



Growing Up in New Zealand

Now We Are Twelve

Life in early adolescence

Supplementary materials for NWA12 Snapshot 6: Experiences of the COVID-19 pandemic and young people's wellbeing: *Evidence from Growing Up in New Zealand*

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1. What do we know about the COVID-19 pandemic and how it impacts wellbeing?

In the Aotearoa, New Zealand context, the first COVID-19 case was reported in late February 2020. The government implemented a COVID-19 Alert System (Level 4 -lockdown, Level 3 - Restrict, Level 2 - Reduce, and Level 1 - Prepare) and announced a stringent nationwide lockdown (Alert Level 4) on 25 March 2020, and again on 17 August 2021 (NZ Government, 2022). Under the Alert System, various regions of the country moved down the levels at differing times, with Auckland continuously being at the highest levels, subsequently experiencing more long-lasting restrictions. The COVID-19 Alert System ended on 2 December 2021, and NZ entered a new system called the COVID-19 Protection Framework (traffic lights – red, orange, green). On 13 September 2022, most remaining COVID-19 related rules and restrictions were removed (For a detailed timeline of the COVID-19 events in NZ, refer to: <https://covid19.govt.nz/about-our-covid-19-response/history-of-the-covid-19-alert-system>).

The initial public health response to COVID-19 in New Zealand involved some of the most stringent restrictions on movement and access to non-essential services (1). The elimination strategy required people to stay within their household “bubble” and only travel within their local communities. This meant that children and young people were unable to interact with their peers or support systems outside of their households (2). These restrictions resulted in a low burden of disease relative to other countries (3). However, they placed additional stressors on families, including job and income loss, lack of access to services, the requirement to home-school children, and in many cases, the need to undertake remote work (4). New Zealand’s move away from the elimination strategy and the opening of schools and other non-essential services brought both positive and negative effects for young people and their families. For example, although the availability of vaccines and the requirement of face mask use and physical distancing provided some protection against infection, there was still anxiety associated with these changes, as well as uncertainty about future restrictions and/or outbreaks (5).

In Aotearoa, the pandemic has been associated with greater depression and anxiety compared to population norms (6) and worry about COVID-19 has been correlated with anxiety, depression, and stress (7). However, few studies have examined the wellbeing of young New Zealanders. Internationally, several studies have reported the negative effects of the pandemic on young people’s wellbeing (8, 9). A recent systematic review reported that the pandemic has significantly contributed to paediatric anxiety, while other studies have reported worse quality of life compared to pre-pandemic levels (10).

Children and young people are particularly vulnerable to the impacts of the pandemic. They have experienced uncertainties, fear, and significant changes to their routine, as well as social isolation and high levels of parental stress (11). Children often have more limited coping strategies, and school closure and separation from friends can cause intense stress and anxiety (12).

The impact of the pandemic has also widened existing inequities for New Zealand young people and their families. The overall burden of disease has not been equitable, with Māori and Pacific people overrepresented in infection and mortality statistics (13, 14). Additionally, vaccine coverage has not been equitable (15).

2. What can *Growing Up in New Zealand* add?

Concerns have been raised about the potential effects of COVID-19 on New Zealand children's wellbeing. Longitudinal studies like *Growing Up in New Zealand* can provide unique, timely evidence of the health burden associated with the COVID-19 pandemic (16).

The 12-year data collection wave (DCW) asked children about their worries and fears due to COVID-19. In this topic, we explore who was most worried about the COVID-19 pandemic and how this relates to young people's wellbeing.

In this topic paper, two main questions are addressed:

- 1) What worries and fears do young people have about the covid pandemic and who is most worried?
- 2) How are worries and fears about COVID-19 associated with wellbeing in young people?

3. Key findings on the impact of COVID-19 from the 12-year DCW

- Two-thirds of young people worried at least sometimes about missing out on schoolwork due to COVID-19.
- Almost half of young people never worried about their families' finances or how people in their home were getting along.
- Transgender or non-binary young people reported more worries and fears about COVID-19, followed by cisgender girls and cisgender boys.
- Pacific and MELAA young people reported more worries and fears about COVID-19.
- Young people living in the most deprived areas had more worries and fears about COVID-19 than those living in the least deprived areas.

- Young people with supportive/strong parent-child relationships had fewer worries about COVID-19.
- Young people who live in a sole parent, extended family, or households with non-kin reported more worries and fears about COVID-19 than those living in two-parent households.
- Worries and fears about COVID-19 among young people was significantly associated with their wellbeing, and increasing worry was associated with worse depression, anxiety, and quality of life scores.

4. Description of tool(s)/questions

The 12-year data collection wave (DCW) asked young people about their worries and fears due to COVID-19. In this topic, we explore who was most worried about the COVID-19 pandemic and how this relates to young people's wellbeing.

Three questions about worries and fear due to COVID-19 were included in the 'child' questionnaire. These questions asked how worried children were about missing out on school work, family finances and people getting along at home due to COVID. Response options ranged from Never to always and included a "Don't know" option. The three questions show a moderate degree of correlation with Cramer V statistics ranging from 0.12 to 0.26 Table 1.

Table 1. Association between COVID-19 worries and fears questions. Association was measured using Cramer's V where 1 is a perfect association and 0 is no association.

Cramer's V	School	Family finances	Getting along
School	1.00		
Family finances	0.12	1.00	
Getting along	0.14	0.26	1.00

The three questions were combined to create a score to be used in modelling. Those that answered "Don't know" to any of the questions were excluded ($n=654$, 15%). The pattern of missingness was examined using proportions and logistic regression. Overall, cisgender girls ($n=277$, 17%) were slightly more likely to select "Don't know" than cisgender boys ($n=259$, 13%). Those living in the most deprived NZDEP quintile ($n=151$, 20%) were more likely to select "Don't know" than those living in the least deprived quintile ($n=130$, 13%). Those identified as Pacific ($n=136$, 21%) and Asian ($n=102$, 17%) were more likely to select "Don't know" than those identified as European ($n=285$, 13%).

Table 2. Demographic comparison for those with a COVID-19 worries and fears score.

	Yes		No		Total	P-value
	<i>n</i>	%	<i>n</i>	%	N	
Total	3777	85	654	15	4431	
Gender						
Cisgender boy	1767	87	259	13	2026	Ref
Cisgender girl	1392	83	277	17	1669	0.00
Transgender/Non-binary/Don't know	618	84	118	16	736	0.23
NZDep quintile						
1	936	89	120	11	1056	Ref
2	832	85	142	15	974	0.04
3	724	86	120	14	844	0.09
4	610	85	107	15	717	0.06
5	607	80	151	20	758	0.00
Ethnicity						
Māori	837	87	130	13	967	0.56
Pacific	382	79	100	21	482	<0.01
Asian	442	83	92	17	534	0.02
MELAA	47	87	<10	13	54	0.70
Other	31	86	<10	14	36	0.82
Sole European	1957	87	285	13	2242	Ref

Note: Externally prioritised ethnicity was used for statistical analysis.

Three measures of wellbeing were used in this report: Depression symptoms, anxiety symptoms and health related quality of life (QOL).

Depression, anxiety and QOL were self-reported by young people using standard short form questionnaires.

- Depression symptoms were measured using the 10-item Centre for Epidemiologic Studies Depression Scale for Children (CES-DC-10) (17).
- Anxiety symptoms were measured using the 8-item Patient-Reported Outcomes Measurement Information System (PROMIS) Paediatric Anxiety - Short Form 8a questionnaire (using Item Bank v2.0) (18).
- QOL was measured using the 10 item KIDSCREEN questionnaire which assesses subjective health and psychological, mental and social wellbeing (19).

5. Research question 1: Worries and fears due to the COVID-19 pandemic

Growing Up in New Zealand has previously reported on “Life during Lockdown” for the cohort at the start of the pandemic in 2020 (20). The 12-year DCW was completed from October 2021 to August 2022 by 4688 young people, of which, 4500 were residing in Aotearoa, New Zealand. During this time, the Delta and Omicron outbreaks occurred, and there were varying restriction levels across the regions in Aotearoa. The 12-year DCW included questions about how often participants worried about things due to COVID-19.

It was uncommon for young people to report that they worried often or always about COVID-19. However, two-thirds of young people ($n = 2887$, 65.2%) worried at least sometimes about missing out on school work due to COVID-19 (Figure 1). Fewer young people were worried about their family finances (Figure 2) or how people in their home were getting along (Figure 3), with 45.8% ($n = 2029$) of young people never worrying about their families' finances and almost half of all young people ($n = 2181$, 49.2%) never worrying about how people in their house were getting along.

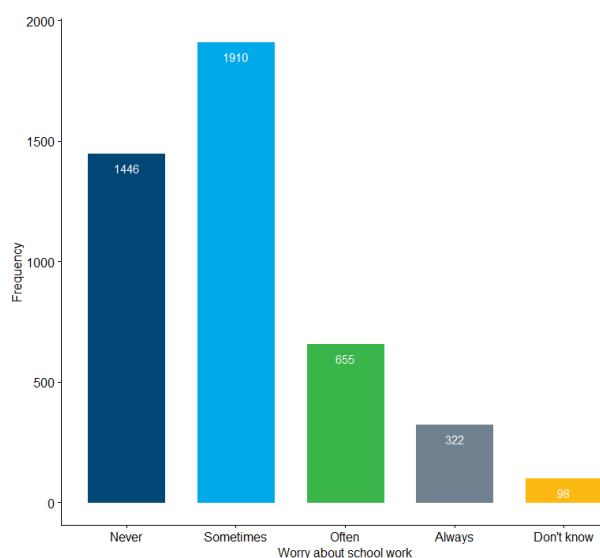


Figure 1. Worries and fears due to COVID-19: How often young people worry about missing out on school work due to COVID-19.

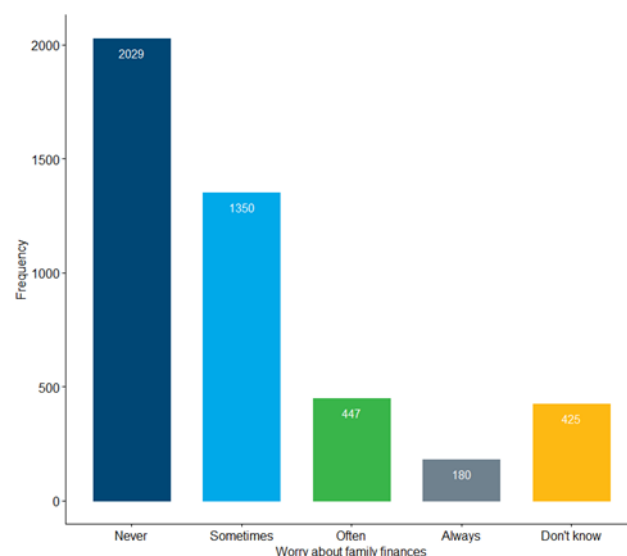


Figure 2. Worries and fears due to COVID-19: How often young people worry about family finances due to COVID-19.

Note: the question included 'never' and 'almost never' response options which have been combined.

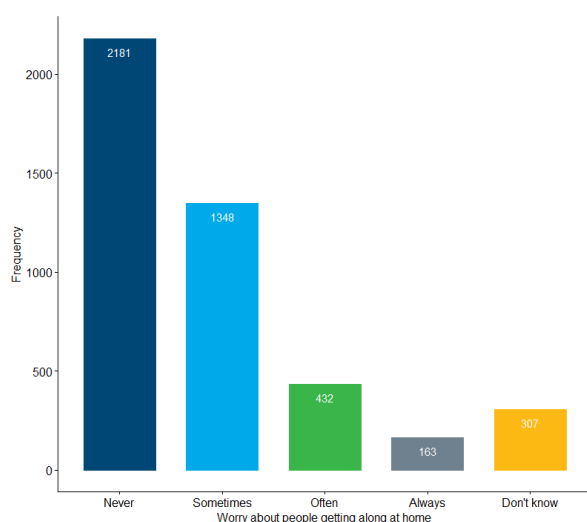


Figure 3. Worries and fears due to COVID-19: How often young people worry about people in their house getting along due to COVID-19.

