

BMJ Open Financial hardship and psychological distress during and after COVID-19 lockdowns in Victoria, Australia: a secondary data analysis of four repeated state-wide surveys

Thach Tran ¹, Andrew Joyce ^{2,3}, Hau Nguyen,¹ Jane Fisher ¹

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¹Global and Women's Health, Public Health and Preventive Medicine, Monash University, Melbourne, Victoria, Australia

²Centre for Social Impact, Swinburne University of Technology, Melbourne, Victoria, Australia

³Research & Impact, VicHealth, Melbourne, Victoria, Australia

Correspondence to

Dr Thach Tran;
thach.tran@monash.edu

ABSTRACT

Objectives This study aimed to estimate the prevalence of individuals experiencing financial hardship and to examine the relationship between their experiences of financial hardship and psychological distress during and after the COVID-19 lockdowns.

Design This is a secondary analysis of data from four repeated state-wide surveys conducted in 2020 and 2022.

Setting Victoria, Australia.

Participants and outcome measures All Victorian residents aged 18 years and above were eligible. Psychological distress was assessed using the Kessler Psychological Distress Scale-6 Item version (K6), while financial hardship was assessed using a nine-item scale. Relationships between experiencing any form of financial hardship and experiencing high psychological distress (K6≥19) were evaluated using an autoregressive and cross-lagged model that used data from all four surveys.

Results A total of 2000, 2000, 2349 and 2444 individuals responded to surveys 1, 2, 3 and 4, respectively. The proportion of people experiencing at least one form of financial hardship increased from 23.5% in 2020 (the first year of the pandemic) to 38.5% in 2022 (the third year of the pandemic). The most vulnerable groups facing financial hardship included young people, Aboriginal & Torres Strait Islanders, individuals with disabilities and those with low income. The proportions of individuals experiencing high psychological distress followed a quadratic trajectory, with the peak occurring between the first and third years of the pandemic. Experiencing financial hardship was consistently associated with high psychological distress at each time point in this study. However, there was no evidence of a longitudinal relationship between financial hardship and high psychological distress.

Conclusions The data from this study confirmed a significant increase in the proportion of individuals facing financial hardship among the adult population in Victoria from the first to the third year of the COVID-19 pandemic. This study does not ascertain a longitudinal effect of financial hardship on psychological distress during the pandemic. Further research is warranted to confirm this finding.

STRENGTHS AND LIMITATIONS OF THIS STUDY

- ⇒ This study included data collected from multiple surveys.
- ⇒ Financial hardship was assessed using a widely used multiple-item scale in large-scale studies in Australia.
- ⇒ The study had large drop-out rates which could introduce bias in the longitudinal data.
- ⇒ It was an online-based and voluntary study, so the characteristics of the samples might differ from those of the overall population.
- ⇒ All the data collected were self-reported, which may introduce recall bias.

INTRODUCTION

Financial hardship or financial stress refers to the level of deprivation a person experiences due to a lack of financial resources relative to their own needs.¹ Some indicators of financial hardship include difficulty paying bills and purchasing essential items such as food. It can result from a range of factors including job loss, low income, high levels of debt, unexpected expenses and economic downturns. The COVID-19 pandemic, which started in late 2019 and spread worldwide early 2020, required almost every country to respond intensively through measures such as lockdowns and travel restrictions. These measures could directly and indirectly affect many people's financial well-being. Studies have reported the high proportions of financial hardship resulting from the pandemic worldwide, including in high-income countries, such as up to 40% in the USA² and 47% in Korea.³

The relationship between financial hardship and mental health is complex. The experience of financial hardship can act as a stressor that might cause several negative feelings, including fear, worry, hopelessness

and a sense of low personal control, efficacy and self-worth.^{1 4} These feelings can be the determinants of mental health disorders in the short term as well as compromise physical and mental well-being in the long term. Mental health problems including depression, anxiety and other psychological disorders can have significant effects on an individual's financial well-being. People with psychological disorders may be less productive in their jobs, spend more on healthcare⁵ and be more likely to make inappropriate decisions regarding managing their finances,⁶ which can lead to financial hardship. Additionally, financial hardship and mental health problems can share several common risk factors including low education levels,^{7 8} living with disability or unemployment.⁸

Prior to COVID-19, studies found evidence of the adverse effects of experiences of financial hardship on poor mental health and mental health problems.^{1 9 10} Several studies conducted during the COVID-19 pandemic reported similar findings. Pierce *et al*¹¹ conducted an analysis of the UK Household Longitudinal Study data collected in 2020, during the first year of the pandemic, and found that having problems paying bills was associated with elevated symptoms of mental health problems. Wilson *et al*¹² reported that greater financial concern was associated with higher anxiety symptoms among US residents in 2020. Trógolo *et al*'s study in Argentina during the pandemic found that self-reported financial problems (eg, difficulty in paying the rent) were associated with more symptoms of depression and anxiety.¹³ In Chile, Borrescio-Higa *et al* conducted a study of 2545 people during the pandemic and found that financial difficulties were associated with increased risks of poor well-being and mental health problems.¹⁴ Sultana *et al*¹⁵ reported that people in Bangladesh who were dealing with a financial problem in 2020 were more likely to have more anxiety and depressive symptoms. In India, Chatterji *et al* conducted a cross-sectional study in a rural agrarian community after the first national COVID-19 lockdown and found that financial hardship was associated with poor mental health symptoms in women, but not in men.¹⁶

