The Social Demography of Covid-19 Delta

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1 Introduction

The trajectory of Covid and its immediate consequences are tracked across several official and some non-official data sources. The main data comes from MOH, with the reported data related to:

- Scanning
- Testing
- Vaccination
- Cases of Covid and also
- MIQ.

Supplementary data provided by Stats NZ and MBIE and covers labour force and hardships consequences, besides other information. In addition, a range of surveys (some carried out by government agencies) provide information on people's attitudes (see Crothers, 2021 for a summary). The usefulness of these various sources of information depends on the speed with which they are processed and made available and the extent to which the data allows close examination of particular social groupings given the social breakdowns provided. Fortunately, MOH data in particular is quickly available and although social breakdowns have been limited more has been made available recently, although ways of presenting data differ according to source. In a fast-changing situation the data presented here will be quickly out of date although it is likely that some of the broad patterns will endure.

Given the wider range of data available and the small-area spatial scale, Vaccination data affords the best insight into social effects on Covid-related phenomena. At the DHB level having 3 DHBs each with somewhat different social characteristics provides some insight into socio-economic effects.

2 Literature

There is already a small literature = which is useful since MOH present but do not analyses their data. A media report and two analyses reveal effects of systematic racism in terms of Covid outcomes – both hospitalisations and deaths (Janesen, 2021; Steyn et al., 2021a; Steyn 2021b) while a study of the spatial arrangements of vaccination services (Whitehead et al, 2021) comes to the same conclusion.

3 Scanning

Data has been developed for various ways of scanning and monthly averages shown in the table that the long period thought which NZ did not experience cases tended to suppress New Zealanders' scanning behaviour.

Report

Mean

Period	App Registrations	QR Codes Generated	NZBN Registered Businesses	Scans	Manual Entries	Active Devices	Bluetooth Active (24hr)
2020-05	36615.3846	2,578.38	18,981.50	32241.6154	00		
2020-06	3666.6667	2,126.88	733.84	29441.8667	00	10,293.13	
2020-07	1654.5455	294.64	101.77	18936.3871	317.7419	10,270.90	
2020-08	50014.2857	9,376.36	3,316.89	920085.5161	67661.1935	416,437.97	
2020-09	950000	1,536.50	178.11	1677153.8333	4600000	735,849.63	
2020-10	1506.4516	651.74	43.68	768900.5161	28281.7742	377,089.03	
2020-11	181000	783.67	59.70	873032.9333	30711.3333	418,983.23	
2020-12	144400	398.83	34.37	515588.3226	20372.6452	270,508.61	411,821.77
2021-01	3925.4000	845.23	63.33	661939.8387	30712.1613	351,297.52	630,327.73
2021-02	5846.2143	2,001.89	160.64	1215640.3929	41744.5714	622,617.93	1,074,020.30
2021-03	2026.9355	1,004.19	71.19	1185040.9355	28915.4194	611,710.13	1,247,662.50
2021-04	1156.6333	545.10	30.33	726707.8333	26165.1333	386,399	1,289,125.87
2021-05	1081.6129	472.74	24.48	584357.9677	23909.4516	314,948.03	1,303,754.32
2021-06	1469.9000	547.67	37.43	602275.2667	34222.6000	322,850.13	1,445,668.60
2021-07	848.6452	464.65	28.06	641844.8065	28786.2581	338,765.61	1,492,569.19
2021-08	6981.8065	2,377.71	257.61	603584.2258	85937.4516	391,959.06	1,663,231.29
2021-09	4634.4000	2,136.43	269.47	2139209.8000	76954.0333	1,037,450.90	2,100,572.33
2021-10	2314.1818	1,652.23	117.82	2367558.8636	66139.7727	1,130,387.27	2,199,154.68
Total	6617.1756	1,608.53	471.75	863767.5230	36029.1820	462,017.96	1,384,854.24

4 Testing:

MOH tables show higher testing rates for the 3 Auckland DHBs, and also higher proportions of tests which are positive. The peak age-range are 40 year olds and there is the slightest gender difference.

All tests by DHB and in managed isolation and quarantine facilities from 22 January 2020 to 24 October 2021

	Total tests	Tested positive (%)	Test rate per 1000 people
Total	3923269	0.18%	697.75
Location			
Managed isolation and quarantine	381208	0.45%	NA
Auckland	581241	0.17%	1037.01
Bay of Plenty	128797	0.07%	526.66
Canterbury	271685	0.07%	466.31
Capital and Coast	180517	0.09%	554.91
Counties Manukau	740081	0.22%	1276.34
Hawkes Bay	64266	0.08%	382.79
Hutt Valley	60959	0.05%	401.49
Lakes	59799	0.04%	535.53
MidCentral	74585	0.05%	408.44
Nelson Marlborough	63368	0.08%	414.2
Northland	109300	0.06%	594.17
South Canterbury	19098	0.18%	317.47
Southern	136953	0.24%	406.23
Tairāwhiti	21046	0.02%	425.79
Taranaki	49407	0.03%	405.99
Waikato	262034	0.12%	610.69
Wairarapa	16572	0.06%	359.3
Waitematā	643106	0.18%	997.15
West Coast	5681	0.07%	177.86
Whanganui	20721	0.03%	318.51
Unknown	32845	0.25%	NA
Ethnicity[1]			
Māori	529768	0.22%	669.46
Pacific peoples	474704	0.31%	1458.86
Asian	666468	0.16%	830.74
European/Other	2098885	0.13%	674.81
Unknown	153444	0.35%	NA
Age group			
0 to 9	265037	0.28%	420
10 to 19	346490	0.23%	540.56
20 to 29	765901	0.2%	1025.43
30 to 39	748434	0.18%	1097.45
40 to 49	591918	0.16%	972.19
50 to 59	580953	0.15%	915.61
60 to 69	392753	0.12%	734.36
70 to 79	160085	0.11%	440.35
80+	71626	0.1%	383.68

[1] The prioritised ethnicity classification system is used which means each person is allocated to a single ethnic group, based on the ethnic groups they identify with. Where people identify with more than one group, they are assigned in this order of priority: Māori, Pacific Peoples, Asian, and European/Other. So, if a person identifies as being Māori and New Zealand European, the person is counted as Māori.

All tests by DHB and in managed isolation and quarantine facilities from 22 January 2020 to 24 October 2021			
	Total tests	**Tested positive (%)**	**Test rate per 1000 people**
Sex			
Female	1990622	0.16%	782.39
Male	1894648	0.19%	762.42

5 Vaccination:

MOH has been releasing vaccination date data by DHB (n=20) and locality (SA2; n=c2139). Data are up to 17th Oct 2021. The DHB level data is not only age (and gender specific) but also includes both Level 1 and Level 2 ethnic levels, allowing quite detailed tracking of groups. The table below is highly summarised but shows that for the 65+ age-group rates are similar for the three ethnic groupings, with increasing divergence with successively younger age-groups.

Age-group	**65+**	**50-64**	**35-49**	**20-34**	**12-19**	**All Ages (12+)**
Maori D1	**94**	**82**	**67**	**54**	**57**	**66**
Maori 2	**85**	**68**	**45**	**28**	**30**	**45**
Pacific p 1	**95**	**95**	**89**	**84**	**74**	**74**
Pacific p 2	**89**	**89**	**77**	**65**	**47**	**45**
Other 1	**95**	**90**	**87**	**85**	**84**	**88**
Other 2	**89**	**78**	**66**	**56**	**53**	**70**

The locality-level data allow many links to be made, but they are links at the 'aggregate level' and such links might not also hold at the individual level. At the locality level separate data is provided for all, Maori and Pacific rates: from these an 'Other (neither Maori nor Pacific) rate can be calculated. This is much higher than that for either Pacifica or Maori, which are both alarmingly low. Given that 2nd dose tends to follow fairly 'automatically' from the first attention is focused on the 1st.