Table 3. Frequency of worry about the COVID-19 pandemic.

	Never		Sometimes		Often		Always		Don't know		Total
Worried about...	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	N
Missing school work	1446	32.6	1910	43.1	655	14.8	322	7.3	98	2.2	4431
Family finances	2029	45.8	1350	30.5	447	10.1	180	4.1	425	9.6	4431
People getting along at home	2181	49.2	1348	30.4	432	9.7	163	3.7	307	6.9	4431

6. Who is most worried about Covid-19?

The COVID-19 pandemic has disproportionately and unequally impacted marginalised communities due to existing structural inequities (21-25). However, most studies examining inequities in the impact of the pandemic have focussed on adult populations, with few studies investigating the impact on young people. *Growing Up in New Zealand* provides a unique opportunity to examine experiences of the pandemic for different communities of young people at age 12 regarding how worried they were about COVID-19 on their lives.

Therefore, to better understand who was most worried about the COVID-19 pandemic, the association between these worries and gender, ethnicity, and deprivation were examined.

6.1. COVID-19 worries and fears by gender

Since the start of the pandemic, there have been several reports of differences in perceptions or impacts of the pandemic by gender. Primarily this has focussed on differences between adult men and women. However, a recent study reported that the pandemic had a greater impact on transgender and gender diverse youth than cisgender youth (26). *Growing Up in New Zealand* data from the 12-year DCW is consistent with this report, with transgender or non-binary young people worrying most due to the pandemic (Figure 4, Figure 5, Figure 6).

- 70.7% ($n = 520$) of transgender or non-binary young people were at least sometimes worried about missing out on school work due to COVID-19.
- 72.0% ($n = 1201$) of cisgender girls were at least sometimes worried about missing out on school work due to COVID-19.
- 57.6% ($n = 1166$) of cisgender boys were at least sometimes worried about missing out on school work due to COVID-19.

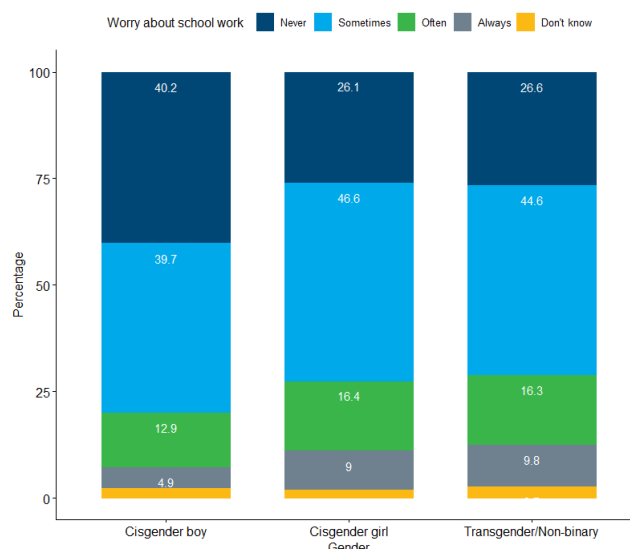


Figure 4. Worries and fears due to COVID-19: Worry about missing out on school work by gender.

- 56.3% ($n = 414$) of transgender or non-binary young people were at least sometimes worried about their family finances due to COVID-19.
- 45.4% ($n = 757$) of cisgender girls were at least sometimes worried about their family finances due to COVID-19.
- 39.8% ($n = 806$) of cisgender boys were at least sometimes worried about their family finances due to COVID-19.

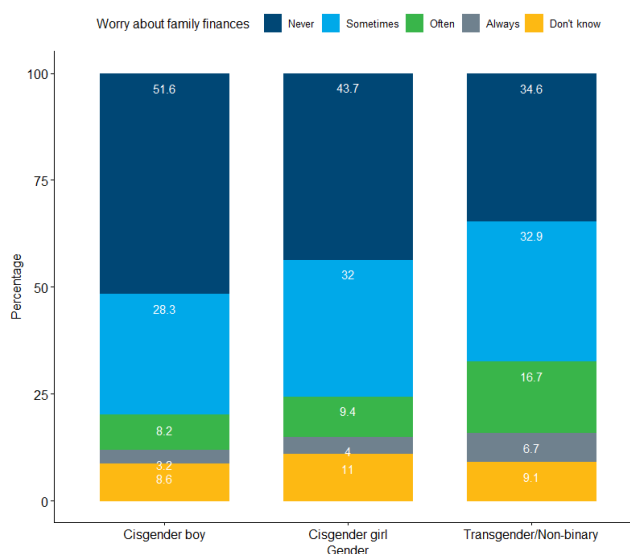


Figure 5. Worries and fears due to COVID-19: Worry about family finances by gender.

- 52.9% ($n = 389$) of transgender or non-binary young people were at least sometimes worried about people in their home getting along due to COVID-19.
- 42.8% ($n = 714$) of cisgender girls were at least sometimes worried about people in their home getting along due to COVID-19.

- 41.5% ($n = 840$) of cisgender boys were at least sometimes worried about people in their home getting along due to COVID-19.

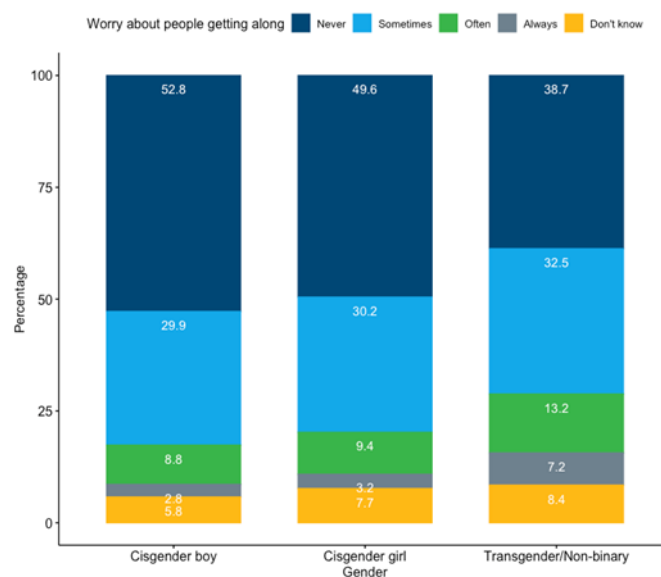


Figure 6. Worries and fears due to COVID-19: Worry about people in my house getting along by gender.

A combined score for worries and fears about the COVID-19 pandemic was created to give an overall view of these worries and fears. Those participants who selected “I don’t know” were not included in the score ($n = 654$, 15%). Overall, transgender or non-binary young people ($n = 618$, mean = 2.9, median = 3) were most worried, followed by cisgender girls ($n = 1392$, mean = 2.5, median = 2.0) when compared to cisgender boys ($n = 1767$, mean = 2.0, median = 2.0) (Figure 7).

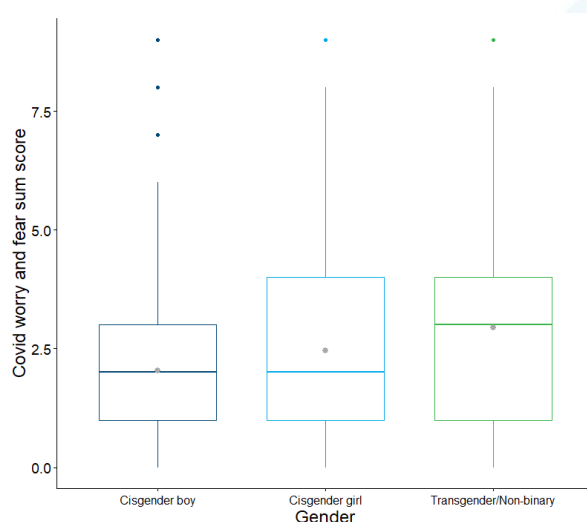


Figure 7. Worries and fears due to COVID-19: Sum score of all three questions by gender.

Table 4. COVID-19 worries and fear by gender

	Never		Sometimes		Often		Always		Don't know		Total
Worried about...	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	N
Missing school work											
Cisgender boy	815	40	805	40	262	13	99	5	45	2	2026
Cisgender girl	435	26	777	47	273	16	151	9	33	2	1669
Transgender/non-binary/don't know	196	27	328	45	120	16	72	10	20	3	736
Family finances											
Cisgender boy	1045	52	574	28	167	8	65	3	175	9	2026
Cisgender girl	729	44	534	32	157	9	66	4	183	11	1669
Transgender/non-binary/don't know	255	35	242	33	123	17	49	7	67	9	736
People getting along at home											
Cisgender boy	1069	53	605	30	178	9	57	3	117	6	2026
Cisgender girl	827	50	504	30	157	9	53	3	128	8	1669
Transgender/non-binary/don't know	285	39	239	32	97	13	53	7	62	8	736

6.2. COVID-19 worries and fears by ethnicity

COVID-19 has highlighted various health disparities, including ethnic and racial disparities (27). In New Zealand, Māori and Pacific people experienced the highest infection, hospitalisation, and mortality rates, as well as experiencing a higher burden of risk factors associated with these outcomes (13, 14). Additionally, vaccine coverage has not been equitable (15). The underlying causes of ethnic disparities of the COVID-19 pandemic are complex and include various factors such as structural determinants of health, racism and discrimination, barriers to healthcare services and individual health needs. Additionally, these factors are often compounded by factors associated with living conditions (e.g., crowded conditions that prevented physical distancing) (28). Within the New Zealand context, it is particularly important to consider the embedded ethnic health inequities for Māori, as there are marked differences between Indigenous and non-Indigenous populations in experiencing the burden of COVID-19 outcomes (13).

In our findings, the pattern of responses differed for each question when examined by the main ethnic groupings represented in our cohort.

- Young people who identify as MELAA were the most worried about missing school work due to COVID-19, followed by Asian, Pacific, sole European, and then rangatahi Māori and 'Other' (Figure 8).

- 61.4% ($n = 594$) of rangatahi Māori were at least sometimes worried about missing school work due to COVID-19.
- 70.1% ($n = 502$) of Pacific young people were at least sometimes worried about missing school work due to COVID-19.
- 73.0% ($n = 465$) of Asian young people were at least sometimes worried about missing school work due to COVID-19.
- 76.4% ($n = 55$) of MELAA young people were at least sometimes worried about missing school work due to COVID-19.
- 70.5% ($n = 55$) of young people categorised as “other ethnicity” were at least sometimes worried about missing school work due to COVID-19.
- 63.2% ($n = 1417$) of European young people were at least sometimes worried about missing school work due to COVID-19.

