



## What influences demand for Buy Now, Pay Later credit?

Tao Chen <sup>a</sup>, Ben R. Marshall <sup>b</sup>, Nhut H. Nguyen <sup>c,\*</sup>, Nuttawat Visaltanachoti <sup>b</sup>

<sup>a</sup> Nanyang Business School, Nanyang Technological University, Singapore

<sup>b</sup> Massey Business School, Massey University, New Zealand

<sup>c</sup> Department of Economics and Finance, Auckland University of Technology, New Zealand

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### ABSTRACT

We investigate the determinants of demand for Buy Now, Pay Later (BNPL) credit using a comprehensive database from New Zealand. We consider both absolute demand and relative to total personal lending demand. The results indicate that BNPL is more popular with single individuals, younger people, and those on lower incomes. There is a negative relation between absolute and relative BNPL demand and interest rates. BNPL demand was reduced during the period around responsible lending legislation changes, even though these were not specifically related to BNPL, while demand increased following the end of COVID-19 lockdowns.

### 1. Introduction

Household consumption is often financed with credit. Historically, most transactions have involved credit cards, but Buy Now, Pay Later (BNPL) has recently become popular. As [Di Maggio et al. \(2022\)](#) note, this FinTech innovation typically involves a purchase with an upfront payment followed by payments in installments. The user incurs no interest or fees if they pay on time. However, a charge is incurred on late payments. BNPL providers charge merchants using their product fees of 5–8 %.

[deHaan et al. \(2024\)](#) suggest that global BNPL expenditure is forecast to reach US\$1 trillion globally by 2025. However, BNPL research is still in its infancy. We document the factors that influence BNPL demand using a unique data set from New Zealand. We obtain proprietary data from Centrix Ltd, a leading New Zealand credit bureau. We source data on the credit checks that BNPL providers make when someone requests to sign up as a customer. We also obtain data on credit checks made by providers of credit card and personal loan credit.

We investigate the extent to which various factors influence demand for BNPL credit. We consider the role played by personal characteristics, such as gender, age, income, marital status, and education. We also determine the influence of calendar effects such as public holidays, days of the week, and months of the year. COVID-19 restrictions may influence BNPL demand, so we investigate this. New Zealand has introduced various regulatory changes in the last five years, so we investigate the

impact of these on BNPL demand. Finally, we investigate the impact of interest rates, stock returns, and stock return volatility on demand for BNPL credit.

Using data from the 2018 to 2022 period, we find that there is no difference between the sexes in terms of the absolute number of requests for BNPL accounts. However, women are more likely to pursue BNPL credit relative to other types of personal lending. Absolute and relative BNPL demand is lower for individuals aged 46 and older. Both absolute and relative BNPL demand is highest among those with low income and in December. There is also evidence of higher absolute and relative demand following the end of COVID lockdowns. Relative demand was also higher during COVID lockdowns. During the period we consider, regulation was introduced that imposed harsher penalties and increased the enforcement of irresponsible lending, and an interest rate cap was imposed on high-cost loans. This regulation did not apply to BNPL, but we find a reduction in BNPL demand, in both absolute and relative terms, following its introduction. Our results also indicate a negative relation between BNPL demand and wholesale interest rates. This is perhaps due to the general tightening of economic conditions leading to a reduced appetite for spending.

Our paper adds to the BNPL literature, which includes the following papers. [Berg et al. \(2022\)](#) point out that while BNPL lending has increased rapidly, it still represents a small share of total credit in the U. S. [Papich \(2023\)](#) suggests access to BNPL increases non-BNPL borrowing. [Bian et al. \(2023\)](#) find that BNPL extends credit access to

\* Corresponding author.

E-mail address: [nhut.nguyen@aut.ac.nz](mailto:nhut.nguyen@aut.ac.nz) (N.H. Nguyen).

