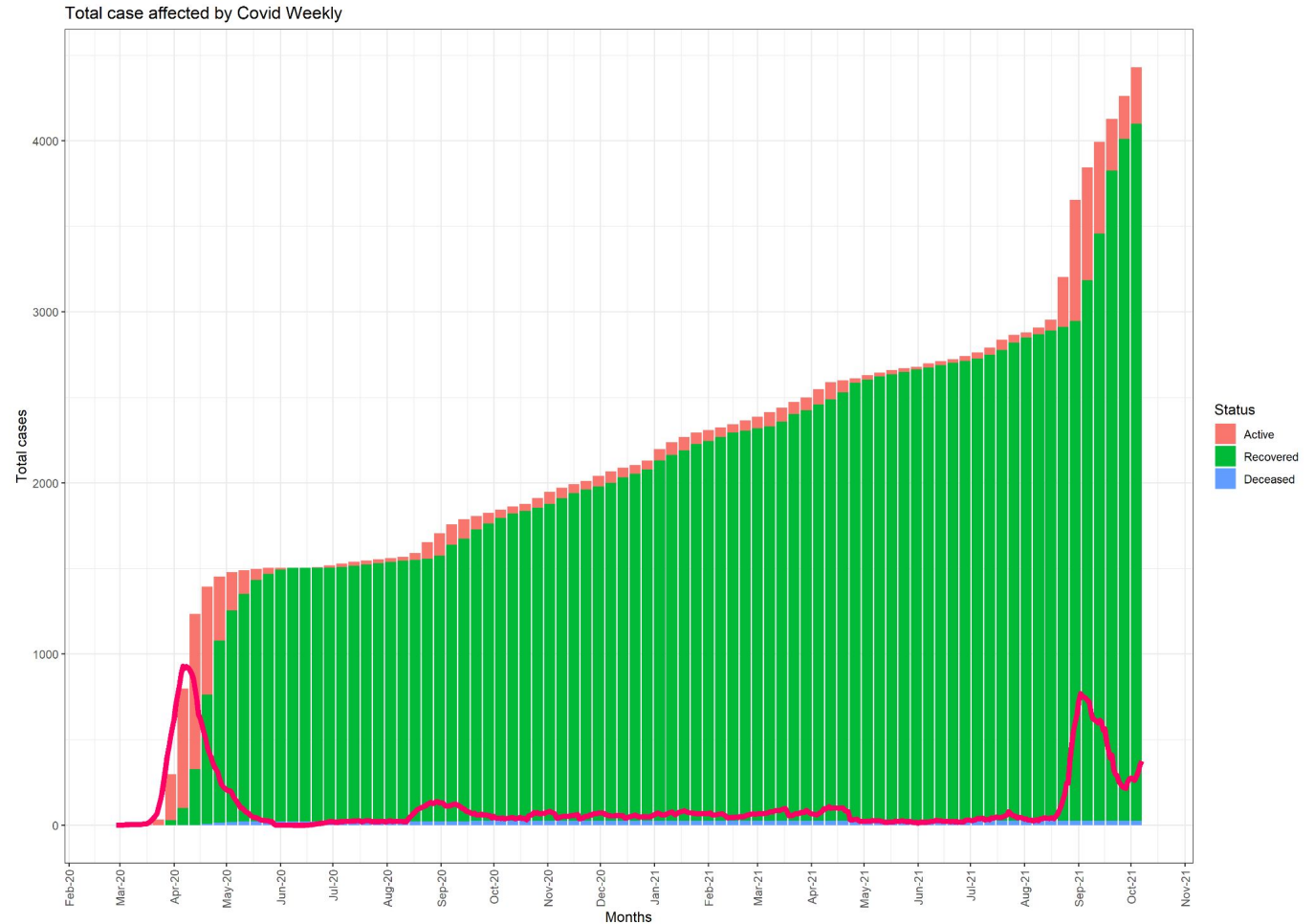
```

38]: # Test
trim_Covid_Raw_df(covid_case_df, "Status")
trim_Covid_Raw_df(covid_case_df, "Deceased") %>% glimpse()
trim_Covid_Raw_df(covid_case_df, "Recovered") %>% glimpse()