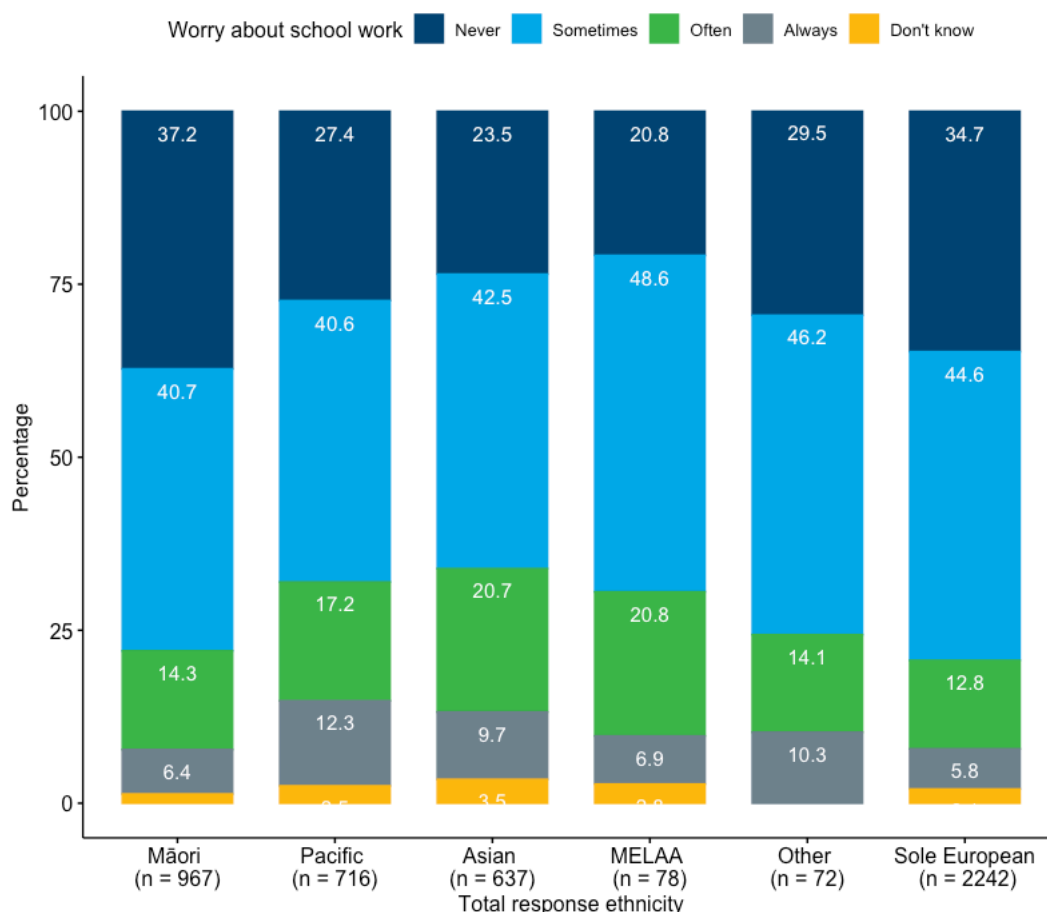


Figure 8. Worries and fears due to COVID-19: Worry about missing out on school work by ethnicity.

- Rangatahi Māori and Pacific young people were the most worried about their family finances due to COVID-19, followed by ‘Other’, MELAA, Asian, and Sole European young people (Figure 9).

- 50.8% ($n = 491$) of rangatahi Māori were at least sometimes worried about their family finances due to COVID-19.
- 51.4% ($n = 368$) of Pacific young people were at least sometimes worried about their family finances due to COVID-19.
- 45.5% ($n = 290$) of Asian young people were at least sometimes worried about their family finances due to COVID-19.
- 47.2% ($n = 34$) of MELAA young people were at least sometimes worried about their family finances due to COVID-19.
- 50.0% ($n = 39$) of young people categorised as “other ethnicity” were at least sometimes worried about their family finances due to COVID-19.
- 40.8% ($n = 914$) of Sole European young people were at least sometimes worried about their family finances due to COVID-19.

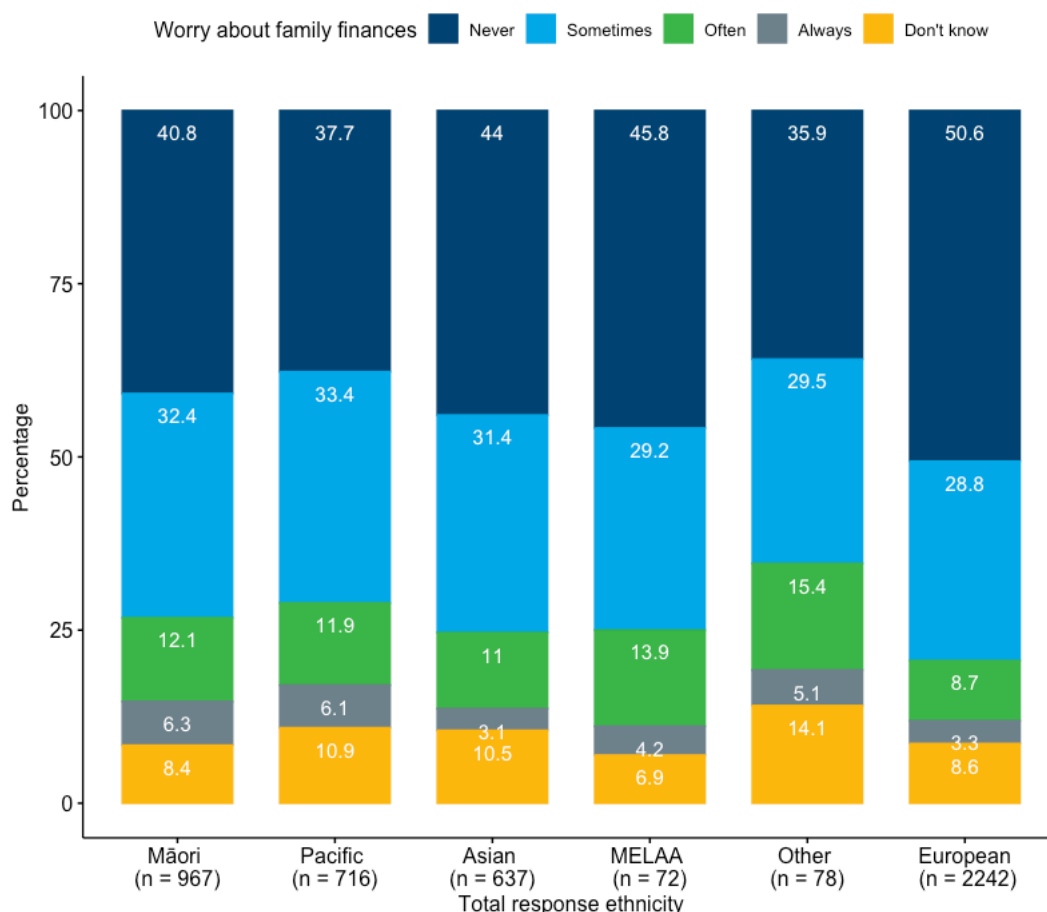


Figure 9. Worries and fears due to COVID-19: Worry about family finances by ethnicity.

- Although differences were small, young people who identify as MELAA were the most worried about people getting along at home due to COVID-19, followed by Pacific, Asian, rangatahi Māori, and then 'Other' and sole European young people (Figure 10).

- 44.8% ($n = 433$) of rangatahi Māori were at least sometimes worried about people getting along at home due to COVID-19.
- 45.3% ($n = 324$) of Pacific young people were at least sometimes worried about people getting along at home due to COVID-19.
- 44.9% ($n = 286$) of Asian young people were at least sometimes worried about people getting along at home due to COVID-19.
- 51.4% ($n = 37$) of MELAA young people were at least sometimes worried about people getting along at home due to COVID-19.
- 44.9% ($n = 35$) of young people categorised as “other ethnicity” were at least sometimes worried about people getting along at home due to COVID-19.
- 43.2% ($n = 969$) of sole European young people were at least sometimes worried about people getting along at home due to COVID-19.

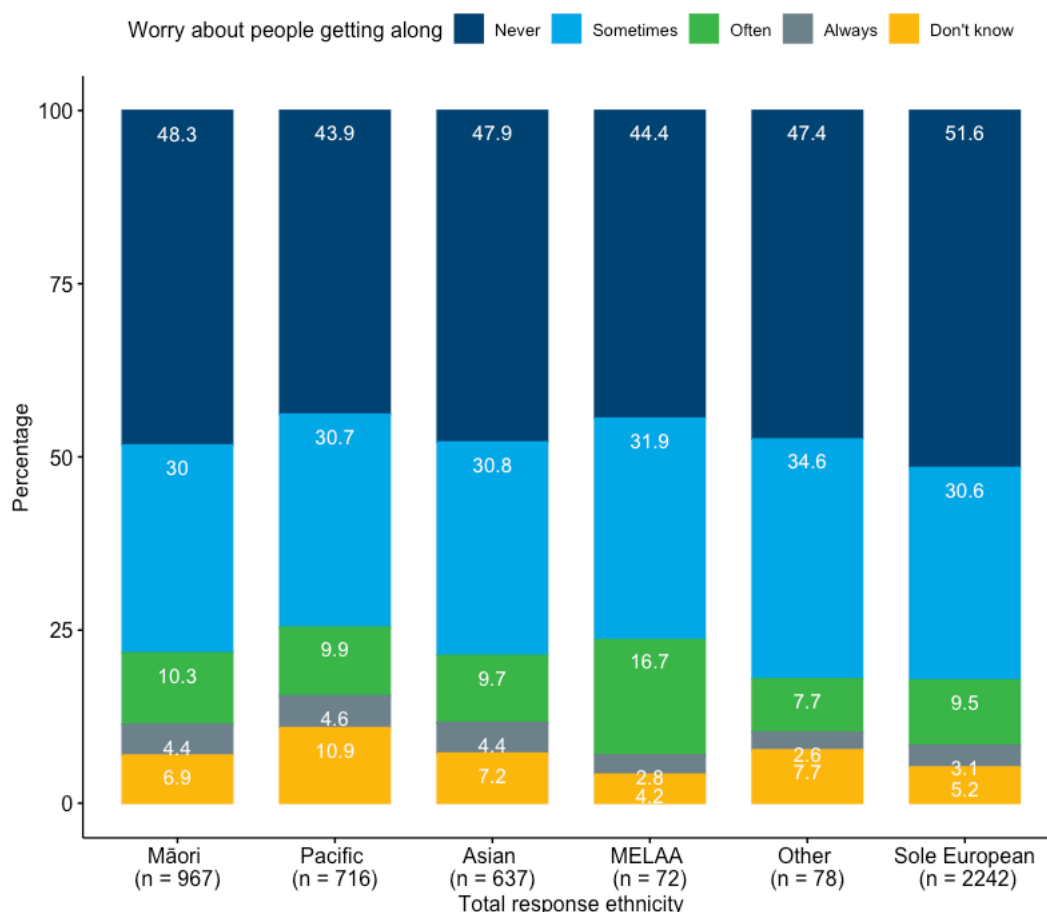


Figure 10. Worries and fears due to COVID-19: Worry about people in my house getting along by ethnicity.

A combined score for worries and fears about the COVID-19 pandemic was created to give an overall view of these worries and fears (Figure 11). Those participants who selected “I don’t know” were not included in the score ($n = 654$, 15%). Overall, rangatahi Māori ($n = 837$, mean = 2.4, median = 2),

Pacific ($n = 580$, mean = 2.8, median = 3), Asian ($n = 535$, mean = 2.6, median = 2) and MELAA ($n = 62$, mean = 2.6, median = 2) young people were more worried due to COVID-19 than young people who identify solely as European ($n = 1957$, mean = 2.2, median = 2).