Australia, with an income per capita of US\$60 443 in 2021,¹⁷ is ranked a high-income country. The national Household, Income and Labour Dynamics in Australia Survey¹⁸ conducted in 2020 found that 1 in 10 people aged 15 or higher experienced at least two of seven financial difficulties, namely could not pay electricity, gas or telephone bills on time; could not pay the rent or mortgage on time; pawned or sold something; went without meals; not able to heat their home; asked for financial help from friends or family or asked for help from welfare/community organisations because of a shortage of money. Several studies have reported high rates of financial hardship within subpopulations during the pandemic in Australia. In a cross-sectional survey, Bryson *et al* demonstrated that 27% of mothers reported job or income loss due to the pandemic.¹⁹ Among multiple cross-sectional surveys,

Botha *et al* found that 44% of unemployed Australians reported experiencing financial stress.²⁰

The relationship between experiences of financial hardship and mental health through the pandemic had been examined in several studies in Australia. Evans *et al* conducted a qualitative analysis of an open-ended question on the impact of COVID-19 in a survey of 2130 parents and found that 'there was a heavy burden of financial loss for many families' and 'financial worries were a substantial part of their family's deterioration in mental health.'²¹ Botha *et al* analysed the data of 3843 unemployed Australian adults from April 2020 to May 2021 and found that financial stress was positively associated with mental distress measured by a single question 'During the past week, about how often did you feel depressed or anxious?'.²⁰ Bryson *et al*¹⁹ found a positive association between financial hardship experience and higher Depression Anxiety and Stress Scales scores among mothers in the second half of 2020. Broadway *et al* conducted an analysis of data from a survey of 3490 persons aged 25–64 years collected in June and July 2020 and reported that financial stress was positively associated with psychological distress for non-employed fathers.²²

Overall, the relationship between financial hardship and mental health problems can be reciprocal. It might have become more complex during the COVID-19 pandemic. However, it lacks investigation using longitudinal data which can provide robust evidence on directional relationships. This study aimed to (1) estimate the prevalence of people experiencing financial hardship in 2020 and 2022 in Victoria and its associated sociodemographic characteristics and (2) examine the longitudinal relationship between financial hardship experience and psychological distress during the COVID-19 pandemic.

MATERIALS AND METHODS

Study design

This is a secondary analysis of the data collected from The VicHealth Coronavirus Victorian Wellbeing Impact Surveys in Victoria, Australia in 2020 and 2021.

Study setting

About Victoria

Victoria with a population of about 6.6 million people in 2022 is the second most populous state among the eight States and Territories of Australia.²³ The first case of COVID-19 in Australia reported on 25 January 2020 was in Victoria. The Victorian Government implemented the first lockdown from 30 March to 12 May and several other lockdowns throughout 2020 and 2021 (figure 1).

The Federal and State Governments introduced several new financial support programmes for businesses and individuals affected by the pandemic, including lockdowns and other restrictions. The most important programme for employers and employees was the JobKeeper Payment which helped 'Australians in jobs and supported businesses affected by the significant economic impact of the