SA2 Descriptive Statistics rates per Million

	N	Minimum	Maximum	Mean	Std. Deviation
Dose rate 1	2112	200	950	781.1430	95.80597
Dose rate 2	2143	161	949	491.1213	94.55336
Maori dose rate 1	2120	167	949	625.7943	123.51036
Maori dose rate 2	2127	83	762	361.0282	102.23506
Pacific dose rate 1	1853	91	950	703.7593	134.21954
Pacific dose rat e2	1968	53	944	440.3943	138.34085
Other dose rate 1	1596	79	6079	1497.6610	740.86173
Other dose rate 2	1596	56	3937	951.3490	478.58694

Regional groupings have very similar overall rates with the South of the North Island lagging overall and for other but not so much for Maori (not-significant) or Pacifica. Measures of Association are not high apart slightly for others.

Report

Region group		Overall dose r 1	Maori dose r1	Pacifica dose r1	other dose r1
NNI	Mean	784.0825	629.2097	714.8568	855.4225
	N	1006	1011	936	846
	Std. Deviation	103.52029	125.76191	124.39512	77.70373
SNI	Mean	770.9498	620.3923	697.6879	832.9471
	N	518	520	455	383
	Std. Deviation	97.32019	123.09177	138.02683	69.24244
SI	Mean	784.8279	624.3231	687.2554	820.4314
	N	587	588	462	366
	Std. Deviation	78.52870	119.69495	147.19369	69.48057
Total	Mean	781.1430	625.7943	703.7593	841.9963
	N	2112	2120	1853	1595
	Std. Deviation	95.80597	123.51036	134.21954	75.34792

			Sig.
Overall dose rate 1 * Region group	Between Groups	(Combined)	.015
		Linearity	.142
		Deviation from Linearity	.016
	Within Groups		
	Total		

Maori dose rate 1 * Region group	Between Groups	(Combined)	.168
		Linearity	.185
		Deviation from Linearity	.192
	Within Groups		
	Total		
Pacifica dose rate 1 * Region group	Between Groups	(Combined)	1
		Linearity	0
		Deviation from Linearity	.646
	Within Groups		
	Total		
Other dose rate 1 * Region group	Between Groups	(Combined)	0
		Linearity	0
		Deviation from Linearity	.261
	Within Groups		
	Total		

Measures of Association

	R	R Squared	Eta	Eta Squared
Overall dose rate 1 * Region group	.032	1	.070	5
Maori dose rate 1 * Region group	.029	1	.049	2
Pacifica dose rate 1 * Region group	-.087	8	.088	8
Other dose rate 1 * Region group	-.196	.038	.198	.039

There is a clear fall-off with size of urban area, illustrated by quite strong measures of association.

Report

Urban Influence		Overall dose r1	Maori dose r1	Pacifica dose r1	Other dose r1
Major urban area	Mean	833.1362	671.7698	743.0205	882.3315
	N	859	873	830	815
	Std. Deviation	77.94581	126.71987	99.59948	60.97583
Large urban area	Mean	755.0927	587.3874	701.7778	813.6019
	N	302	302	279	264
	Std. Deviation	93.61640	111.07191	119.99332	60.75898
Medium urban area	Mean	780.2414	607.2315	705.3315	809.7080

	N	203	203	178	154
	Std. Deviation	74.73634	99.18734	113.69678	59.26543
High urban accessibility	Mean	806.1392	689.3974	715.3333	834.5475
	N	79	78	66	58
	Std. Deviation	66.76360	114.87230	161.45753	46.72130
Medium-High	Mean	785.0732	668.3902	634.3103	802.5513
	N	41	41	29	21
	Std. Deviation	52.64332	98.61260	187.12927	41.82065
Medium urban accessibility	Mean	752.4088	610.4173	662.7087	799.2125
	N	137	139	103	86
	Std. Deviation	77.03662	105.70145	158.15775	57.03383
Lo-Medium	Mean	727.4786	582.5517	634.2347	767.4006
	N	117	116	98	43
	Std. Deviation	68.17556	96.23082	157.41905	51.85334
Low urban accessibility	Mean	718.8480	565.6512	673.3953	770.4387
	N	171	172	129	90
	Std. Deviation	84.68662	103.37704	154.63553	70.03889
Remote	Mean	705.5068	564.1857	580.0816	784.8055
	N	73	70	49	28
	Std. Deviation	111.75806	113.16197	168.98778	58.51038
Remote/V remote	Mean	686.5484	530.5161	552.8182	722.7282
	N	31	31	22	7
	Std. Deviation	108.10576	104.40749	209.73195	128.96466
Very remote	Mean	701.8235	55800	671.8000	763.0940
	N	17	17	15	9
	Std. Deviation	90.34049	75.18311	168.89693	50.67599
Total	Mean	781.1430	625.7943	703.7593	841.9963
	N	2112	2120	1853	1595
	Std. Deviation	95.80597	123.51036	134.21954	75.34792

			Sig.
Overall dose rate 1 * UrbInfl	Between Groups	(Combined)	0
		Linearity	0
		Deviation from Linearity	0
	Within Groups		
	Total		
Maori dose rate 1 * UrbInfl	Between Groups	(Combined)	0
		Linearity	0
		Deviation from Linearity	0

	Within Groups		
	Total		
Pacifica dose rate 1 * UrbInfl	Between Groups	(Combined)	0
		Linearity	0
		Deviation from Linearity	0
	Within Groups		
	Total		
Other dose rate 1 * UrbInfl	Between Groups	(Combined)	0
		Linearity	0
		Deviation from Linearity	0
	Within Groups		
	Total		

Measures of Association

	R	R Squared	Eta	Eta Squared
Overall dose rate 1 * UrbInfl	-.390	.152	.529	.280
Maori dose rate 1 * UrbInfl	-.205	.042	.383	.147
Pacifica dose rate 1 * UrbInfl	-.287	.082	.357	.128
Other dose rate 1 * UrbInfl	-.414	.171	.600	.360

There is an even stronger association (although less so for Pacifica) between Deprivation level of area and vaccination.

Report

Dep Index 2018		Overall dose rate 1	Maori dose rate 1	Pacifica dose rate 1	Other dose rate 1
1	Mean	862.8244	757.0194	74400	885.5966
	N	205	206	161	139
	Std. Deviation	47.85505	103.81310	145.30167	42.19815
2	Mean	838.2123	713.6143	732.7584	864.1221
	N	212	210	178	155
	Std. Deviation	56.73032	104.13641	141.88474	50.88380
3	Mean	833.0141	695.8302	721.5503	866.4080
	N	213	212	189	159
	Std. Deviation	63.97674	109.99116	142.59813	50.76826

4	Mean	816.1564	655.2394	717.9259	855.2799
	N	211	213	189	155
	Std. Deviation	69.32476	101.41147	131.53397	58.51600
5	Mean	799.2536	632.7867	710.7486	845.8585
	N	209	211	179	159
	Std. Deviation	76.69456	97.93383	144.10015	74.28837
6	Mean	776.8942	608.5261	706.6339	836.6411
	N	208	211	183	147
	Std. Deviation	75.07078	99.28954	124.65576	69.64919
7	Mean	766.7000	584.0427	709.1064	823.8223
	N	210	211	188	168
	Std. Deviation	73.49524	93.67641	108.77249	70.62662
8	Mean	758.0191	573.5896	709.2995	827.7679
	N	209	212	187	174
	Std. Deviation	83.12444	90.48844	109.19966	80.29763
9	Mean	717.7512	546.2958	661.5052	820.2692
	N	205	213	194	167
	Std. Deviation	75.16962	85.65366	134.12917	100.75419
10	Mean	653.0892	498.6462	641.5545	806.5319
	N	213	212	202	172
	Std. Deviation	94.40937	75.54982	123.61322	90.55114
Total	Mean	782.1189	626.1071	704.1573	841.9963
	N	2095	2111	1850	1595
	Std. Deviation	93.87658	122.77768	133.94250	75.34792