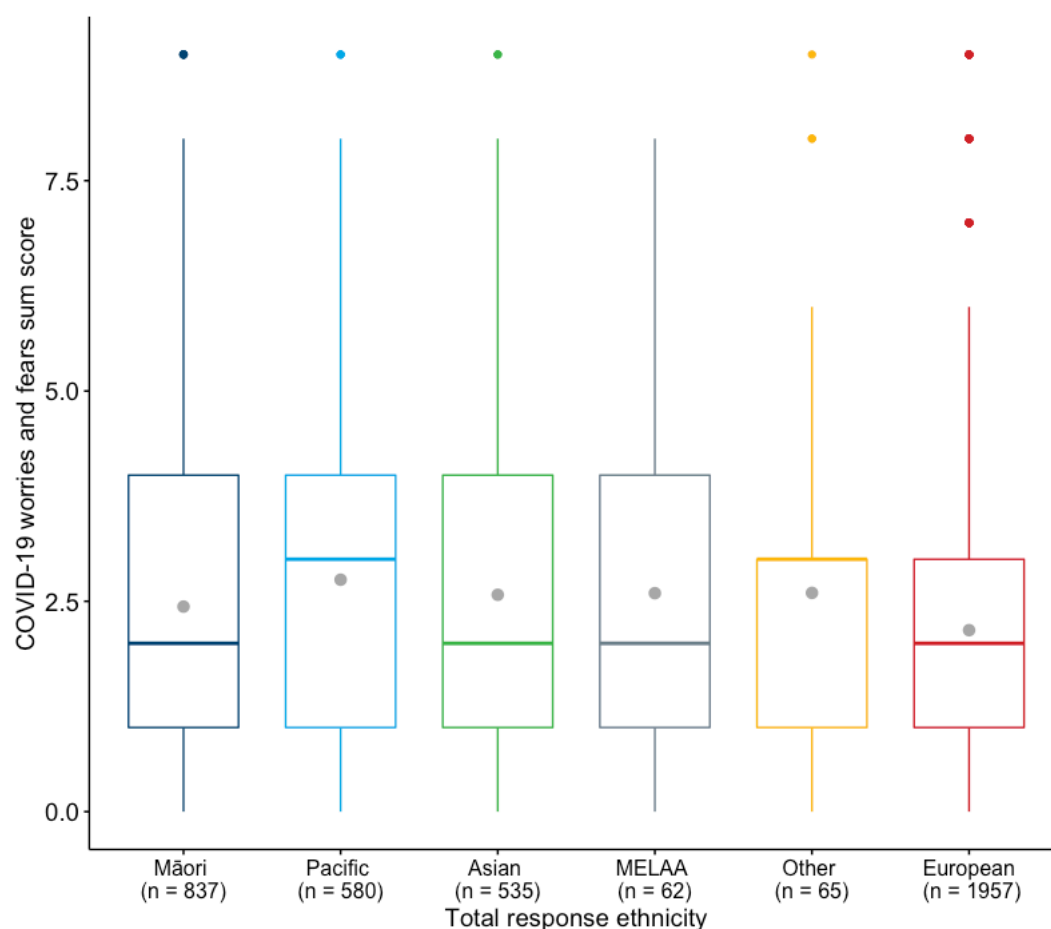


Figure 11. Worries and fears due to COVID-19: Sum score of all three questions by ethnicity. Ethnicity is presented as total response such that participants who selected multiple ethnicities are included in multiple categories. In contrast, European includes only those participants who selected European and no other ethnicity.

Table 5. COVID-19 worries and fears by ethnicity

Worried about...	Never		Sometimes		Often		Always		Don't know		Total
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	N
Missing school work											
Māori	360	37.2	394	40.7	138	14.3	62	6.4	13	1.3	967
Pacific	196	27.4	291	40.6	123	17.2	88	12.3	18	2.5	716
Asian	150	23.5	271	42.5	132	20.7	62	9.7	22	3.5	637
MELAA/Other	38	25.3	71	47.3	26	17.3	13	8.7	2	1.3	150
Sole European	779	34.7	1000	44.6	287	12.8	130	5.8	46	2.1	2242
Family finances											
Māori	395	40.8	313	32.4	117	12.1	61	6.3	81	8.4	967
Pacific	270	37.7	239	33.4	85	11.9	44	6.1	78	10.9	716
Asian	280	44.0	200	31.4	70	11.0	20	3.1	67	10.5	637
MELAA/Other	61	40.7	44	29.3	22	14.7	7	4.7	16	10.7	150
Sole European	1135	50.6	645	28.8	195	8.7	74	3.3	193	8.6	2242
People getting along at home											
Māori	467	48.3	290	30.0	100	10.3	43	4.4	67	6.9	967
Pacific	314	43.9	220	30.7	71	9.9	33	4.6	78	10.9	716
Asian	305	47.9	196	30.8	62	9.7	28	4.4	46	7.2	637
MELAA/Other	69	46.0	50	33.3	18	12.0	4	2.7	9	6.0	150
Sole European	1156	51.6	687	30.6	212	9.5	70	3.1	117	5.2	2242

Note: Ethnicity is presented as total response such that participants who selected multiple ethnicities are included in multiple categories. In contrast, European includes only those participants who selected European and no other ethnicity..

6.3. COVID-19 worries and fears by area-level deprivation

The differences in risk factors, hospitalisation, and mortality rates of COVID-19 are not just prominent at the individual level. There are significant factors at the societal level that contribute to the observed disparities, such as socioeconomic position (29). Varying levels of vulnerability between people and places have important consequences on individual and community responses to the pandemic (30). For example, living in poor housing conditions (31) or high-deprivation areas were associated with an increased prevalence of COVID-19 infections (29).

There was a general trend that for higher deprivation, there was more worry due to COVID-19 (Figure 12, Figure 13). However, this trend was most pronounced for worry about family finances due to COVID-19 (Figure 14).

- 19.6% (*n* = 207) of young people living in the least deprived quintile (1) were often or always worried about missing out on their school work due to COVID-19.

- 26.4% ($n = 200$) of young people living in the most deprived quintile (5) were often or always worried about missing out on their school work due to COVID-19.

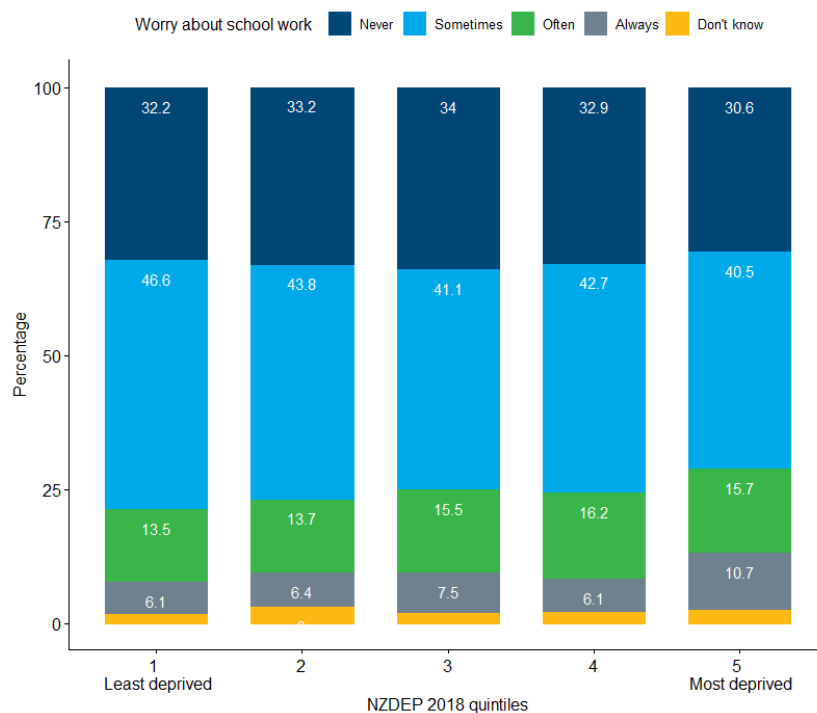


Figure 12. Worries and fears due to COVID-19: Worry about missing out on school work by area level deprivation.

- 10.5% ($n = 111$) of young people living in the least deprived quintile (1) were often or always worried about their family finances due to COVID-19.
- 18.6% ($n = 141$) of young people living in the most deprived quintile (5) were often or always worried about their family finances due to COVID-19.

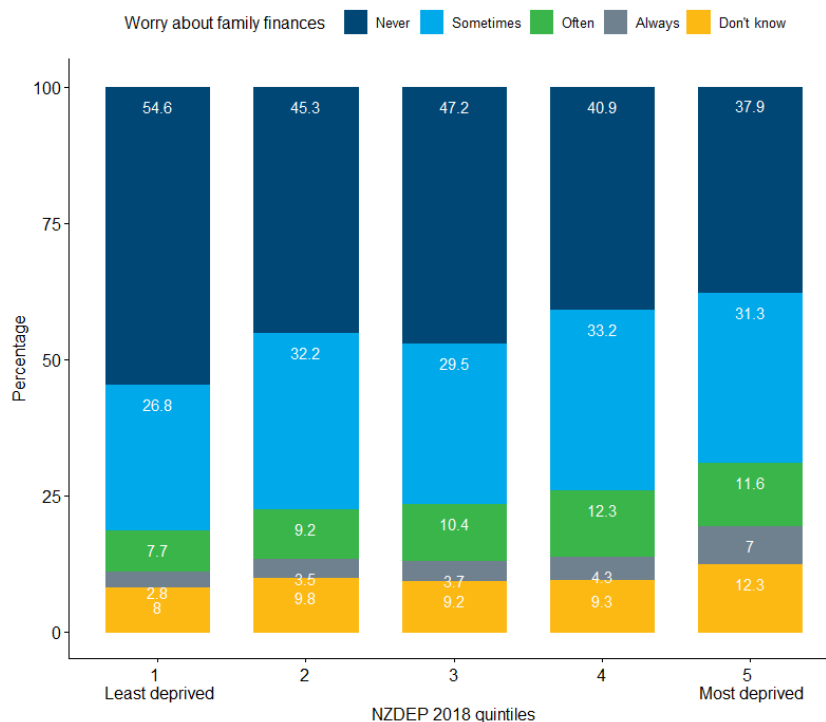


Figure 13. Worries and fears due to COVID-19: Worry about family finances by area level deprivation.

- 11.4% ($n = 120$) of young people living in the least deprived quintile (1) were often or always worried about the people in their home getting along due to COVID-19.
- 14.5% ($n = 110$) of young people living in the most deprived quintile (5) were often or always worried about the people in their home getting along due to COVID-19.

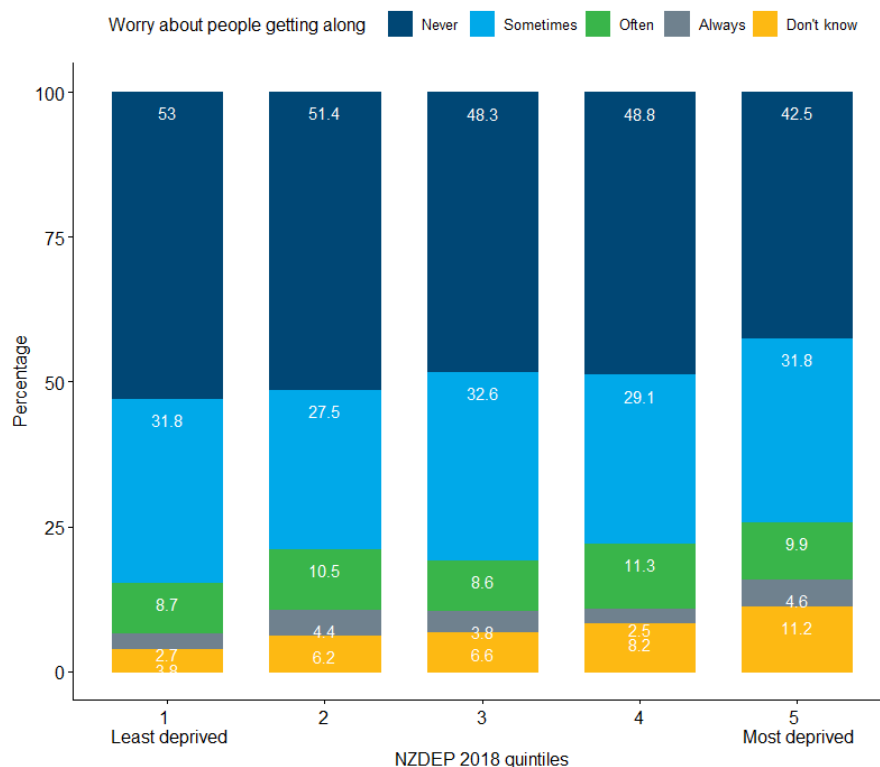


Figure 14. Worries and fears due to COVID-19: Worry about people in my house getting along by area-level deprivation.