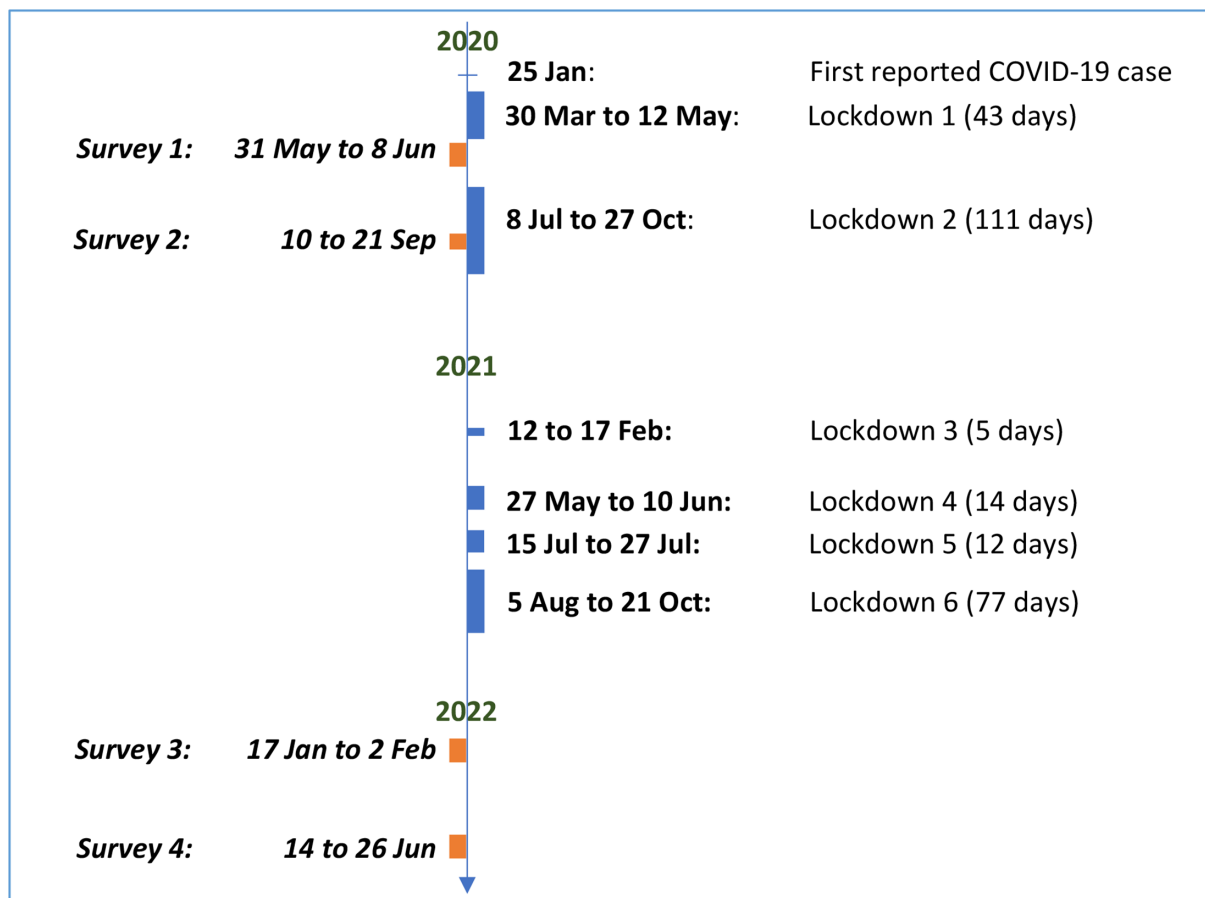


Figure 1 Timing of the surveys and COVID-19 lockdowns in Victoria, Australia (Source: <https://www.coronavirus.vic.gov.au>).

COVID-19 pandemic.²⁴ In the first phase of JobKeeper, from 30 March to 27 September 2020, eligible businesses and not-for-profits were able to receive US\$1500 per fortnight per employee to cover the cost of wages. The extension phase of JobKeeper was from 28 September 2020 to 28 March 2021 and targeted the businesses significantly affected by the economic downturn.

Households and individuals were supported by social assistance benefits in cash including the Coronavirus Supplement and Economic Support Payment. The Coronavirus Supplement started on 27 April 2020 and ended on 31 March 2021 and provided US\$275 a week for people in some vulnerable groups including people who were receiving Sickness Allowance, Parenting Payment or Farm Household Allowance and young adults who were receiving JobSeeker Payment and Youth Allowance. The Economic Support Payment included one-off payments of US\$750 from March 2020 to July 2020 and US\$250 from December 2020 to March 2021 for families with low income or having a Concession Card.

The VicHealth Coronavirus Victorian Wellbeing Impact Surveys

A series of four repeated surveys were conducted by the Victorian Health Promotion Foundation (VicHealth), a statutory authority in Victoria, Australia, with a mandate to promote good health and prevent chronic disease for all Victorians. These surveys aimed to inform VicHealth

and its stakeholders to support the health and well-being of Victorians during coronavirus restrictions and beyond. The four surveys were undertaken in 2020 and 2022 (see figure 1 for the times of the surveys) using similar methods.

All Victorian residents aged 18 years and above were eligible for surveys 1 and 2. In surveys 3 and 4, the age range was expanded to 16 years and above.

Participants were recruited using LiveTribe, a research-only panel operated and managed by i-Link Research.²⁵ Panellists of LiveTribe are recruited via a blend of print media, online marketing initiatives, direct mail, social media platforms, affiliate partnerships, personal invitations and a range of other ad hoc initiatives. Respondents of these surveys received a nominal incentive for their participation according to the panel policies.

The surveys were completely anonymous and built using a web-based platform for online self-completion. All participants provided online written informed consent.

Participants

In surveys 1 (May to Jun 2020) and 2 (September 2020), sample sizes were 2000. The sample sizes were increased to 2500 for each of the Surveys 3 (January to Feb 2022) and 4 (June 2022) to obtain participants aged 16 and 17. However, for consistency, this study only includes data of respondents aged 18 years and above from the four

surveys. In each survey, respondents were asked if they would be happy to be recontacted for this survey again in the future. Those agreeing to be recontacted were invited to participate in the subsequent surveys. Each participant was allocated an identification number which was used across the surveys.

Data sources

Financial hardship

Financial hardship was assessed using a nine-item scale asking whether they experienced certain events because of a shortage of money. This scale comprises six items developed by the Australian Bureau of Statistics²⁶ for use in national population-based income and expenditure surveys prior to the COVID-19 pandemic and three study-specific items. The six items developed by the Australian Bureau of Statistics are as follows:

1. Could not pay electricity, gas or telephone bills on time.
2. Could not pay the rent or mortgage on time.
3. Pawned or sold something.
4. Went without meals.
5. Asked for financial help from friends or family.
6. Asked for help from welfare/community organisations.

The three study-specific items are as follows:

1. Attended a food relief agency, food bank or food pantry (or similar) to access food relief.
2. Skipped a meal in order to feed your household.
3. Ran out of food and could not afford to buy more.

In surveys 1 and 2, people were asked for the period from when the COVID-19 restrictions began to the survey time. In surveys 3 and 4, people were asked for the period from October 2021 (when the final COVID-19 lockdown was eased) to the survey time.

The response options for each of these nine items were 'No' and 'Yes'. The indicator of financial hardship, 'experienced at least one form of financial hardship,' was categorised as follows: 'Yes' if the respondent answered 'Yes' to any of the nine items, and 'No' if the respondent answered 'No' to all nine items.