trim_Covid_Raw_df(covid_case_df, "Active") %>% glimpse()
trim_Covid_Raw_df(covid_case_df, "Sample")
trim_Covid_Raw_df(covid_case_df, "Summary") %>% glimpse()

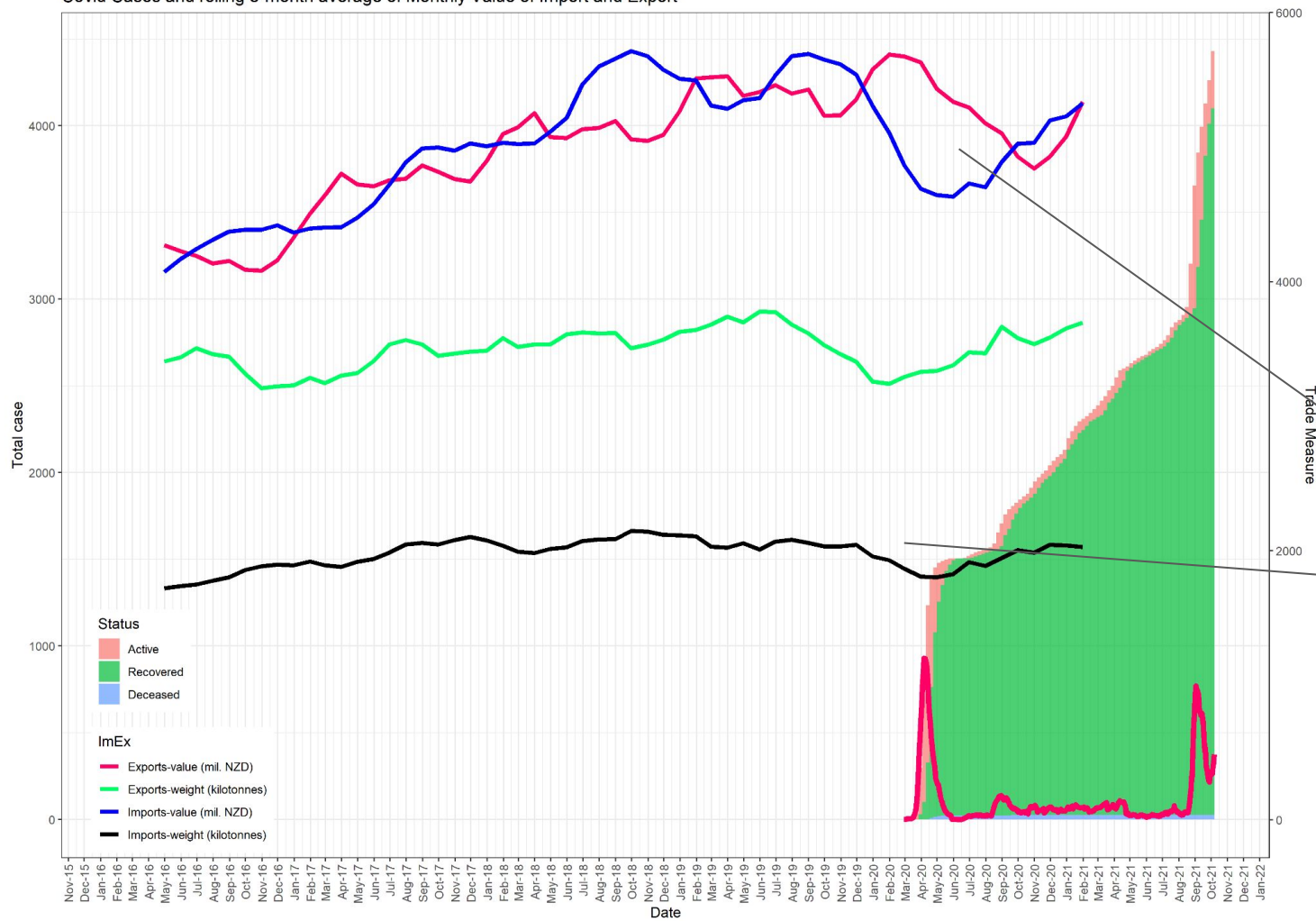
```