A combined score for worries and fears about the COVID-19 pandemic was created to give an overall view of these worries and fears. Those participants who selected “I don’t know” were not included in the score ($n = 654$, 15%). Overall, with increasing area-level deprivation, there were increasing worries and fears due to COVID-19. Young people living in the most deprived areas (quintile 5) had the highest worries and fears score ($n = 607$, mean = 2.7, median = 3) compared to those living in the least deprived areas (quintile 1, $n = 936$, mean = 2.1, median = 2).

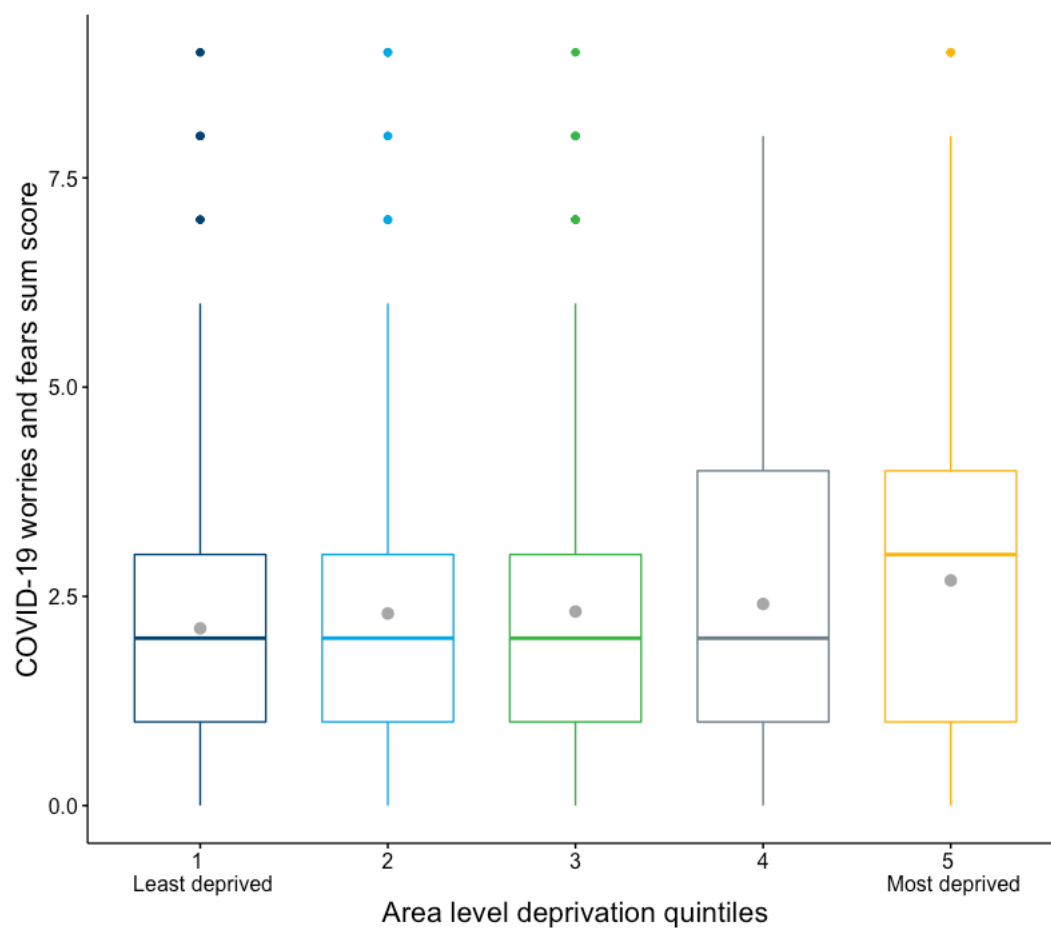


Figure 15. Worries and fears due to COVID-19: Sum score of all three questions by area level deprivation.

Table 6. COVID-19 worry and fear by area level deprivation.

	Never		Sometimes		Often		Always		Don't know		Total
Worried about...	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	N
Missing school work											
1	340	32.2	492	46.6	143	13.5	64	6.1	17	1.6	1056
2	323	33.2	427	43.8	133	13.7	62	6.4	29	3.0	974
3	287	34.0	347	41.1	131	15.5	63	7.5	16	1.9	844
4	236	32.9	306	42.7	116	16.2	44	6.1	15	2.1	717
5	232	30.6	307	40.5	119	15.7	81	10.7	19	2.5	758
Family finances											
1	577	54.6	283	26.8	81	7.7	30	2.8	85	8.0	1056
2	441	45.3	314	32.2	90	9.2	34	3.5	95	9.8	974
3	398	47.2	249	29.5	88	10.4	31	3.7	78	9.2	844
4	293	40.9	238	33.2	88	12.3	31	4.3	67	9.3	717
5	287	37.9	237	31.3	88	11.6	53	7.0	93	12.3	758
People getting along at home											
1	560	53.0	336	31.8	92	8.7	28	2.7	40	3.8	1056
2	501	51.4	268	27.5	102	10.5	43	4.4	60	6.2	974
3	408	48.3	275	32.6	73	8.6	32	3.8	56	6.6	844
4	350	48.8	209	29.1	81	11.3	18	2.5	59	8.2	717
5	322	42.5	241	31.8	75	9.9	35	4.6	85	11.2	758

6.4. Predictors of worries and fears due to COVID-19

Factors that were hypothesised to be predictors of worries and fears due to the COVID-19 pandemic were selected based on the literature. These included child demographic factors (child gender, ethnicity), socioeconomic factors (DEP17 total score, mother labour force status), household factors (household structure, residential mobility), relationship factors (child-peer relationship score, child-parent relationship score) and the mother wellbeing factors (worries and fears due to COVID-19, depression). Although all of these factors were significantly associated with worries and fears individually (at the univariate level), after correcting for all factors in a multivariate model, some were no longer significant predictors. Overall, the multivariate model explained a relatively small (8%)

amount of the total variability in the COVID-19 worries and fears sum score with demographic factors explaining the largest amount of variation.¹

Child demographic factors were significantly associated with the COVID-19 worries and fears sum score. Specifically, **Gender** was associated with the COVID-19 worries and fears sum score. Cisgender girls or transgender or non-binary young people had higher scores than those who identified as cisgender boys. **Ethnicity** was also significantly associated with the COVID-19 worries and fears sum score. Young people who identify as Pacific or Asian had higher scores than those who identify as European. Young people who identified as Māori had a higher score than those who identified as European, but this was not statistically significant after correcting for other factors in the multivariate model.

Socioeconomic factors were significantly associated with the COVID-19 worries and fears sum score. Greater deprivation (measured using the DEP-17 score, which measures individual deprivation) was associated with increasing (worse) COVID-19 worries and fears. Young people whose mother was employed had a lower COVID-19 worries and fears sum score. However, employment was not statistically significant after correcting for other factors in the multivariate model.

Household factors were significantly associated with the COVID-19 worries and fears sum score. Household structure was associated with the COVID-19 worries and fears sum score. Young people living in a sole-parent or an extended family household reported higher worries and fear scores than those living in a two-parent only household. Young people who had experienced greater residential mobility in their lives also had higher scores than those who did not. However, residential mobility was not statistically significant after correcting for other factors in the multivariate model.

Relationship factors were significantly associated with the COVID-19 worries and fears sum score. Both the child-peer and child-parent scores (where higher scores = more supportive/stronger relationships) were associated with lower COVID-19 worries and fears score, however, only the child-parent score was statistically significant after correcting for other factors in the multivariate model. Young people with more supportive/stronger relationships with their parents were less worried about the impacts of COVID-19. See **Snapshot 9** for more information about both the Parent-Child and Peer Relationships measures.

Mother wellbeing factors were significantly associated with the COVID-19 worries and fears score. The mother COVID-19 worries and fears sum score was associated with the young person's

¹ Full models are reported in supplementary material.

COVID-19 worries and fears score such that with increasing worry from the mother (higher score) there was increasing worry from their child (higher score). Mother depression symptoms was associated with the COVID-19 worries and fears score, however, depression symptoms was not statistically significant after correcting for other factors in the multivariate model.

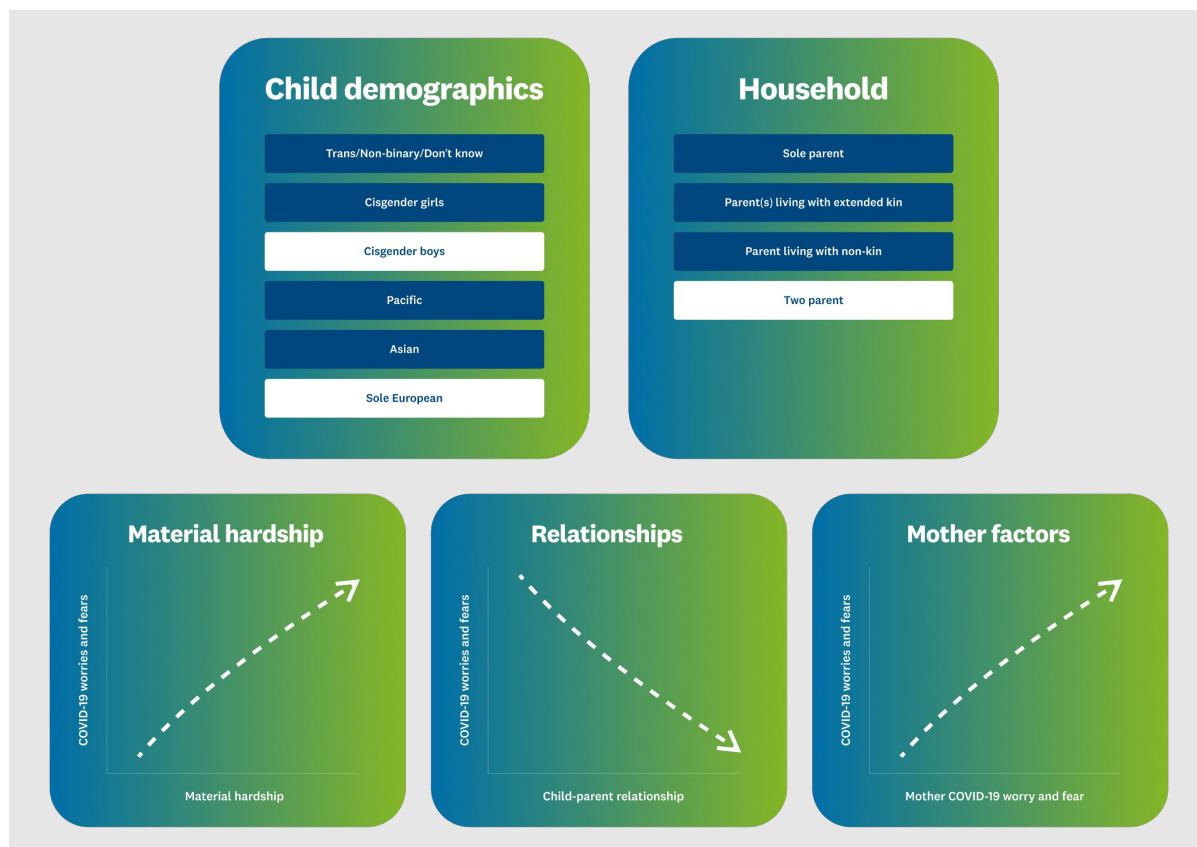


Figure 16. Factors associated with COVID-19 worries and fears at age 12 years. Blue indicates factors associated with more worry and fear compared to the reference (white). Further details about this analysis can be found in the PDF document..