Psychological distress

Psychological distress was assessed using the Kessler Psychological Distress Scale-6 Item version (K6).²⁷ K6 is widely used in research worldwide including Australia to assess symptoms of serious mental illness in the general population. The K6 comprises six questions about a person's emotional state in the last month, namely feeling nervous; hopeless; restless/fidgety; so depressed that nothing could cheer them up; that everything was an effort; and worthless. Each question has five options scored (Australian scoring method) from 1 (none of the time) to 5 (all of the time). The scale scores are the sum of the six question scores and range from 6 to 30. The higher scores indicate higher levels of psychological distress.

K6 has performed well against the WHO's Composite International Diagnostic Interview for depressive and

anxiety disorders among Australian adults (the areas under receiver operating characteristic curves of 0.89, 95% CI: 0.88 to 0.90).²⁸ A threshold of 19 or higher K6 scores in the Australian scoring method indicates high psychological distress or probable serious mental illness.²⁷

Sociodemographic characteristics

Sociodemographic characteristics were collected using study-specific questions: age, gender, residential postcode, being an Aboriginal & Torres Strait Islander, country of birth, speaking other languages than English at home, highest education level, having any disability, household composition, main activity and income. The residential postcode was used to identify the residential region (Melbourne, the capital city of Victoria or other) and the Socio-Economic Indexes for Areas (SEIFA) using the most recent Australian Bureau of Statistics data.²⁹

Statistical analyses

First, cross-sectional data analyses with the whole sample of each survey were used to determine the proportions of people with financial hardship and its associated factors at each time point. The proportions of people with financial hardship were estimated with 95% CI. The associations of sociodemographic characteristics and having any experience of financial hardship were examined simultaneously using multiple logistic regression. All independent variables included in the models were checked for multicollinearity using the variance inflation factor (VIF). A VIF<5 indicates a low correlation of that variable with other variables in the model.³⁰

Second, the relationships between any experience of financial hardship and high psychological distress were assessed using an autoregressive and cross-lagged model that involved data from all four surveys. An autoregressive and cross-lagged model can estimate the directional effects of two variables on each other over time when controlling for the correlations between the two variables at the same time points and confounding effects of other covariates (in this study, sociodemographic characteristics). The autoregressive and cross-lagged model was estimated using estimator 'weighted least square parameter estimates using a diagonal weight matrix with standard errors and mean-adjusted and variance-adjusted χ^2 test statistic that use a full weight matrix' (WLSMV). The model coefficients are probit coefficients because the outcomes (financial hardship and high psychological distress) are binary. All probit coefficients to ORs were converted for ease of interpretation. Criteria to evaluate the good fit of the model to the observed data were root mean square error of approximation with values less than 0.05, weighted root mean square residual with values less than 1.00 and Tucker-Lewis Index and Comparative Fit Index with values greater than 0.95.³¹ Missing data were treated using the full information maximum likelihood method with the assumption that they were missing at random. Sensitivity analyses were conducted with the

different cut-offs for financial hardship of having any two and any three events.

In this study, poststratification weights were used for each survey to adjust for the differences in the proportions of several main sociodemographic characteristics (ie, age groups, genders, education level and speaking language other than English at home) in the sample and the corresponding information in the Victoria population.³² The autoregressive and cross-lagged analysis was conducted using MPlus V.7 and the other analyses were carried out with STATA V.17.

RESULTS

A total of 6395 people contributed data to any surveys. Among those, 2000, 2000, 2349 and 2444 people responded to surveys 1, 2, 3 and 4, respectively. A person could participate in more than one survey. Among 6395 participants, 4717 completed only one survey and 1678 completed two or more surveys. In more detail, 1008 participants provided data at both surveys 1 and 2; 432 participants provided data at both surveys 2 and 3; and 731 participants provided data at both surveys 3 and 4. There were statistically significant differences in the demographic characteristics of the participants who completed only one survey and those who completed two or more surveys (online supplemental S1 table). The largest differences were in age, language spoken at home, disability status and income.

The sociodemographic characteristics of the participants are similar across all four surveys (table 1).

The proportions of people reporting the experiences of financial hardship were not significantly different between survey 1 and survey 2 (table 2). They were also similar between survey 3 and survey 4. There were substantial increases in the proportions from the first two surveys to the last two surveys. The proportions of respondents experiencing at least one form of financial hardship increased from about more than a fifth in surveys 1 and 2 to more than a third in surveys 3 and 4.

Several sociodemographic characteristics were consistently associated with the experience of any form of financial hardship across the four surveys (table 3). Age was negatively associated with the odds of having any experience of financial hardship, while having low income (\$A40 000 per year), being an Aboriginal & Torres Strait Islander and living with disability were associated with higher odds of having financial hardship.

Additionally, in survey 1, the country of birth, education level and main activity during the lockdown were associated with the odds of having any experience of financial hardship. People born in non-English speaking countries had about double the odds of experiencing financial hardship than those born in Australia. Those with complete high-school education or a technical and further education qualification had higher odds of financial hardship than those with lower education levels. Compared with people employed, people who were retired had lower

odds of financial hardship. In survey 2, couples with children had higher odds of having financial hardship than people living alone. In survey 3, people who were retired had lower odds of financial hardship than people who were working for income. In survey 4, people who were not working also had higher odds of financial hardship than those who were employed.