			Sig.
Overall dose rate 1 * Dep Index 2018	Between Groups	(Combined)	0
		Linearity	0
		Deviation from Linearity	0
	Within Groups		
	Total		
Maori dose rate 1 * Dep Index 2018	Between Groups	(Combined)	0
		Linearity	0
		Deviation from Linearity	.026
	Within Groups		
	Total		
Pacifica dose rate 1 * Dep Index 2018	Between Groups	(Combined)	0
		Linearity	0
		Deviation from Linearity	.011

	Within Groups		
	Total		
Other dose rate 1 * Dep Index 2018	Between Groups	(Combined)	0
		Linearity	0
		Deviation from Linearity	.596
	Within Groups		
	Total		

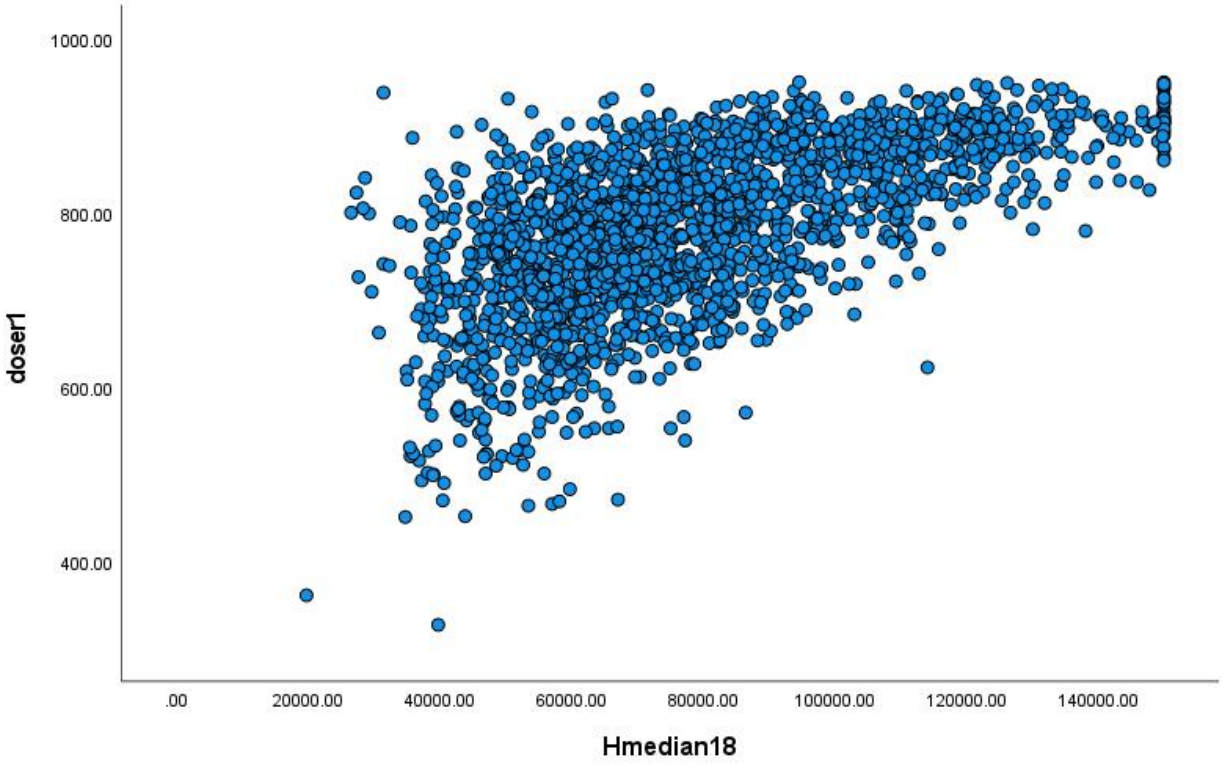
Measures of Association

	R	R Squared	Eta	Eta Squared
Overall dose rate 1 * Dep Index 2018	-.609	.371	.635	.403
Maori dose rate 1 * Dep Index 2018	-.615	.378	.619	.383
Pacifica dose rate 1 * Dep Index 2018	-.199	.040	.224	.050
Other dose rate 1 * Dep Index 2018	-.301	.091	.307	.094

Some illustrative graphs are followed by a table of correlations of by rates with appropriate locality characteristics.

The four vaccination rates are very strongly locked together which suggests that locality-level characteristics may be pushing all in the locality towards a similar rate. Regions yielded little difference (see also above) in terms of tenure (except for other), local authority ownership, those without vehicles especially for Maori but not Pacifica, population change rate, median age, % European, % New Zealander, length of residence, average household size