Table 7. Predictors of COVID-19 worries and fears.

	<i>n</i>	Mean	SD	Univariate		Multivariate	
				beta	p-value	beta	p-value
Gender							
Cisgender boy	1767	2.04	1.68	Reference			
Cisgender girl	1392	2.46	1.82	0.42	<0.01	0.45	<0.01
Transgender/Non-binary	618	2.95	1.96	0.91	<0.01	0.68	<0.01
Ethnicity							
Māori	837	2.44	1.89	0.28	<0.01	0.11	0.18
Pacific	382	2.81	1.83	0.65	<0.01	0.25	0.04
Asian	442	2.54	1.86	0.39	<0.01	0.22	0.04
MELA	47	2.45	1.59	0.29	0.27	0.25	0.39
Other	31	2.45	1.88	0.29	0.36	0.31	0.34
Sole European	1957	2.16	1.74	Reference			
DEP-17				0.11	<0.01	0.06	<0.01
Mother labour force status							
Employed	3127	2.30	1.78	Reference			
Not employed	543	2.52	1.95	-0.23	0.01		
Household structure							
Two parent	2795	2.21	1.75	Reference			
Sole parent	473	2.66	2.00	0.45	<0.01	0.27	<0.01
Parent(s) living with extended family	406	2.80	1.88	0.59	<0.01	0.31	<0.01
Parent(s) living with non-kin	69	2.73	1.80	0.51	0.02	0.16	<0.01
Residential mobility							
No moves	2000	2.27	1.77	Reference			
Moved at least once	1662	2.40	1.84	0.13	0.04		
Child-Peer relationship score				-0.01	0.05		
Child-Parent relationship score				-0.06	<0.01	-0.05	<0.01
Mother COVID-19 worries and fears score				0.04	<0.01	0.02	<0.01
Mother depression symptoms				0.06	<0.01		

Note: Total response ethnicity was prioritised to create exclusive categories for statistical analysis. The Ministry of health protocol originally developed by Statistics New Zealand was used to allocate each participant to a single Level 1 ethnicity.

7. Research Question 2: How is worry about COVID-19 related to wellbeing in young people?

Three wellbeing indicators have been examined in relation to worries and fears due to COVID-19: depression, anxiety, and quality of life. These measures are common proxy markers of wellbeing and are also measures that have been associated with wellbeing throughout the life course. *Growing Up in New Zealand* has measured depression and anxiety at three time points over the past four years (at 8, 10 and 12 years of age). In this section, we examine the association between worries and fears due to COVID-19 and the three wellbeing measures at 12-years-old and then examine mean values for depression and anxiety from 8 to 12 years of age and how these differ based on worries and fears due to COVID-19.

7.1. COVID-19 worries and fears and depression scores

The association between COVID-19 worries and fears and depression score was examined for the three COVID-19 worries and fears questions individually, as well as the COVID-19 worries and fears sum score. Overall, with increasing worries and fears due to COVID-19 the depression score was greater. COVID-19 worries and fears were significantly associated with depression scores even after correcting for other factors in multivariate modelling ². When looking longitudinally at three timepoints (8, 10 and 12 years of age), depression scores have increased over time with the mean depression scores differing by the degree of reported COVID-19 worries and fears.

Young people who worry more often about missing out on school work due to COVID-19 had higher depression scores at 12 years of age. This remained statistically significant after accounting for other factors in a multivariate model.

- Depression scores were greatest for young people who worried always ($n = 322$, mean = 10.2, median = 10) or often ($n = 655$, mean = 9.4, median = 9) about missing out on school work due to COVID-19 compared to those who worried sometimes ($n = 1910$, mean = 8.3, median = 7) or never ($n = 1446$, mean = 7.9, median = 7). The pattern of mean depression score by frequency of worry was similar at each time point (8, 10 and 12 years).

² Full results from the multivariate models are reported in supplementary material

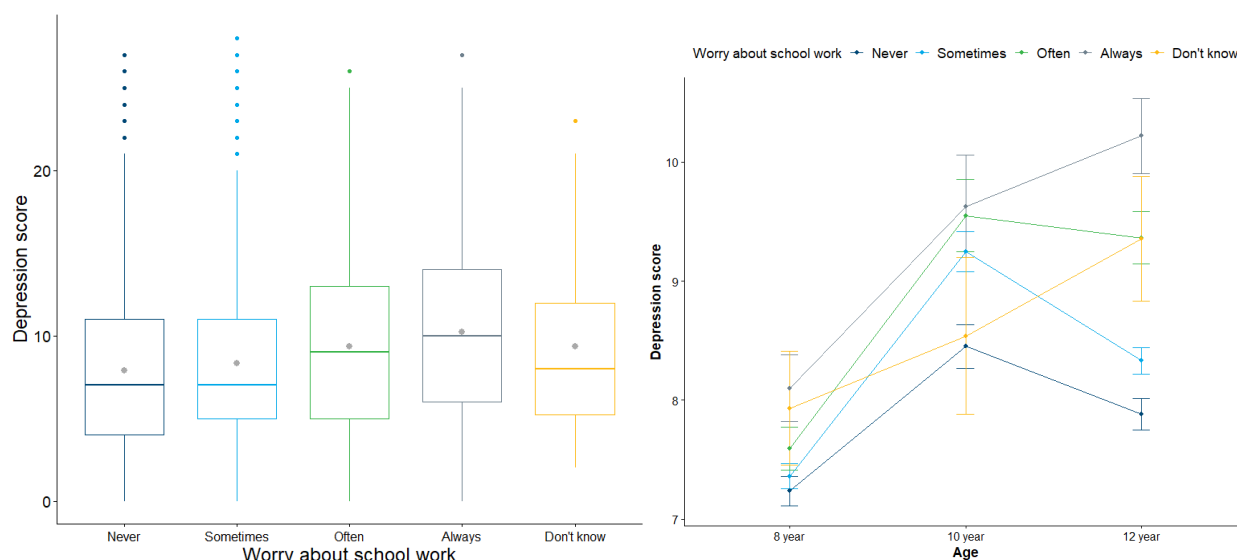


Figure 17. Worries and fears due to COVID-19: Depression score by worry about missing out on school work.

Young people who worry more often about their family finances due to COVID-19 had higher depression scores at 12 years of age.

- Depression scores were greatest for young people who worried always ($n = 180$, mean = 13.0, median = 13) or often ($n = 447$, mean = 11.5, median = 11) about their family finances due to COVID-19 compared to those who worried sometimes ($n = 1350$, mean = 9.0, median = 8) or never ($n = 2029$, mean = 7.1, median = 6). The pattern of mean depression score by frequency of worry was similar at each time point (8, 10 and 12 years).

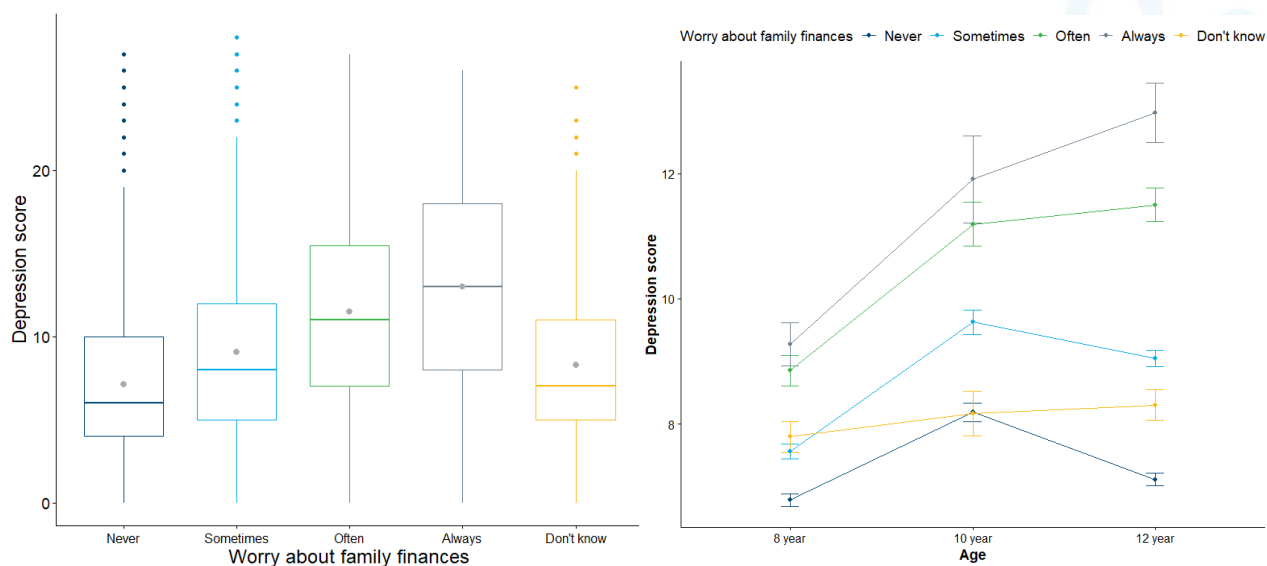


Figure 18. Worries and fears due to COVID-19: Depression score by worry about family finances.

Young people who worry more often about people in their home getting along due to COVID-19 had higher depression scores at 12 years of age.

- Depression scores were greatest for young people who worried always ($n = 163$, mean = 12.1, median = 12) or often ($n = 432$, mean = 10.8, median = 10) about people in their home getting along due to COVID-19 compared to those who worried sometimes ($n = 1348$, mean = 9.2, median = 9) or never ($n = 2181$, mean = 7.3, median = 6). The pattern of mean depression score by frequency of worry was similar at each time point (8, 10 and 12 years).

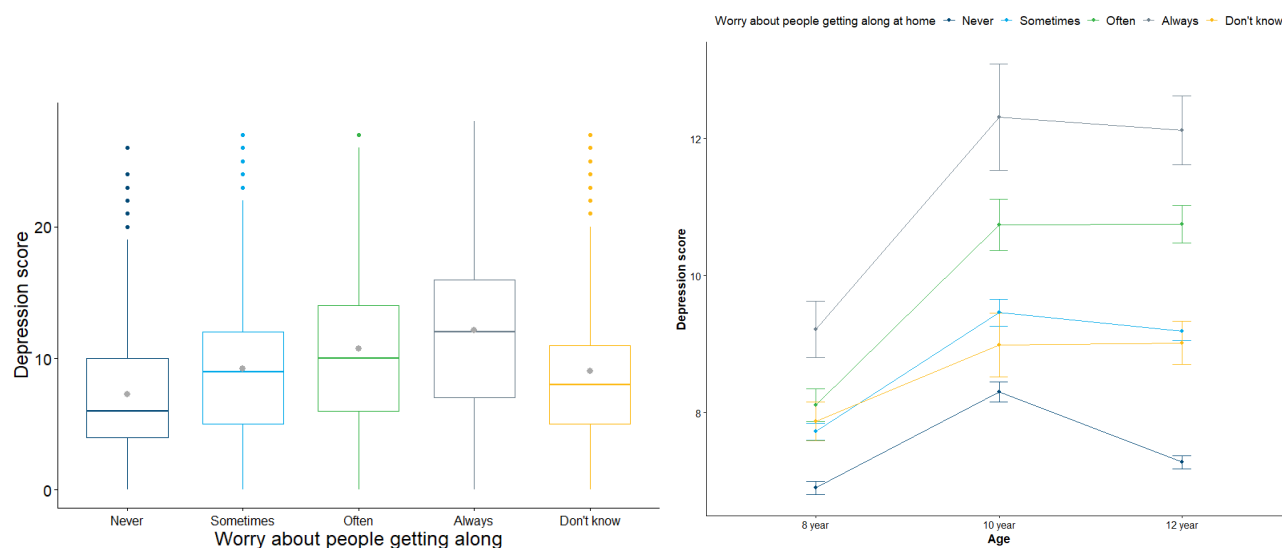


Figure 19. Worries and fears due to COVID-19: Depression score by worry about people in my house getting along.