Mean psychological distress scores and the proportions of high psychological distress were statistically increased from survey 1 to survey 2 and reduced from survey 3 to survey 4 (table 4). The differences between surveys 2 and 3 were not statistically significant.

In a cross-sectional analysis of data at survey 1, the proportion of people with high psychological distress among people experiencing any financial hardship (31.6%) was statistically significantly higher than that for people without financial hardship (9.4%, $p<0.001$). Similarly, the proportions were 37.6% vs 10.8% ($p<0.001$) in survey 2; 41.2% vs 9.8% ($p<0.001$) in survey 3; and 31.9% vs 7.2% ($p<0.001$) in survey 4.

All fit indices for the autoregressive and cross-lagged model examining the relationship between financial hardship and high psychological distress met the criteria for a good fit to the observed data (online supplemental S2 table). None of the directional pathways from financial hardship to high psychological distress and vice versa (cross-lagged pathways) were statistically significant (figure 2).

All autoregressive pathways between two consecutive time points for both financial hardship and high psychological distress were statistically significant. The effect size of the autoregressive pathway for financial hardship from survey 1 to survey 2 was significantly higher (OR 11.9, $p<0.001$) than that from survey 2 to survey 3 (OR 3.03, $p<0.001$) or survey 3 to survey 4 (OR 5.23, $p<0.001$). The magnitudes of the relationship between two consecutive time points of high psychological distress were not largely different across the course of the study.

The cross-sectional correlation between financial hardship and high psychological distress was positively correlated at survey 1 but became not statistically significant in the later surveys.

The sensitivity analyses of the autoregressive and cross-lagged model with different cut-offs of financial hardship (any two and any three events) provided similar results that all autoregressive pathways were significant but none of the cross-lagged pathways were significant.

DISCUSSION

This study examined the relationship between experiencing financial hardship and psychological distress during and after COVID-19 lockdowns in Victoria. Overall, experiencing financial hardship was associated with high psychological distress at every time point. Nevertheless, no causal relationship between financial hardship and high psychological distress was found during and after

Table 1 Sociodemographic characteristics of participants by surveys

	Survey 1 (N=2000)	Survey 2 (N=2000)	Survey 3 (N=2349)	Survey 4 (N=2444)
Age				
18–24 years	11.2	12.5	11.2	11.0
25–34 years	18.4	13.2	18.6	18.1
35–44 years	16.7	16.7	18.1	18
45–54 years	16.1	18.3	15.8	16.5
55–64 years	15.3	17.5	14.6	14.6
65–74 years	12.2	14.4	12.0	12.0
75 or more	10.1	7.4	9.7	9.8
Gender—male	49.5	48.3	50	49.5
Socio-Economic Indexes for Areas				
First quintile (most disadvantaged)	13.2	12.0	13.3	13.0
Second quintile	18.6	15.9	20.6	18.9
Third quintile	18.8	19.4	19.8	20.0
Fourth quintile	25.7	26.4	21.3	21.1
Fifth quintile (most advantaged)	23.8	26.2	24.9	27.0
Aboriginal and Torres Strait Islander	3.2	3.1	4.0	4.8
Birth country				
Australian born	65.0	63.3	64.7	67.0
Mainly English-speaking countries	6.1	6.2	6.6	6.5
Other countries	29.0	30.5	28.7	26.1
Speak a language other than English at home	22.9	25.0	23.9	21.3
Education				
Completed some high school	12.2	11.5	10.9	12.2
Completed all high school (year 12)	11.4	11.1	12.6	12.6
Technical and further education/certificate	43.4	41.5	43.8	42.3
University	28.3	31.3	27.9	27.8
Unable to determine	4.7	4.6	4.7	5.1
Disability	22.1	20.6	25.7	24.6
Household composition				
Person living alone	19.9	20.3	20.2	18.5
Couple living alone	29.7	28.6	28.5	29.5
Couple with children	36.8	38.0	37.8	38.5
Other	13.6	13.1	13.5	13.4
Region—Melbourne (capital city)	75.1	77.8	76.3	73.6
Main activity				
Employed/self-employed	52.6	55.7	52.9	57.0
Retire	21.3	21.5	19.0	18.9
Not working for income	26.1	22.8	28.1	24.1
Income <A40 000 per year	29.3	25.7	27.0	25.8
Data cell: weighted proportion (%).				

the lockdowns. The proportions of people facing financial hardship increased significantly from the first to the third year of the pandemic. Proportions of high psychological distress followed a quadratic trajectory, with the peak occurring between the first and third year of the pandemic.