Relations were strong with Density (moderately and not so much for Polynesian) and especially dep index, together with other measures of socio-economic status (median rent, affluence scale, private landlord, Housing NZ ownership (esp. overall or Maori) iwi ownership, access to the internet, living in joined dwelling, % Asian, MELAA, being born in NZ, variably able to spe4ak English, Personal Income. Smoking regularly, % Professionals, agriculture workers, working at home (strongly negative) couple with children households, single parent households (negative) , single person household, relativized median income, % crowded.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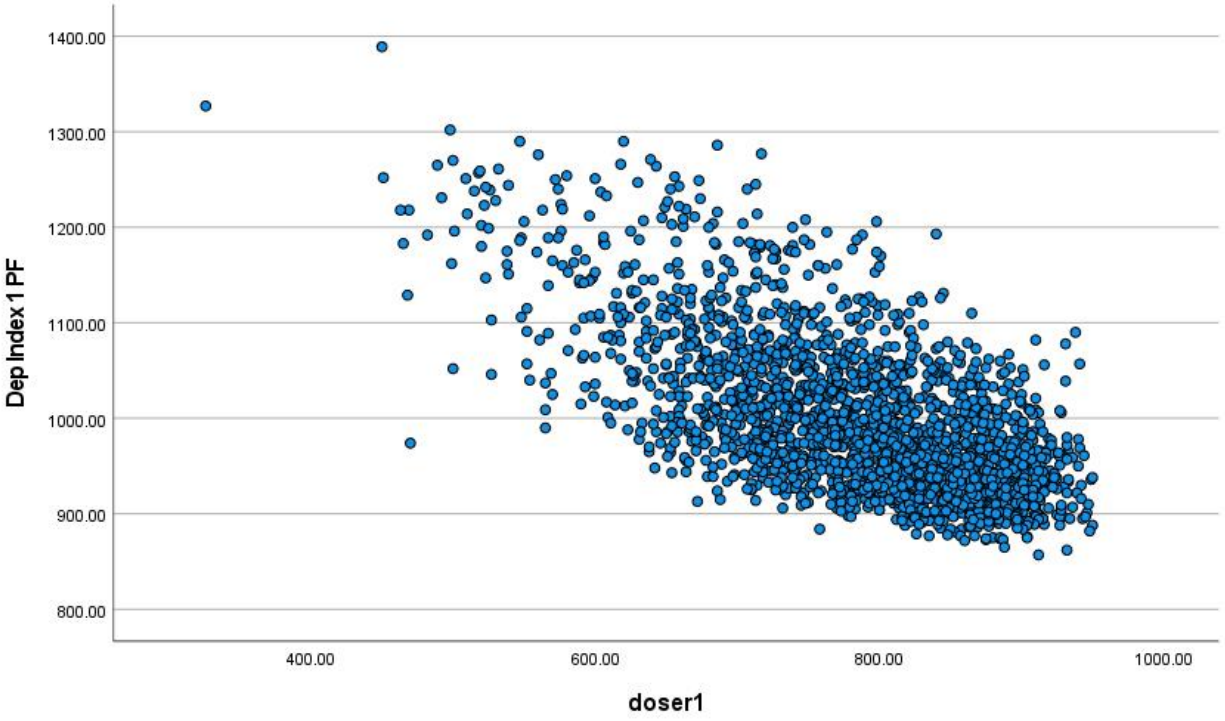
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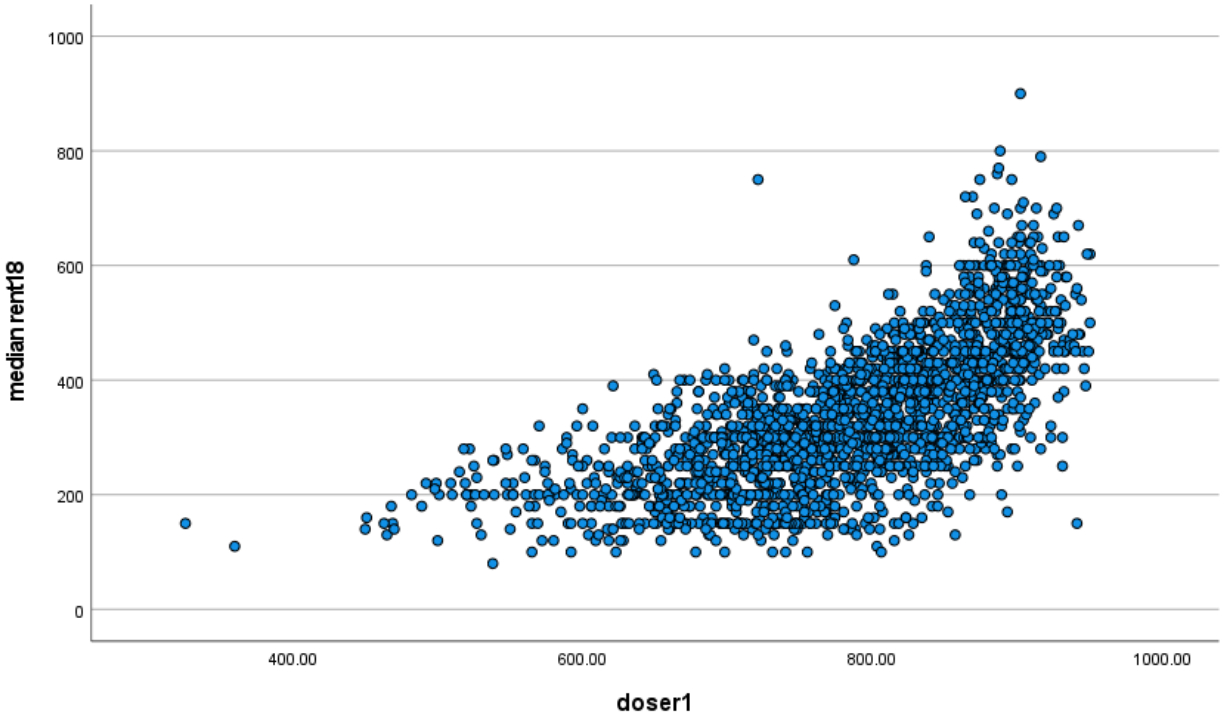
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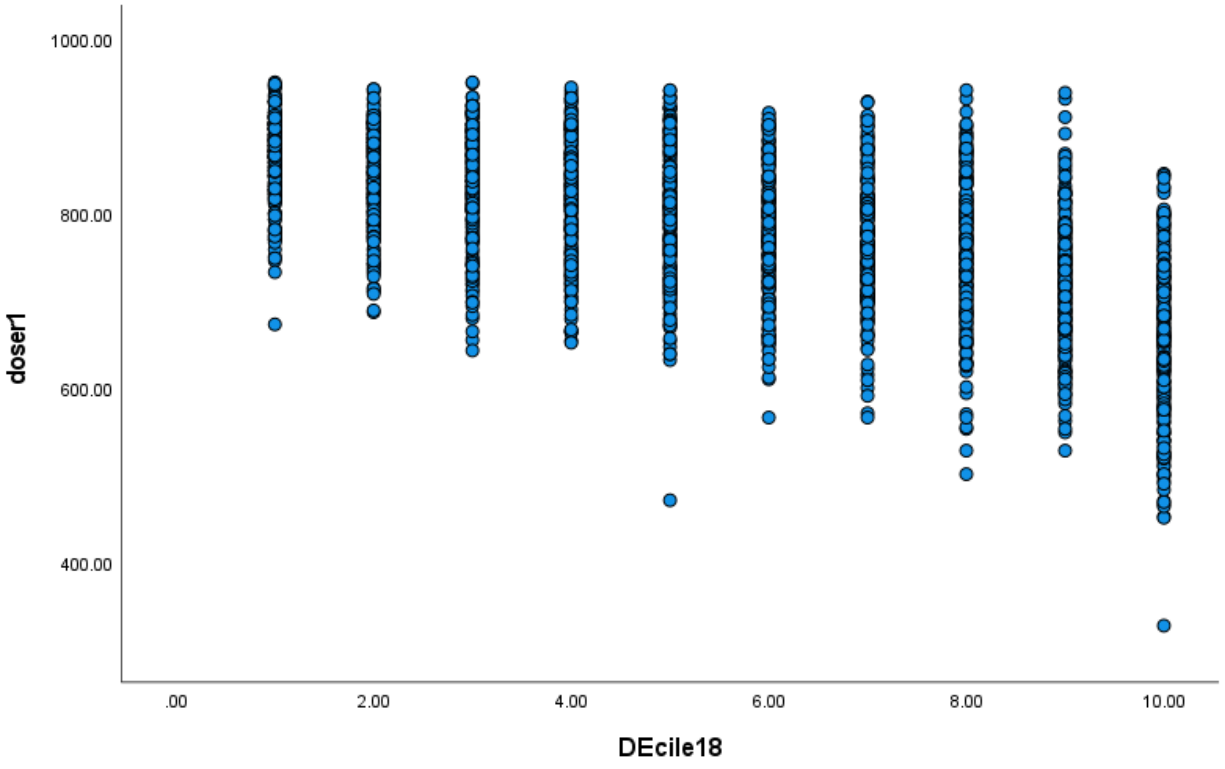
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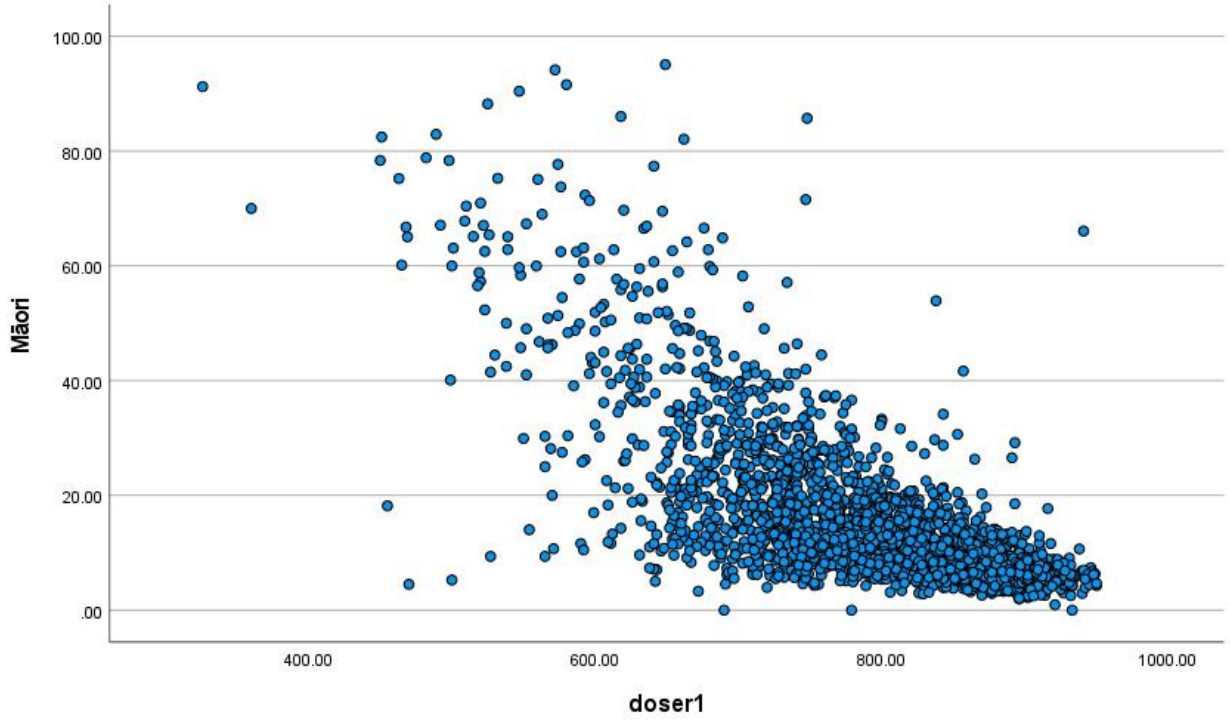