Table 8. Association between COVID-19 worries and fears and depression score. The final model explained 41.5% of the variation in depression scores. In addition to the COVID-19 questions, the final model included: Gender, 8 year depression score, bullying score at age 12, child-peer relationship score at age 12, and child-parent relationship score at age 12. The final model explained 41.5% of the variation in age 12 depression score.

Depression at age 12							
Worry about	Summary statistics			Univariate		Multivariate	
	n	Mean	Median	beta	p-value	beta	p-value
Missing school							
Never	1446	7.9	7	Reference			
Sometimes	1910	8.3	7	0.45	<0.01	0.06	0.69
Often	655	9.4	9	1.48	<0.01	0.48	0.03
Always	322	10.2	10	2.33	<0.01	0.31	0.28
Don't know	98	9.4	8	1.47	<0.01	0.63	0.27
Family finances							
Never	2029	7.1	6	Reference			
Sometimes	1350	9.0	8	1.93	<0.01	0.62	<0.01
Often	447	11.5	11	4.39	<0.01	1.78	<0.01
Always	180	13.0	13	5.86	<0.01	2.46	<0.01
Don't know	425	8.3	7	1.19	<0.01	0.05	0.86
Getting along at home							
Never	2181	7.3	6	Reference			
Sometimes	1348	9.2	9	1.92	<0.01	1.03	<0.01
Often	432	10.8	10	3.47	<0.01	1.52	<0.01
Always	163	12.1	12	4.84	<0.01	1.57	<0.01
Don't know	307	9.0	8	1.74	<0.01	0.92	<0.01

7.2. COVID-19 worries and fears and anxiety scores

The association between COVID-19 worries and fears and anxiety scores was examined for the three COVID-19 worries and fears questions individually as well as the COVID-19 worries and fears sum score. Overall, with increasing worries and fears due to COVID-19 the anxiety score was also greater. COVID-19 worries and fears were significantly associated with anxiety score even after correcting for other factors in multivariate modelling. In contrast to longitudinal depression scores, the average level of anxiety symptoms seem to have decreased from ages 8-12, the relationship between mean longitudinal anxiety scores and the degree of COVID-19 worries and fears remained. Young people who worry more often about missing out on school work due to COVID-19 had higher anxiety scores at 12 years of age.

- Anxiety scores were greatest for young people who worried always ($n = 322$, mean = 49.9, median = 51.2) or often ($n = 655$, mean = 48.7, median = 48.3) about missing out on school work due to COVID-19 compared to those who worried sometimes ($n = 1910$, mean = 46.6, median = 46.7) or never ($n = 2029$, mean = 43.4, median = 40.6). The pattern of mean anxiety score by frequency of worry was similar at each time point (8, 10 and 12 years).

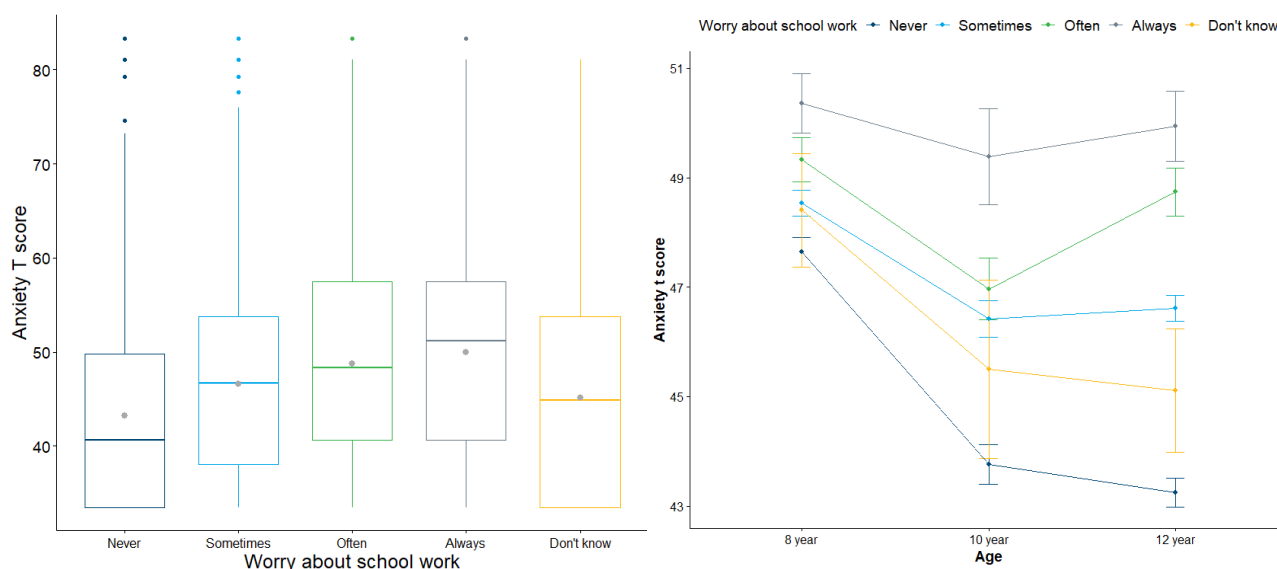


Figure 20. Worries and fears due to COVID-19: Anxiety score by worry about missing out on school work.

Young people who worry more often about their family finances due to COVID-19 had higher anxiety scores at 12 years of age.

- Anxiety scores were greatest for young people who worried always ($n = 180$, mean = 53.6, median = 54.5) or often ($n = 447$, mean = 51.3, median = 52.5) about how people in their home were getting along due to COVID-19 compared to those who worried sometimes ($n = 1350$, mean = 47.6, median = 48.3) or never ($n = 2029$, mean = 43.2, median = 40.6). The pattern of mean anxiety score by frequency of worry was similar at each time point (8, 10 and 12 years).

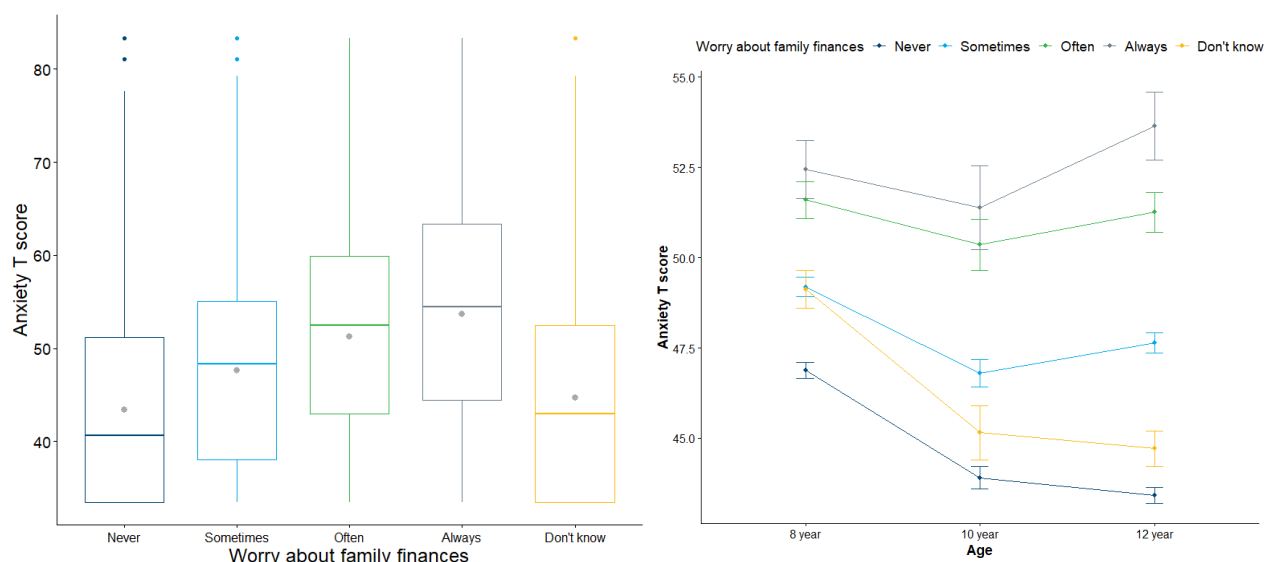


Figure 21. Worries and fears due to COVID-19: Anxiety score by worry about family finances.

Young people who worry more often about how people in their home were getting along due to COVID-19 had higher anxiety scores at 12 years of age.

- Anxiety scores were greatest for young people who worried always ($n = 163$, mean = 54.0, median = 55.1) or often ($n = 432$, mean = 50.9, median = 51.2) about how people in their home were getting along due to COVID-19 compared to those who worried sometimes ($n = 1348$, mean = 48.2, median = 48.3) or never ($n = 2181$, mean = 43.2, median = 40.6). The pattern of mean anxiety score by frequency of worry was similar at each time point (8, 10 and 12 years).

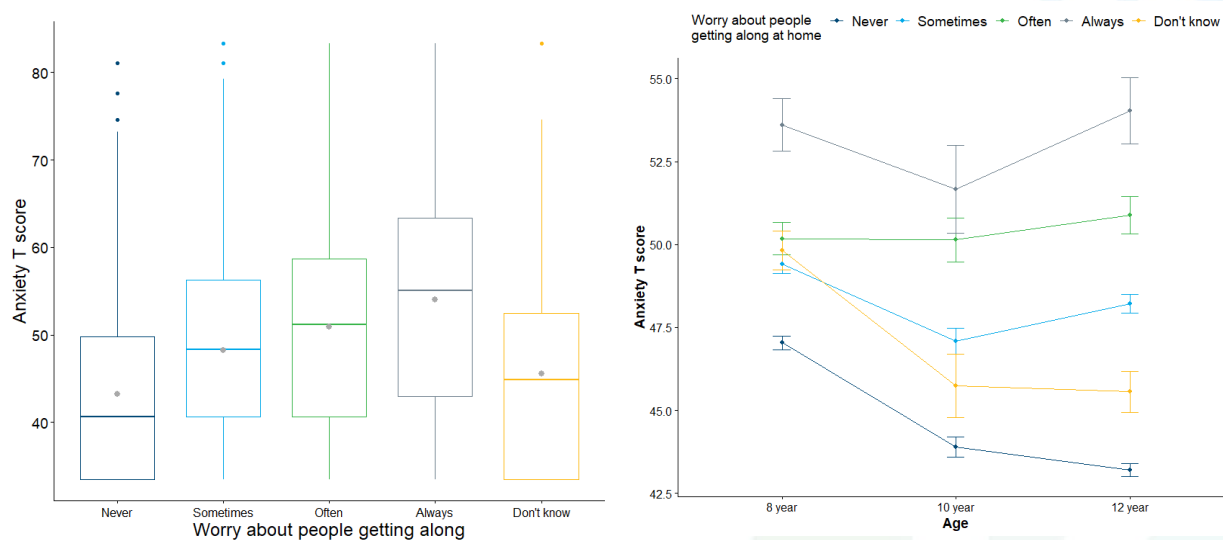


Figure 22. Worries and fears due to COVID-19: Anxiety score by worry about people in my house getting along by area level deprivation.

Table 9. Association between COVID-19 worries and fears and anxiety score. In addition to the COVID-19 questions, the final model included: Gender, ethnicity, anxiety score at age 8, bullying score at age 12, child-peer relationship score at age 12, child-parent relationship score at age 12. The final model explained 30% of the variation in the anxiety score at age 12.