This study included data collected from large samples of adults at multiple time points in the first and third years of the COVID-19 pandemic in Victoria. This allowed for the testing of directional relationships between experiences of financial hardship and psychological distress during the pandemic, which to our knowledge has not

Table 2 Proportions of people endorsing financial hardship events

	Survey 1 (N=2000)	Survey 2 (N=2000)	Survey 3 (N=2349)	Survey 4 (N=2444)
Financial hardship event				
► Could not pay electricity, gas or telephone bills on time	11.3 (9.8; 13)	11.2 (9.6; 12.9)	19.8 (17.9; 21.7)	18.8 (17.1; 20.7)
► Could not pay the rent or mortgage on time	7.4 (6.2; 8.8)	8.4 (7; 10)	12.8 (11.3; 14.4)	11.6 (10.2; 13.2)
► Pawned or sold something	8 (6.8; 9.5)	7.5 (6.2; 8.9)	15.5 (13.9; 17.3)	16.3 (14.7; 18)
► Went without meals	7.8 (6.5; 9.2)	7.3 (6.1; 8.8)	13.8 (12.2; 15.5)	14.2 (12.7; 15.9)
► Asked for financial help from friends or family	10.6 (9.1; 12.2)	8.7 (7.4; 10.3)	19.2 (17.4; 21)	20.1 (18.3; 21.9)
► Asked for help from welfare/community organisations	6.9 (5.7; 8.3)	5.6 (4.5; 6.9)	10.8 (9.5; 12.4)	10.7 (9.3; 12.1)
► Attended a food relief agency, food bank or food pantry (or similar) to access food relief	6.7 (5.6; 8)	5.2 (4.2; 6.4)	11.8 (10.4; 13.4)	10.5 (9.2; 12)
► Skipped a meal in order to feed your household	8.4 (7.1; 9.9)	7.3 (6.1; 8.7)	14.9 (13.3; 16.7)	14.9 (13.4; 16.6)
► Ran out of food and could not afford to buy more	6.6 (5.5; 7.9)	6.4 (5.2; 7.7)	13.3 (11.8; 14.9)	13.6 (12.2; 15.3)
Experienced at least one form of financial hardship event above	24.4 (22.3; 26.6)	23.5 (21.4; 25.7)	36.6 (34.3; 38.9)	38.5 (36.3; 40.7)
Data cell: weighted proportion, % (95% CI).				

Table 3 Predictors of experiences of at least one form of financial hardship across four time points in 2020 and 2022

	Survey 1 OR* (95% CI)	Survey 2 OR* (95% CI)	Survey 3 OR* (95% CI)	Survey 4 OR* (95% CI)
Age				
18–24 years	Ref.	Ref.	Ref.	Ref.
25–34 years	0.92 (0.61; 1.39)	0.72 (0.46; 1.12)	1.35 (0.97; 1.87)	1.11 (0.82; 1.51)
35–44 years	0.49 (0.33; 0.74)	0.27 (0.17; 0.43)	0.84 (0.60; 1.17)	0.67 (0.49; 0.93)
45–54 years	0.34 (0.22; 0.53)	0.36 (0.23; 0.56)	0.39 (0.27; 0.55)	0.45 (0.32; 0.63)
55–64 years	0.20 (0.12; 0.32)	0.25 (0.15; 0.40)	0.35 (0.24; 0.51)	0.23 (0.16; 0.33)
65–74 years	0.20 (0.10; 0.40)	0.23 (0.12; 0.44)	0.13 (0.07; 0.23)	0.09 (0.05; 0.16)
75 or more	0.06 (0.01; 0.27)	0.08 (0.03; 0.23)	0.08 (0.03; 0.21)	0.07 (0.03; 0.17)
Gender—male	0.98 (0.76; 1.28)	0.88 (0.67; 1.15)	1.13 (0.90; 1.42)	0.95 (0.77; 1.18)
Socio-Economic Indexes for Areas				
First quintile (Most disadvantaged)	Ref.	Ref.	Ref.	Ref.
Second quintile	0.92 (0.59; 1.43)	0.85 (0.53; 1.37)	1.43 (0.98; 2.09)	1.23 (0.84; 1.82)
Third quintile	1.00 (0.63; 1.58)	0.76 (0.47; 1.24)	0.81 (0.54; 1.19)	1.03 (0.71; 1.50)
Fourth quintile	0.79 (0.50; 1.23)	0.82 (0.51; 1.33)	0.78 (0.52; 1.15)	0.91 (0.62; 1.35)
Fifth quintile (most advantaged)	0.91 (0.57; 1.46)	0.77 (0.47; 1.25)	0.87 (0.59; 1.27)	0.78 (0.53; 1.14)
Aboriginal & Torres Strait Islander	5.85 (3.09; 11.09)	7.64 (3.76; 15.5)	5.23 (2.57; 10.66)	2.98 (1.73; 5.14)
Birth country				
Australian born	Ref.	Ref.	Ref.	Ref.
Mainly English-speaking countries	1.12 (0.57; 2.17)	1.01 (0.57; 1.79)	1.04 (0.61; 1.77)	1.07 (0.65; 1.77)
Other countries	1.96 (1.20; 3.20)	1.4 (0.86; 2.28)	1.04 (0.62; 1.73)	1.43 (0.83; 2.47)
Speak a language other than English at home	1.13 (0.67; 1.91)	1.07 (0.62; 1.86)	1.16 (0.67; 2.00)	0.85 (0.48; 1.53)
Education				
Completed some high school	Ref.	Ref.	Ref.	Ref.
Completed all high school	1.88 (1.04; 3.39)	0.93 (0.52; 1.68)	0.72 (0.45; 1.15)	0.93 (0.61; 1.43)
Technical and further education/certificate	1.62 (1.04; 2.53)	1.49 (0.96; 2.31)	1.31 (0.90; 1.90)	1.35 (0.95; 1.90)
University	1.25 (0.78; 2.03)	1.18 (0.73; 1.92)	0.68 (0.46; 1.03)	0.77 (0.54; 1.11)