		Overall dose r1	Maori dose r1	Pacifica dose r1	Other dose r1
Overall dose rate 1	Pearson Correlation	1	.775**	.458**	.838**
	Sig. (2-tailed)		0	0	0
	N	2112	2089	1832	1566
Maori dose rate 1	Pearson Correlation	.775**	1	.371**	.576**
	Sig. (2-tailed)	0		0	0
	N	2089	2120	1843	1585
Pacifica dose rate 1	Pearson Correlation	.458**	.371**	1	.348**
	Sig. (2-tailed)	0	0		0
	N	1832	1843	1853	1458
Other dose rate 1	Pearson Correlation	.838**	.576**	.348**	1
	Sig. (2-tailed)	0	0	0	
	N	1566	1585	1458	1595
Region group	Pearson Correlation	.032	.029	-.087**	-.196**
	Sig. (2-tailed)	.142	.185	0	0
	N	2112	2120	1853	1595
Density	Pearson Correlation	.332**	.124**	.179**	.445**
	Sig. (2-tailed)	0	0	0	0
	N	2108	2119	1853	1595
Dep Index 2018	Pearson Correlation	-.609**	-.615**	-.199**	-.301**
	Sig. (2-tailed)	0	0	0	0

	N	2095	2111	1850	1595
median rent18	Pearson Correlation	.679**	.584**	.374**	.576**
	Sig. (2-tailed)	0	0	0	0
	N	2095	2112	1851	1595
Affluence scale	Pearson Correlation	.645**	.666**	.213**	.427**
	Sig. (2-tailed)	0	0	0	0
	N	2101	2114	1853	1595
Total Dwelling owned or partly owned 2018	Pearson Correlation	-.033	.095**	-.026	-.354**
	Sig. (2-tailed)	.128	0	.269	0
	N	2098	2114	1851	1595
Private person trust or business 2018	Pearson Correlation	.282**	.314**	.047*	.064*
	Sig. (2-tailed)	0	0	.041	.011
	N	2095	2112	1851	1595
Local authority or city council	Pearson Correlation	-.072**	-.086**	-.017	-.142**
	Sig. (2-tailed)	1	0	.469	0
	N	2069	2089	1844	1593
Housing New Zealand Corporation	Pearson Correlation	-.209**	-.272**	-.020	-2
	Sig. (2-tailed)	0	0	.401	.937
	N	2069	2089	1844	1593
Iwi hapū or Māori land trust	Pearson Correlation	-.250**	-.132**	-.175**	-.158**
	Sig. (2-tailed)	0	0	0	0
	N	2069	2089	1844	1593
Other community housing provider	Pearson Correlation	-.082**	-.116**	-2	-.082**
	Sig. (2-tailed)	0	0	.935	1
	N	2069	2089	1844	1593
Other state owned corporation or state owned enterprise or government department or ministry	Pearson Correlation	-.113**	-.069**	-.030	-5
	Sig. (2-tailed)	0	2	.197	.848
	N	2069	2089	1844	1593
No motor vehicle 2018	Pearson Correlation	-.064**	-.123**	.027	.191**
	Sig. (2-tailed)	3	0	.252	0
	N	2094	2111	1849	1595
Access to the internet	Pearson Correlation	.702**	.597**	.311**	.505**
	Sig. (2-tailed)	0	0	0	0
	N	2099	2115	1852	1595
Joined dwelling	Pearson Correlation	.300**	.116**	.147**	.383**
	Sig. (2-tailed)	0	0	0	0
	N	2108	2118	1852	1595
Pop Chg 2008-18 %	Pearson Correlation	.080**	.070**	.037	.056*
	Sig. (2-tailed)	0	1	.113	.025
	N	2104	2114	1850	1590

Median age (2018)	Pearson Correlation	.061**	.088**	-.069**	-.160**
	Sig. (2-tailed)	5	0	3	0
	N	2108	2119	1853	1595
European	Pearson Correlation	.057**	.141**	-.085**	-.358**
	Sig. (2-tailed)	9	0	0	0
	N	2108	2119	1853	1595
Māori	Pearson Correlation	-.714**	-.499**	-.258**	-.499**
	Sig. (2-tailed)	0	0	0	0
	N	2105	2118	1853	1595
Pacific Peoples	Pearson Correlation	-.116**	-.169**	.027	.179**
	Sig. (2-tailed)	0	0	.246	0
	N	2105	2118	1853	1595
Asian	Pearson Correlation	.481**	.242**	.270**	.614**
	Sig. (2-tailed)	0	0	0	0
	N	2105	2118	1853	1595
Middle Eastern Latin American	Pearson Correlation	.434**	.219**	.213**	.514**
	Sig. (2-tailed)	0	0	0	0
	N	2105	2118	1853	1595
Other Ethnicity	Pearson Correlation	.043*	.044*	-.015	-.092**
	Sig. (2-tailed)	.047	.044	.507	0
	N	2105	2118	1853	1595
New Zealander	Pearson Correlation	-.066**	-4	-.094**	-.243**
	Sig. (2-tailed)	2	.836	0	0
	N	2103	2116	1853	1595
New Zealand COB	Pearson Correlation	-.603**	-.352**	-.304**	-.710**
	Sig. (2-tailed)	0	0	0	0
	N	2108	2119	1853	1595
% Speak English	Pearson Correlation	-.218**	-.052*	-.190**	-.421**
	Sig. (2-tailed)	0	.018	0	0
	N	2108	2119	1853	1595
% Usual Residence 5 years	Pearson Correlation	.023	.145**	-.026	-.169**
	Sig. (2-tailed)	.295	0	.268	0
	N	2106	2118	1853	1595
Median $ Personal income	Pearson Correlation	.535**	.555**	.223**	.337**
	Sig. (2-tailed)	0	0	0	0
	N	2112	2120	1853	1595
No religion	Pearson Correlation	-8	.123**	-.035	-.285**
	Sig. (2-tailed)	.705	0	.135	0
	N	2108	2119	1853	1595
Christian	Pearson Correlation	.021	-.033	2	.107**