Anxiety at age 12							
Worry about	Summary statistics			Univariate		Multivariate	
	<i>n</i>	Mean	Median	beta	p-value	beta	p-value
Missing school							
Never	1446	43.249	40.6	Reference			
Sometimes	1910	46.611	46.7	3.362	<0.01	1.83	<0.01
Often	655	48.737	48.3	5.4882	<0.01	2.58	<0.01
Always	322	49.936	51.2	6.6872	<0.01	2.77	<0.01
Don't know	98	45.11	44.9	1.8617	0.09	2.03	0.12
Family finances							
Never	2029	43.418	40.6	Reference			
Sometimes	1350	47.646	48.3	4.2284	<0.01	1.33	<0.01
Often	447	51.257	52.5	7.8391	<0.01	2.09	<0.01
Always	180	53.648	54.45	10.2306	<0.01	3.79	<0.01
Don't know	425	44.708	43	1.2908	0.02	-0.39	0.53
Getting along at home							
Never	2181	43.197	40.6	Reference			
Sometimes	1348	48.219	48.3	5.022	<0.01	2.80	<0.01
Often	432	50.882	51.2	7.6853	<0.01	3.67	<0.01
Always	163	54.026	55.1	10.8287	<0.01	4.94	<0.01
Don't know	307	45.559	44.9	2.3618	<0.01	1.54	0.04

7.3. COVID-19 worries and fears and quality of life scores

The association between COVID-19 worries and fears and health-related quality of life was examined for the three COVID-19 worries and fears questions individually as well as the COVID-19 worries and fears sum score. Overall, with increasing worries and fears due to COVID-19 the quality of life score was lower meaning those who were more worried about the impact of COVID-19 had worse quality of life scores. COVID-19 worries and fears were significantly associated with the quality of life score even after correcting for other factors in multivariate modelling.

Young people who worry more often about missing out on school work due to COVID-19 had lower quality of life scores at 12 years of age.

- Quality of life scores were lowest for young people who worried always ($n = 322$, mean = 39.0, median = 39) or often ($n = 655$, mean = 39.2, median = 40) about missing out on school work due to COVID-19 compared to those who worried sometimes ($n = 1910$, mean = 39.5, median = 40) or never ($n = 1446$, mean = 39.7, median = 40).

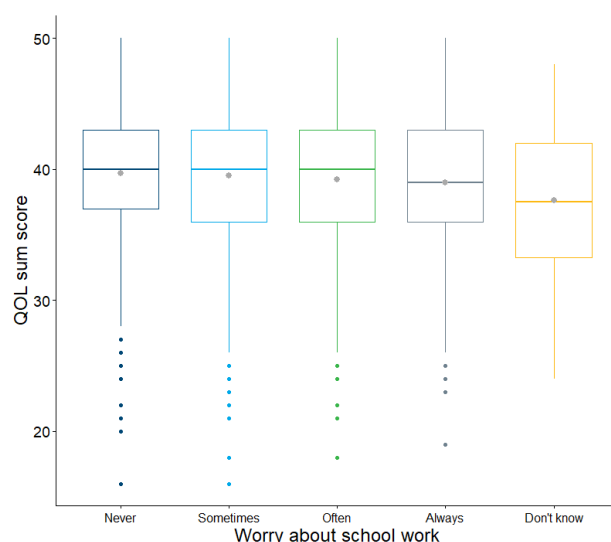


Figure 23. Worries and fears due to COVID-19: QOL score by worry about missing out on school work.

Young people who worry more often about their family finances due to COVID-19 had lower quality of life scores at 12 years of age.

- Quality of life scores were lowest for young people who worried always ($n = 180$, mean = 36.7, median = 37) or often ($n = 447$, mean = 37.1, median = 37) about their family finances due to COVID-19 compared to those who worried sometimes ($n = 1350$, mean = 38.8, median = 39) or never ($n = 2029$, mean = 40.6, median = 41).

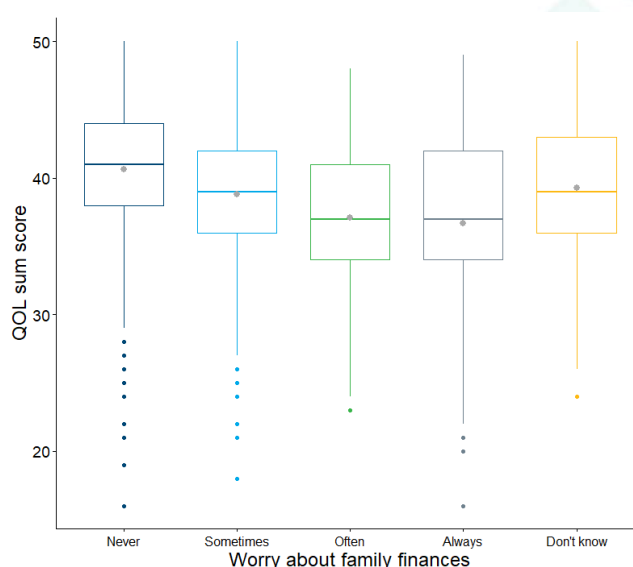


Figure 24. Worries and fears due to COVID-19: QOL score by worry about family finances.

Young people who worry more often about how people in their home were getting along due to COVID-19 had lower quality of life scores at 12 years of age.

- Quality of life scores were lowest for young people who worried always ($n = 163$, mean = 37.7, median = 38) or often ($n = 432$, mean = 38.0, median = 39.0) about how people in their home were getting along due to COVID-19 compared to those who worried sometimes ($n = 1348$, mean = 38.8, median = 39) or never ($n = 2181$, mean = 40.3, median = 41).

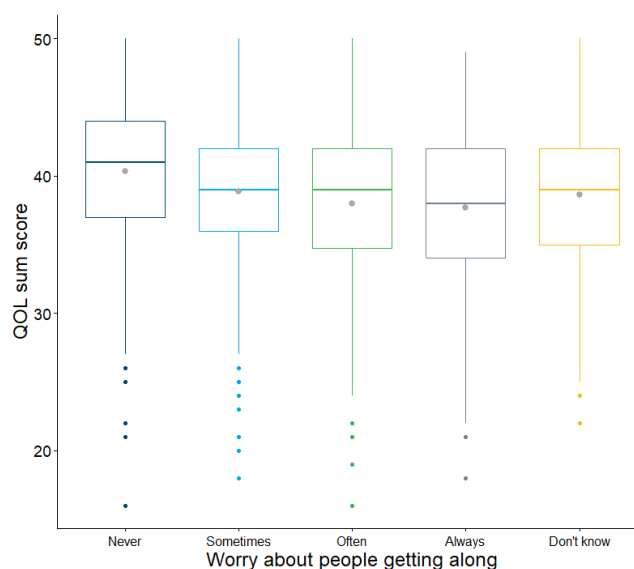


Figure 25. Worries and fears due to COVID-19: QOL score by worry about people in my house getting along by area level deprivation.

Table 10. Association between COVID-19 worries and fears and quality of life. In addition to the COVID-19 items, the full model included: Gender, mothers antenatal perceived stress, bullying score, child-peer relationship score and child-parent relationship score. The final model explained 33.2% of the variability in QOL scores at age 12.

QOL at age 12							
Worry about	Summary statistics			Univariate		Multivariate	
	n	Mean	Median	beta	p-value	beta	p-value
Missing school							
Never	1446	39.67	40.00	Reference			
Sometimes	1910	39.52	40.00	-0.15	0.39	-0.09	0.60
Often	655	39.22	40.00	-0.45	0.06	-0.02	0.92
Always	322	38.96	39.00	-0.71	0.02	0.53	0.08
Don't know	98	37.63	37.50	-2.04	<0.01	-0.41	0.51
Family finances							
Never	2029	40.63	41.00	Reference			
Sometimes	1350	38.84	39.00	-1.80	<0.01	-0.70	<0.01
Often	447	37.11	37.00	-3.52	<0.01	-1.25	<0.01
Always	180	36.66	37.00	-3.97	<0.01	-1.83	<0.01
Don't know	425	39.31	39.00	-1.32	<0.01	-0.41	0.15
Getting along at home							
Never	2181	40.35	41.00	Reference			
Sometimes	1348	38.84	39.00	-1.51	<0.01	-0.75	<0.01
Often	432	37.99	39.00	-2.36	<0.01	-1.10	<0.01
Always	163	37.66	38.00	-2.69	<0.01	-0.82	0.05
Don't know	307	38.60	39.00	-1.75	<0.01	-0.64	0.06

8. Relevance for policy and practice

Worrying is a normal response to unknown or concerning situations, such as a global pandemic. However, there are ongoing physical and mental health concerns that have arisen in response to COVID-19. This report highlights that worries and fears surrounding COVID-19 had a significant impact on young people's quality of life, depressive symptoms, and anxiety symptoms. *Growing Up in New Zealand* provides evidence for areas of worries and fears related to COVID-19 that could be addressed or mitigated as part of the COVID-19 recovery and any future pandemic planning. For example:

Financial worries and fears. The economic instability that was experienced by parents during the pandemic has had an impact on over half of young people. It is critical to consider that the financial implications of COVID-19 affect the entire family, by causing generally higher levels of worries and fear within the household. Therefore policy makers who are aiming to improve young peoples

quality of life should consider that measures which improve financial stability for households as a whole are likely to be beneficial in improving young peoples quality of life, especially in emergencies.

School work worries and fears. Two-thirds of young people worried at least sometimes about missing out on school work due to COVID-19. It is important to consider the ongoing impact school closures during COVID-19 will have on the learning needs of young people. At the policy level, ensuring resources are made available to help mitigate any learning loss, particularly for vulnerable and marginalised groups, will be critical.

Getting along at home worries and fears. Almost half of all young people never or almost never worried about how people in their house were getting along. Although it was less common than other worries, in terms of the impact this worry had on wellbeing, being worried about getting along at home had a similar impact to financial worries and fears.

Demographics. Worries about the impact of COVID-19 on young people was not equally distributed in terms of demographics or the environment in which young people were growing up in. Gender, ethnicity, and deprivation were all associated with worry about the impact of COVID-19. The same groups who experience social, economic, and educational inequities also experienced the most worry about the impacts of COVID-19. This supports previous evidence that COVID-19 has widened the socioeconomic gap in Aotearoa.

Gender. Transgender or non-binary young people were most worried about the impact of COVID-19. Given worry about the impact of COVID-19 was significantly associated with wellbeing outcomes, this finding indicates that the stressors associated with COVID-19 has exacerbated the health and wellbeing inequalities that exist among transgender and non-binary young people. Policy makers should consider this when working to reduce the ongoing impact of COVID-19. Furthermore, a higher proportion of transgender and non-binary participants reported worries about people getting along at home than other groups, suggesting that more supports may be required to support them and their whānau after the COVID-19 pandemic.

Wellbeing. Young people who experienced the most worry about the impact of COVID-19 also experienced the poorest health and wellbeing outcomes. Worry about the impact of COVID-19 was associated with worse depression, anxiety, and quality of life scores. It is likely that COVID-19 has exacerbated mental health concerns, particularly for the most marginalised and for those who experienced these concerns pre-COVID. This highlights the importance of targeted and easily accessible mental health care for young people in Aotearoa. This is particularly important for transgender and non-binary young people who were both more worried and experienced poorer wellbeing.

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Suggested citation:

Walker C.G, Fletcher B.D, Cha, J.E., Waldie, K.E., Morton, S.M.B., Peterson, E.R., Bullen, P., Prickett, K., Meissel, K., Fenaughty, J., Paine, S.J. 2023. Now We Are 12: Experiences of the COVID-19 pandemic and young people's wellbeing: Evidence from *Growing Up in New Zealand*. Snapshot 6. Auckland: *Growing Up in New Zealand*. Available from: www.growingup.co.nz

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