Continued

Table 3 Continued

	Survey 1 OR* (95% CI)	Survey 2 OR* (95% CI)	Survey 3 OR* (95% CI)	Survey 4 OR* (95% CI)
With disability	2.30 (1.65; 3.20)	2.17 (1.56; 3.02)	2.84 (2.14; 3.77)	2.24 (1.7; 2.96)
Household composition				
Person living alone	Ref.	Ref.	Ref.	Ref.
Couple living alone	1.07 (0.71; 1.62)	1.01 (0.68; 1.5)	0.79 (0.55; 1.13)	0.73 (0.52; 1.02)
Couple with children	1.04 (0.70; 1.53)	1.46 (1.01; 2.1)	0.99 (0.72; 1.37)	0.88 (0.64; 1.21)
Other	1.08 (0.69; 1.68)	1.53 (0.97; 2.4)	0.64 (0.44; 0.95)	0.72 (0.49; 1.06)
Melbourne (capital city)	1.00 (0.70; 1.44)	0.82 (0.57; 1.17)	1.10 (0.82; 1.47)	0.90 (0.67; 1.19)
Main activity				
Employed/self-employed	Ref.	Ref.	Ref.	Ref.
Retire	0.47 (0.25; 0.86)	0.59 (0.34; 1.05)	0.56 (0.32; 0.98)	0.74 (0.44; 1.24)
Not working for income	1.34 (0.98; 1.82)	0.73 (0.52; 1.03)	1.24 (0.95; 1.61)	1.32 (1.02; 1.71)
Income <A40 000 per year	1.62 (1.15; 2.28)	2.02 (1.40; 2.90)	2.82 (2.12; 3.75)	2.55 (1.91; 3.41)

*ORs were calculated using multiple logistic regression including all predictors in this table. Ref.: Reference group. Bold coefficient: statistically significant.

Table 4 Psychological distress

	Survey 1 (N=1909)	Survey 2 (N=1914)	Survey 3 (N=2276)	Survey 4 (N=2444)
K6 total score, mean (95% CI)	12.3 (12.0; 12.6)	12.8 (12.5; 13.1)	13.3 (13.1; 13.6)	12.6 (12.3; 12.8)
Compared with preceding survey (p value)	N/A	0.001	0.807	0.007
High psychological distress (K6≥19), % (95% CI)	14.9 (13.2; 16.7)	17.5 (15.7; 19.6)	21.1 (19.2; 23.0)	16.8 (15.2; 18.5)
Compared with preceding survey (p value)	N/A	0.009	0.652	0.031
Missing: Survey 1 (91 cases), survey 2 (86 cases); survey 3 (73 cases); survey 4 (53 cases); p values were derived from multiple linear/logistic regression models adjusted for the demographic characteristics presented in table 1 .				
K6, Kessler Psychological Distress Scale-6 item version; N/A, not available.				

been done before. Financial hardship was assessed using a widely used multiple-item scale in large-scale studies in Australia.³³ We acknowledge several limitations. First, the study had a large drop-out rate, and the demographic characteristics of those who participated in only one survey and those who took part in two or more surveys were different, which could introduce bias in the longitudinal data. Second, it was an online-based and voluntary study, so the characteristics of the samples might differ from those of the overall population. To address this, poststratification weights were applied to adjust for differences in the main sociodemographic characteristics between the samples and the population. Lastly, all the data collected were self-reported, which may introduce recall bias.

The proportions of people experiencing financial hardship in this study were lower than those reported in several high-income countries, such as USA^{2 34} and Korea,³ as well as in low-income and middle-income countries like Bangladesh,³⁵ India¹⁶ and Chile.¹⁴ However, these comparisons should be interpreted with caution as each study used a different scale/set of questions to assess financial hardship. Compared with studies in Australia, the proportions of financial hardship experiences in the first half of 2020 in this study were consistent with those reported in the Household, Income and Labour Dynamics in Australia Survey in 2020 and were not significantly different from those in the years prior to the pandemic.¹⁸ However, there are no available data on population proportions of financial hardship in 2022 in Australia. The data from the first half of 2020 suggested that the pandemic and the lockdowns did not immediately cause significant changes in the financial situation of the majority of the population. The government's support packages, including JobKeeper and Coronavirus Supplement income programmes,²⁰ played a crucial role in preventing the increase of financial hardship, especially among the most vulnerable groups. The proportions of people experiencing financial hardship rose significantly in the second year of the pandemic, which could be attributed to the consequences of pandemic-related restrictions on individuals' financial situations in the short term. It could also be influenced by the withdrawal of government support programmes in 2021 specific to the pandemic, such as JobKeeper Payment and Coronavirus Supplement.