	Sig. (2-tailed)	.335	.124	.920	0
	N	2105	2118	1853	1595
Regular smoker	Pearson Correlation	-.786**	-.670**	-.291**	-.534**
	Sig. (2-tailed)	0	0	0	0
	N	2108	2119	1853	1595
Own/Trust	Pearson Correlation	.089**	.194**	-.057*	-.293**
	Sig. (2-tailed)	0	0	.014	0
	N	2108	2119	1853	1595
Professionals	Pearson Correlation	.674**	.642**	.322**	.531**
	Sig. (2-tailed)	0	0	0	0
	N	2112	2120	1853	1595
Agriculture Forestry and Fishing 18 WPLC	Pearson Correlation	-.374**	-.230**	-.301**	-.400**
	Sig. (2-tailed)	0	0	0	0
	N	2112	2120	1853	1595
Proportions (worked at home)	Pearson Correlation	-.274**	-.137**	-.295**	-.332**
	Sig. (2-tailed)	0	0	0	0
	N	2096	2111	1850	1595
Couple with children household (with or without other people)	Pearson Correlation	.289**	.326**	.142**	.244**
	Sig. (2-tailed)	0	0	0	0
	N	2073	2091	1844	1589
Single parent household (with or without other people)	Pearson Correlation	-.433**	-.409**	-.053*	-.270**
	Sig. (2-tailed)	0	0	.023	0
	N	2073	2091	1844	1589
Other multi-person household	Pearson Correlation	.146**	.078**	.125**	.285**
	Sig. (2-tailed)	0	0	0	0
	N	2096	2112	1850	1595
One-person household	Pearson Correlation	-.208**	-.263**	-.118**	-.286**
	Sig. (2-tailed)	0	0	0	0
	N	2096	2112	1850	1595
Median_OECD_Modified_Income	Pearson Correlation	.631**	.635**	.263**	.441**
	Sig. (2-tailed)	0	0	0	0
	N	2103	2117	1852	1595
40-50 housing rental costs	Pearson Correlation	.045*	5	.043	-.104**
	Sig. (2-tailed)	.050	.819	.075	0
	N	1910	1929	1743	1556
Percent crowded	Pearson Correlation	-.197**	-.234**	-7	.213**
	Sig. (2-tailed)	0	0	.780	0
	N	1952	1972	1758	1532
Residents Ave	Pearson Correlation	.089**	.101**	.125**	.296**
	Sig. (2-tailed)	0	0	0	0

	N	2091	2107	1849	1595

6 Catching Covid:

Covid cases need to be sequestered between those in MIQ (almost totally drawn from overseas travellers) and 'community cases. During periods where there were no community cases were necessarily drawn from overseas. Community cases are drawn substantially from each of the main ethnic groups and across age groups up to the 50s and even between the two genders. Those hospitalized have ben older and with more males.

period * miq Status Crosstabulation

% within period

		Miq		
		No	Yes	Total
period	2020-03	100.0%		100.0%
	2020-04	100.0%		100.0%
	2020-05	100.0%		100.0%
	2020-06	8.3%	91.7%	100.0%
	2020-07		100.0%	100.0%
	2020-08	77.4%	22.6%	100.0%
	2020-09	52.6%	47.4%	100.0%
	2020-10	4.1%	95.9%	100.0%
	2020-11	7.8%	92.2%	100.0%
	2020-12		100.0%	100.0%
	2021-01	3.6%	96.4%	100.0%
	2021-02	21.6%	78.4%	100.0%
	2021-03	1.7%	98.3%	100.0%
	2021-04	3.5%	96.5%	100.0%
	2021-05		100.0%	100.0%
	2021-06		100.0%	100.0%
	2021-07		100.0%	100.0%
	2021-08	88.6%	11.4%	100.0%
	2021-09	89.9%	10.1%	100.0%
	2021-10	97.2%	2.8%	100.0%
Total		76.5%	23.5%	100.0%

Nearly one-third of overseas travellers do not get assigned to MIQ. Very few community cases are assigned to MIQ.

Overseas travel * miq Crosstabulation

% within Overseas travel

		miq		
		No	yes	Total
Overseas travel	No	99.5%	0.5%	100.0%
	Unknown	98.7%	1.3%	100.0%
	Yes	30.7%	69.3%	100.0%
Total		76.5%	23.5%	100.0%

		Other	Waitemata	Auckland	Counties-Manukau	Waikato	
period	2020-03	50.1%	13.6%	13.6%	8.3%	14.4%	100.0%
	2020-04	53.3%	17.1%	9.6%	9.4%	10.5%	100.0%
	2020-05	20.0%	45.0%	20.0%	5.0%	10.0%	100.0%
	2020-06	100.0%					100.0%
	2020-08		25.0%	27.1%	47.2%	0.7%	100.0%
	2020-09		42.0%	18.0%	28.0%	12.0%	100.0%
	2020-10	20.0%	60.0%		20.0%		100.0%
	2020-11	62.5%		25.0%	12.5%		100.0%
	2021-01		40.0%	20.0%	40.0%		100.0%
	2021-02		6.3%		93.8%		100.0%
	2021-03	50.0%				50.0%	100.0%
	2021-04	25.0%			75.0%		100.0%
	2021-08	2.3%	23.9%	19.4%	54.3%		100.0%
	2021-09	0.2%	11.4%	15.4%	73.1%		100.0%
	2021-10	0.5%	37.0%	19.4%	36.7%	6.4%	100.0%
Total		18.7%	23.5%	16.3%	35.1%	6.4%	100.0%

In some periods there has been a substantial backlog of ‘historical’ cases.

period * Historical Crosstabulation

% within period

		Historical		
			Yes	Total
period	2020-03	100.0%		100.0%
	2020-04	100.0%		100.0%
	2020-05	95.0%	5.0%	100.0%
	2020-06	100.0%		100.0%
	2020-07	100.0%		100.0%

	2020-08	100.0%		100.0%
	2020-09	98.9%	1.1%	100.0%
	2020-10	98.3%	1.7%	100.0%
	2020-11	95.1%	4.9%	100.0%
	2020-12	79.4%	20.6%	100.0%
	2021-01	82.7%	17.3%	100.0%
	2021-02	82.4%	17.6%	100.0%
	2021-03	95.0%	5.0%	100.0%
	2021-04	92.2%	7.8%	100.0%
	2021-05	70.4%	29.6%	100.0%
	2021-06	73.6%	26.4%	100.0%
	2021-07	78.6%	21.4%	100.0%
	2021-08	97.4%	2.6%	100.0%
	2021-09	95.1%	4.9%	100.0%
	2021-10	99.3%	0.7%	100.0%
Total		96.3%	3.7%	100.0%

Community Cases - Period * Sex Crosstabulation

% within period

		Sex			
		Female	Male	Unknown	Total
period	2020-03	54.6%	45.4%		100.0%
	2020-04	56.5%	43.5%		100.0%
	2020-05	65.0%	35.0%		100.0%
	2020-06	100.0%			100.0%
	2020-08	47.9%	52.1%		100.0%
	2020-09	66.0%	34.0%		100.0%
	2020-10	20.0%	80.0%		100.0%
	2020-11	75.0%	25.0%		100.0%
	2021-01	60.0%	40.0%		100.0%
	2021-02	75.0%	25.0%		100.0%
	2021-03	50.0%	50.0%		100.0%
	2021-04	75.0%	25.0%		100.0%
	2021-08	53.5%	46.5%		100.0%
	2021-09	50.8%	49.2%		100.0%
	2021-10	48.1%	51.7%	0.2%	100.0%
Total		52.4%	47.6%	0.1%	100.0%