A tibble: 3 ×
 1
 Status
 <chr>

- We used this data to show the impact on imports and exports
- We also looked at select categories in the CPI



Covid Cases and rolling 8-month average of Monthly Value of Import and Export



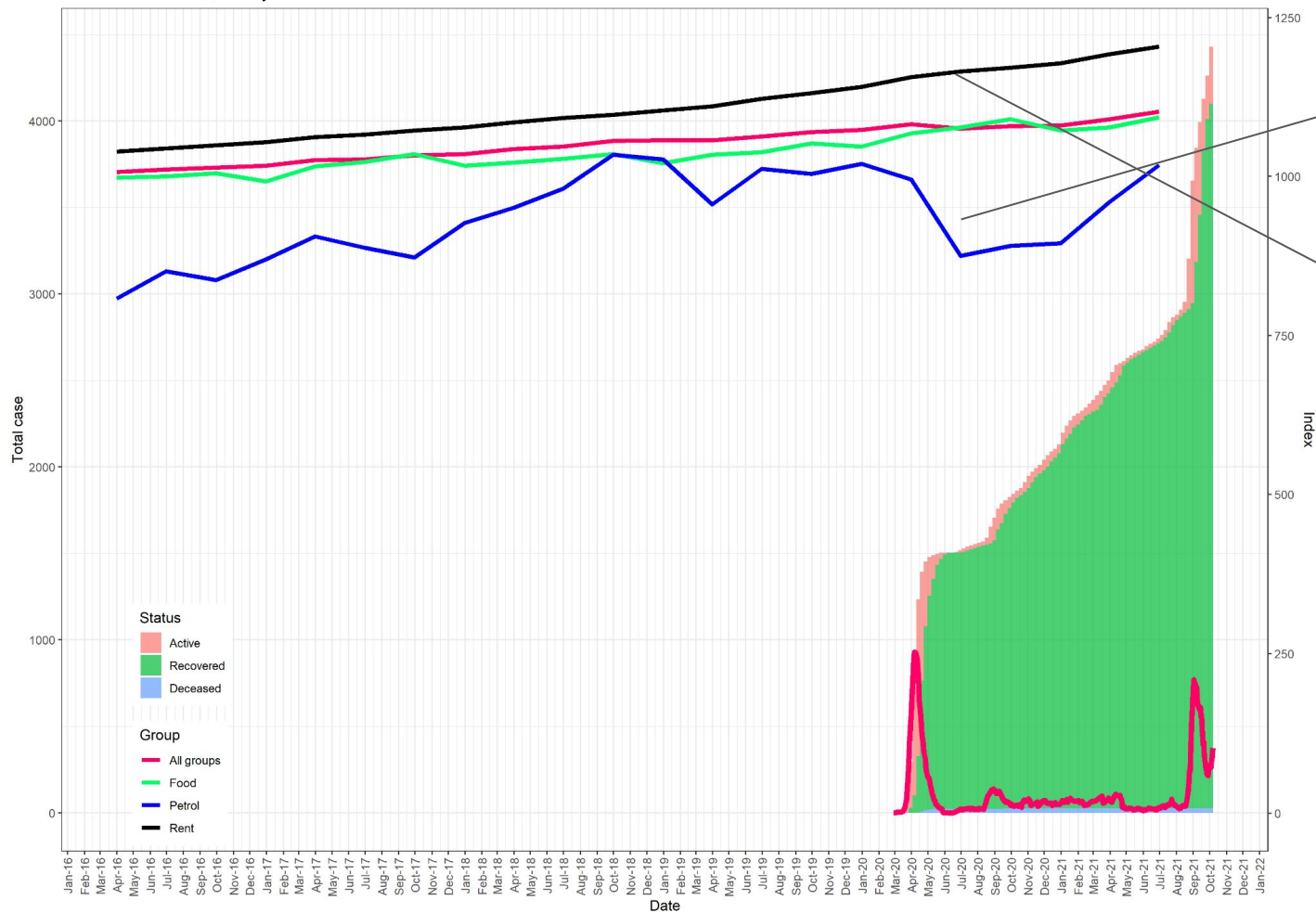
Considerations

- Economic recovery from government
- No loss of consumers
- Internet and online shopping

Value decrease

Almost no drop in export/imports

Covid Cases and Quarterly



Considerations

- Russian Saudi price war
- Loss of demand
- Economic recovery plan
- Rent amnesty
- Housing crisis

Conclusion

YES, Covid has affected the cost of living in New Zealand but also....

- Economic Recovery plan
- 2020 Russia–Saudi Arabia oil price war
- COVID Rent amnesty
- Too early to tell - Future data may reveal more

Final Dataset

	Date	key	value
357	2020-03-29	Active	457
358	2020-03-30	Deceased	1
359	2020-03-30	Recovered	63
360	2020-03-30	Active	525
361	2020-03-31	Deceased	1
362	2020-03-31	Recovered	74
363	2020-03-31	Active	572
364	2020-03-31	Exports_weight_kiloto...	3591.309
365	2020-03-31	Imports_weight_kiloto...	2278.137
366	2020-03-31	Exports_value_mil_nzd	6244.932
367	2020-03-31	Imports_value_mil_nzd	5250.431
368	2020-03-31	All groups	1082
369	2020-03-31	Food	1068
370	2020-03-31	Petrol	995
371	2020-03-31	Rent	1156