Throughout the four surveys, individuals in vulnerable groups such as young people, Aboriginal & Torres Strait Islanders, individuals with disabilities and those with low income consistently faced higher levels of financial hardship. These findings are consistent with the results of studies in other countries.^{36–38} These groups were already more likely to experience financial hardship before the pandemic due to their lower income compared with the average population.³⁹ Therefore, it can be predicted that they would also be more likely to face financial difficulties during and after the pandemic. In this study, it was not possible to determine whether the relative likelihood

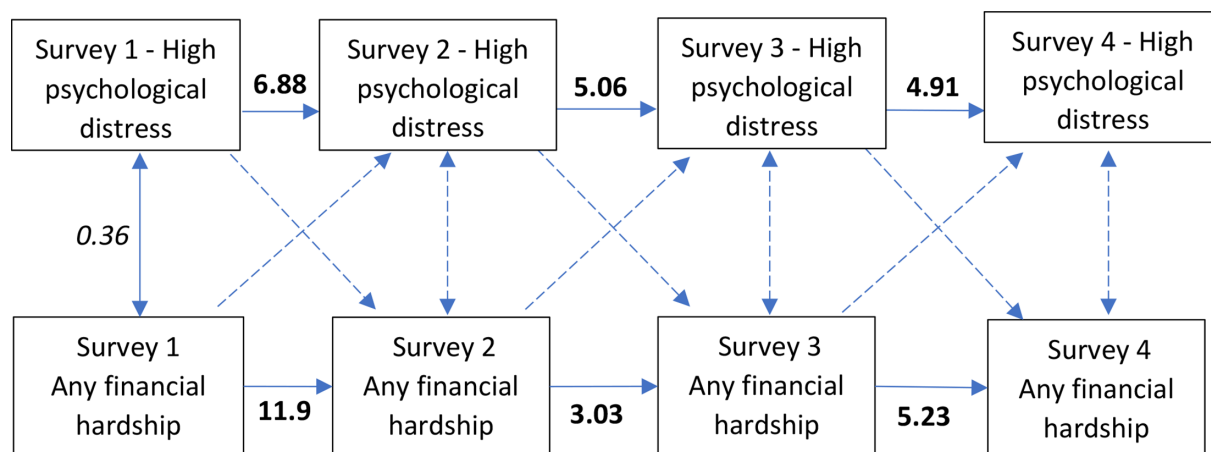


Figure 2 Autoregressive and cross-lagged model of the relationship between financial hardship and high psychological distress. Single-headed solid arrows represent the direction of the statistically significant paths; single-headed dotted arrows represent hypothesised directional paths but not statistically significant in this model; double-headed arrow indicates the variables that are assumed to be correlated; bold path coefficients are ORs; italic coefficients are covariance. All coefficients were estimated using a single path analysis model adjusted for sociodemographic characteristics presented in table 1. See online supplemental table 2 for the full details of this model. High psychological distress: Kessler Psychological Distress Scale-6 items score ≥ 19 ; 1008 participants provided data at both survey 1 and survey 2; 432 participants provided data at both survey 2 and survey 3; 731 participants provided data at both survey 3 and survey 4.

of experiencing financial hardship in these vulnerable groups during the pandemic was elevated compared with the prepandemic period. During the first lockdown, individuals in the middle education groups were more likely to experience financial hardship compared with those in the lowest and highest education groups. These middle groups might have lower income than those with the highest education level and less government support than those with the lowest education level. Consequently, their financial situation would have been affected more severely during the first lockdown.

The study did not find a statistically significant association between the SEIFA and financial hardship. This result may be due to the analysis controlling for several other indicators of disadvantage, including country of birth, language used at home, disability and employment. The socioeconomic index for areas where people live might not be a sensitive indicator of individual financial situations when controlling for various sociodemographic characteristics.

Previous studies examining the relationship between financial hardship/stress and mental health during the pandemic and prepandemic periods in Australia and other countries before¹⁰ and during the COVID-19 pandemic^{12–16} primarily used cross-sectional data. Therefore, the significant relationships reported between financial hardship/stress and mental health problems were based on associations at a specific point in time. In this study, significant associations were also found between these variables at each time point using cross-sectional data. However, the study did not confirm longitudinal directional relationships between financial hardship and psychological distress. This suggests that financial hardship and psychological distress share several common

cofactors, including income and other vulnerability-related characteristics (eg, living with a disability). When controlling for these cofactors, the relationship between financial hardship and psychological distress becomes nonsignificant. Furthermore, the instrument used to assess psychological distress in this study, the K6, can only provide an indication of a person's temporary emotional state, which might be highly sensitive to stressors like financial hardship events. However, for most individuals, their emotions can rebound after a short time.⁴⁰ Therefore, while financial hardship may have an immediate effect on psychological distress, it may not persist over longer periods of time.

Further research is warranted to investigate the relationship between financial hardship and mental health. It would be beneficial to examine other common mental health problems, including depressive and anxiety disorders, using psychiatric diagnostic instruments. Additionally, assessing the severity of financial hardship could help to examine if there is a dose-response relationship with mental health outcomes. As the proportion of financial hardship continues to rise, monitoring it as an annual statistic is recommended for the government. Furthermore, the factors contributing to the sharp increase in the proportion of financial hardship in Victoria should be investigated to inform the response of the Victorian government and other governments to the current pandemic and future ones.

In conclusion, the data from this study confirmed a substantial increase in the proportion of financial hardship among the adult population in Victoria from the first to the third year of the COVID-19 pandemic. Young people, Aboriginal & Torres Strait Islanders,

people with disabilities and those with low income were identified as the most vulnerable groups facing financial hardship. This study did not find a longitudinal effect of financial hardship on psychological distress. Future research to confirm this finding is warranted.

X Jane Fisher @Jane_Fisher1

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ORCID iDs

Thach Tran <http://orcid.org/0000-0002-4686-8601>

Andrew Joyce <http://orcid.org/0000-0003-0430-2324>

Jane Fisher <http://orcid.org/0000-0002-1959-6807>

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