		Age group									
		0 to 9	10 to 19	20 to 29	30 to 39	40 to 49	50 to 59	60 to 69	70 to 79	80 to 89	90+
period	2020-03	0.9%	7.0%	25.8%	14.2%	16.8%	15.5%	13.0%	5.2%	1.5%	
	2020-04	3.6%	9.0%	21.9%	16.1%	12.6%	17.4%	10.7%	5.1%	2.4%	1.2%
	2020-05	10.0%	10.0%	20.0%	25.0%	10.0%	10.0%	10.0%		5.0%	
	2020-06				50.0%	50.0%					
	2020-08	10.4%	18.1%	16.0%	15.3%	17.4%	15.3%	3.5%	3.5%	0.7%	
	2020-09	18.0%	26.0%	18.0%	22.0%	2.0%	4.0%	10.0%			
	2020-10			20.0%	20.0%	20.0%	20.0%	20.0%			
	2020-11			50.0%	12.5%	12.5%	25.0%				
	2021-01	20.0%				60.0%	20.0%				
	2021-02	6.3%	43.8%	6.3%	12.5%	31.3%					
	2021-03				50.0%			50.0%			
	2021-04	25.0%	25.0%	25.0%	25.0%						
	2021-08	12.8%	24.7%	26.4%	8.2%	9.7%	12.2%	3.4%	2.3%	0.1%	0.1%
	2021-09	24.2%	20.2%	22.9%	10.2%	11.5%	6.1%	3.4%	1.4%		0.2%
	2021-10	15.6%	13.6%	18.2%	23.4%	14.1%	9.6%	3.8%	1.2%	0.4%	0.1%
Total		11.5%	14.7%	22.0%	16.0%	13.3%	12.0%	6.6%	2.8%	0.9%	0.3%

Period * Overseas travel Crosstabulation

		Overseas travel connection % within period			
		No	Unknown	Yes	Total
period	2020-03	45.3%	0.4%	54.3%	100.0%
	2020-04	77.1%	0.3%	22.7%	100.0%
	2020-05	85.0%		15.0%	100.0%
	2020-06			100.0%	100.0%
	2020-08	100.0%			100.0%
	2020-09	98.0%	2.0%		100.0%
	2020-10	100.0%			100.0%
	2020-11	100.0%			100.0%
	2021-01	100.0%			100.0%
	2021-02	100.0%			100.0%
	2021-03	50.0%		50.0%	100.0%
	2021-04	100.0%			100.0%
	2021-08	99.3%	0.7%		100.0%
	2021-09	99.7%	0.3%		100.0%
	2021-10	89.0%	11.0%		100.0%
Total		83.0%	3.6%	13.4%	100.0%

Period * Historical Crosstabulation

% within period

		Historical		
			Yes	Total
period	202003	100.0%		100.0%
	202004	100.0%		100.0%
	202005	95.0%	5.0%	100.0%
	202006	100.0%		100.0%
	202008	100.0%		100.0%
	202009	100.0%		100.0%
	202010	80.0%	20.0%	100.0%
	202011	100.0%		100.0%
	202101	100.0%		100.0%
	202102	100.0%		100.0%
	202103		100.0%	100.0%
	202104	75.0%	25.0%	100.0%
	202108	100.0%		100.0%
	202109	99.7%	0.3%	100.0%
	202110	99.9%	0.1%	100.0%
Total		99.8%	0.2%	100.0%

Crosstabs MIQ Cases

period * Sex Crosstabulation

% within period

		Sex			
		Female	Male	Unknown	Total
period	202006.00	36.4%	63.6%		100.0%
	202007	47.1%	52.9%		100.0%
	202008	61.9%	38.1%		100.0%
	202009	46.7%	53.3%		100.0%
	202010	34.5%	65.5%		100.0%
	202011	35.1%	64.9%		100.0%
	202012	45.8%	54.2%		100.0%
	202101	45.5%	54.5%		100.0%
	202102	36.2%	63.8%		100.0%
	202103	40.7%	59.3%		100.0%
	202104	44.1%	55.9%		100.0%
	202105	31.5%	68.5%		100.0%
	202106	36.1%	63.9%		100.0%
	202107	23.0%	75.4%	1.6%	100.0%

	202108	36.4%	63.6%		100.0%
	202109	28.8%	71.2%		100.0%
	202110	34.2%	65.8%		100.0%
Total		38.3%	61.5%	0.2%	100.0%

period * Age group Crosstabulation

% within period

		Age group								
		0 to 9	10 to 19	20 to 29	30 to 39	40 to 49	50 to 59	60 to 69	70 to 79	80 to 89	Total
period	202006	4.5%	4.5%	31.8%	36.4%		9.1%	9.1%	4.5%		100.0%
	202007	2.9%		35.3%	32.4%	8.8%	8.8%	5.9%	5.9%		100.0%
	202008	9.5%	4.8%	26.2%	33.3%	7.1%	14.3%	2.4%		2.4%	100.0%
	202009	17.8%	6.7%	26.7%	24.4%	6.7%	6.7%	6.7%	4.4%		100.0%
	202010	6.0%	6.0%	22.4%	29.3%	15.5%	10.3%	10.3%			100.0%
	202011	3.2%	12.8%	29.8%	21.3%	12.8%	9.6%	7.4%	3.2%		100.0%
	202012	4.7%	9.3%	21.5%	28.0%	18.7%	10.3%	5.6%	1.9%		100.0%
	202101	9.0%	9.0%	26.1%	28.4%	14.2%	8.2%	4.5%	0.7%		100.0%
	202102	5.2%	8.6%	20.7%	25.9%	19.0%	17.2%	3.4%			100.0%
	202103	5.9%	4.2%	32.2%	36.4%	8.5%	11.0%	1.7%			100.0%
	202104	11.7%	2.7%	29.7%	28.8%	11.7%	7.2%	2.7%	3.6%	1.8%	100.0%
	202105	9.3%	5.6%	16.7%	29.6%	13.0%	18.5%	5.6%	1.9%		100.0%
	202106	15.3%	8.3%	25.0%	20.8%	15.3%	11.1%	4.2%			100.0%
	202107	8.7%	2.4%	20.6%	27.8%	20.6%	14.3%	4.0%	1.6%		100.0%
	202108	11.4%	13.6%	22.7%	20.5%	15.9%	8.0%	6.8%	1.1%		100.0%
	202109	13.6%	6.1%	34.8%	21.2%	6.1%	16.7%		1.5%		100.0%
	202110	10.5%	13.2%	26.3%	15.8%	10.5%	15.8%	5.3%	2.6%		100.0%
Total		8.6%	7.0%	25.9%	27.2%	13.4%	11.2%	4.9%	1.6%	0.2%	100.0%

period * Overseas travel Crosstabulation

% within period

		Overseas travel			
		No	Unknown	Yes	Total
period	202006			100.0%	100.0%
	202007			100.0%	100.0%
	202008			100.0%	100.0%
	202009	2.2%		97.8%	100.0%
	202010	1.7%		98.3%	100.0%
	202011	2.1%		97.9%	100.0%
	202012			100.0%	100.0%

	202101	0.7%		99.3%	100.0%
	202102	1.7%		98.3%	100.0%
	202103	2.5%		97.5%	100.0%
	202104	3.6%		96.4%	100.0%
	202105			100.0%	100.0%
	202106	1.4%		98.6%	100.0%
	202107			100.0%	100.0%
	202108	1.1%		98.9%	100.0%
	202109	3.0%		97.0%	100.0%
	202110		5.3%	94.7%	100.0%
Total		1.4%	0.2%	98.5%	100.0%

7 MIQ:

There is limited information on MIQ.

Occupancy and returnee overview, as at 11:59PM 21 October 2021
Number of people currently in Managed Isolation facilities **4,867**
Number of people currently in Quarantine facilities **343**
Projected Returnees – Next 14 days **4,216**
Total number of people through MIQ facilities since 26 March 2020 **182,536**

8 International Comparisons

Several agencies have ranked countries' Covid responses. NZ is depicted as having fallen from first place in their first ranking to 32nd2 On the Bloomberg resilience rating largely as a result of the lockdown regime imposed in order to combat Delta. World-level comparative datasets and analyses can be found at:

- World Health Organization (WHO) COVID-19 dashboard
- John Hopkins Coronavirus Resource Center COVID-19 dashboard and map
- Worldometer COVID-19 statistics.

A useful presentation provides data for total cases, and then cases, deaths and tests per million population. It is important to exclude various cases to obtain more comparable measurement and to recognize that countries vary enormously in the accuracy of their reporting. Ranking (in my view) is best carried out on case rate. On this basis NZ is 3rd amongst larger countries (after China and Taiwan and we do slightly better in terms of death rate.

Country, Other	Total Cases	Tot Cases/ 1M pop	Deaths/ 1M pop	Tests/ 1M pop	Population
World	237,548,427	30,475	622.1		
Micronesia	**1**	**9**			**116,548**
Vanuatu	**4**	**13**	**3**	**72,738**	**316,202**
Samoa	**3**	**15**			**200,082**

[2] https://www.bloomberg.com/graphics/covid-resilience-ranking/

Country, Other	Total Cases	Tot Cases/ 1M pop	Deaths/ 1M pop	Tests/ 1M pop	Population
Solomon Islands	20	28		6,355	708,135
China	96,357	67	3	111,163	1,439,323,776
Palau	5	275		547,382	18,203
Taiwan	16,271	682	35	271,139	23,871,339
New Zealand	4,527	905	6	708,319	5,002,100
Hong Kong	12,252	1,618	28	3,378,368	7,573,912
Papua New Guinea	21,896	2,390	27	21,268	9,161,039
Australia	122,566	4,737	54	1,521,727	25,873,925
Pakistan	1,256,233	5,551	124	87,414	226,308,104
Japan	1,707,752	13,555	141	199,945	125,986,140
Thailand	1,689,437	24,127	250	131,411	70,021,659
India	33,914,465	24,274	322	414,167	1,397,161,207
New Caledonia	8,860	30,661	640	147,961	288,969
Iceland	12,092	35,147	96	3,133,372	344,045
Norway	192,587	35,177	159	1,450,078	5,474,860
Canada	1,651,233	43,271	737	1,154,798	38,160,672
Germany	4,306,757	51,196	1,128	871,924	84,122,996
Russia	7,690,110	52,667	1,463	1,335,491	146,013,681
Fiji	51,386	56,801	717	463,172	904,662
Denmark	362,068	62,232	459	14,454,707	5,818,016
Iran	5,674,083	66,479	1,430	382,174	85,351,834
Italy	4,692,274	77,752	2,174	1,564,967	60,349,253
Ireland	397,831	79,447	1,054	1,516,543	5,007,521
Austria	755,797	83,316	1,221	9,868,576	9,071,416
Chile	1,659,386	85,873	1,942	1,148,861	19,323,737
Turkey	7,357,336	86,064	767	1,038,698	85,486,524
Colombia	4,967,524	96,328	2,453	501,163	51,568,624
Switzerland	847,451	97,021	1,274	1,268,104	8,734,684
Brazil	21,532,558	100,399	2,797	297,365	214,470,785
Portugal	1,073,268	105,646	1,774	1,857,349	10,159,058
Spain	4,971,310	106,275	1,853	1,399,663	46,777,704
France	7,043,316	107,603	1,787	2,188,250	65,456,327
Belgium	1,256,191	107,796	2,201	1,742,032	11,653,450
Sweden	1,157,083	113,674	1,460	1,251,982	10,178,935
Argentina	5,264,305	115,142	2,524	530,461	45,720,260
Netherlands	2,016,171	117,336	1,059	1,018,230	17,182,860
UK	8,046,390	117,745	2,011	4,542,769	68,337,222
USA	45,021,267	135,013	2,190	1,961,762	333,458,383
French Polynesia	40,178	141,991	2,212	93,140	282,962
Czechia	1,697,064	158,100	2,841	3,596,127	10,734,129

9 Conclusions

The data assembled in this research note shows that we are each experiencing Covid through the places we hold in society and viewpoints fatefully shaped by New Zealand's social order. But Covid is also fatefully reshaping this social order not just in the short term as we experience the current shifting phases but into the longer-term future.

These different ways we relate to Covid are fractured by underlying socio-economic, ethnic and age differences (and perhaps others). Managers and Professionals and Businesspeople (according to the Household Labourforce Survey data reported in Crothers, 2021) are more likely to be able to have the advantages of 'working from home' affording them more protection from being exposed to the virus – whereas many 'Essential workers' (see Appendix) that have needed to venture out are closer to the breadline (Stats NZ data). Those suffering from lower incomes are more likely to be causal workers. Many service workers are vulnerable, and many do not have the flexibility or even the transport to be able to easily take opportunities to be vaccinated. To the different opportunities and difficulties which accrue to different socio-economic situations must be added difficulties which can arise through ethnicity and language, some embedded in very long-standing experiences of deprivation and prejudice. Moreover many in difficult circumstances are further handicapped by their distance from facilities – and perhaps also the opportunities to talk with others about the situation and its dangers. Different ethnic groups also have different age-structures and the Ministry of Health data show that different age-cohorts are being vaccinated at fairly similar rates. Analysis has to dig below the surface.

The analysis of data from MOH show useful light on some of the underlying social differences at DHB and locality (SA2) levels. Vaccination rates are strongly shaped by social class, ethnicity and location. These points are important: although Māori lags in vaccination are partly due to the greater extent to which Māori are working class but there is also a major vaccination gap in working class areas in general – and also in those which are more remote.

A further new class division which is emerging is that between the vaccinated and the unvaccinated which hopefully at least will be temporary until more of the disadvantaged catch up in their vaccinations with the advantaged. Such a division seems unfortunately seems unavoidable to ensure we can all cope with Covid. Assigning extra resources to educate and assist the vaccine hesitant is essential and the Government is working on this. To keep tabs on this issue formal government reporting on progress is being carried out which is useful to agencies in targeting their efforts although unfortunately it adds further pressure and stigmatisation.

While the majority are law abiding and will follow rules designed to limit the dangers of Covid not all are, and appalled respectable citizens often cannot understand why simple rules (e.g. stay at home isolation) cannot be more widely followed, and perhaps don't realise how much extra resource is sucked into dealing with the relatively few stand-outs and why more complex approaches are needed. Covid too has brought out just how many people in various social situations (although many youth fall into this category) who are considerably detached from the broader society most respectable citizens live within.

Charting forward any path is completely rife with difficulty and continues to involve trade-offs in decisions and balancing of competing interests. The tendency of too many in the public, commentators in the media let alone opposition leaders is to paper over these conflicting interests and views and, worse, to increase polarizing them, which is not helpful to keeping the high social

cohesion we need to get through these difficulties. I try here to document some of the ways in which New Zealanders are divided and deserve recognition and acceptance for difficulties

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Appendix: Essential Workers: Statistics NZ estimates by Occupation and Industry – underlying data from Saville-Smith & Mitchell (2020).

Occupation/Industry	**Code**	**Numbers**
Checkout operators	631111	16k
Health carers	423	68k
Nurses and midwives	254	58k
Police officers	4413	11k
Rubbish & recyclers	8996 and 839918	1k
Total		156
2. *Industry*		
Supermarket & grocery	G411	83k
Health care	Q84 & Q85	153k
Residential care	Q86	7k
Police	O7711	13.5k
Waste management	D291	2k
Total		258.5