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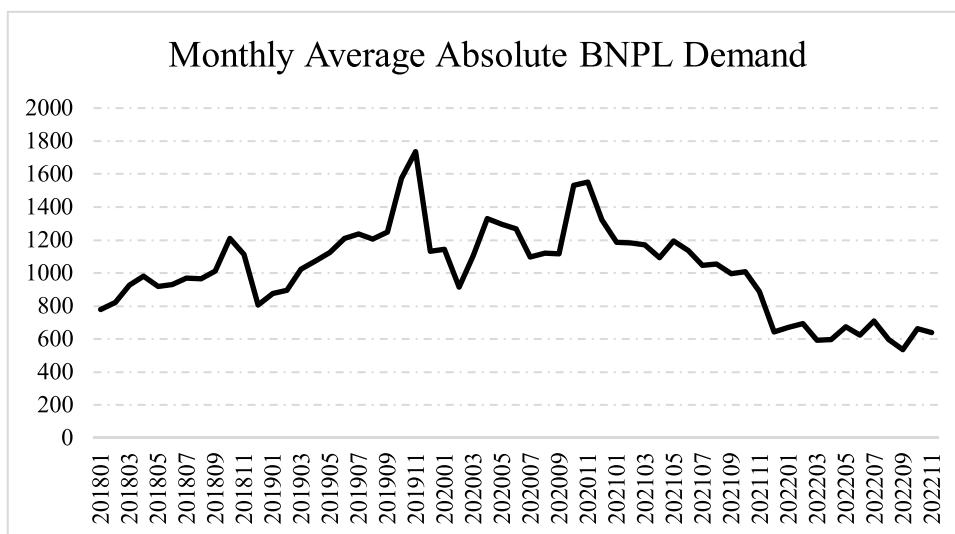


Fig. 1(a). The absolute monthly BNPL demand over time.

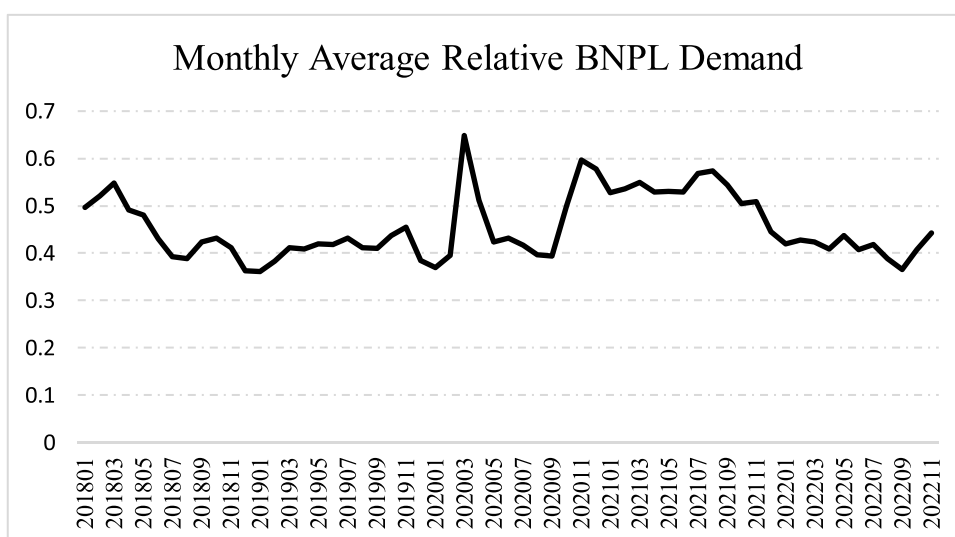


Fig. 1(b). The monthly BNPL demand relative to the sum of BNPL, credit card, and personal loan demand over time.

underserved consumers. [Guttman-Kenney et al. \(2023\)](#) find that BNPL users often pay for balances using credit cards. [Malamud et al. \(2022\)](#) introduce features of BNPL into a consumption asset pricing framework.

## 2. BNPL data

We obtain data from Centrix Ltd, a leading New Zealand credit bureau. The information they track includes the following categories (with percentages of total data points in brackets): individuals seeking to open a BNPL account (31.5 %), obtain a credit card (or increase their credit limit) (24.3 %), obtain a personal loan (13.5 %), obtain a motor vehicle loan (5.0 %), and a mortgage (21.8 %).<sup>1</sup> The data we obtain relates to the period from 1/1/2018 to 31/12/2022.

The data are daily and include the Statistics New Zealand SA2 area that the enquiry is from. In urban centers, these areas typically contain 2000 – 4000 residents, while in rural districts, they may contain less than 1000 residents. The sex and age brackets of the applications are

<sup>1</sup> The remaining data points relate to Consumer Finance (0.02%) or are missing.

also included. We focus on absolute BNPL demand and relative BNPL demand, which we measure as absolute BNPL demand divided by the sum of BNPL, credit card, and personal loan demand. We include these items as, unlike motor vehicle and mortgage enquiries, they relate to unsecured personal lending.

Credit enquiries regarding establishing BNPL accounts were over 1.7 million. This is consistent with the Consumer NZ suggestion that over 25 % of New Zealanders (population 5.2 million) have established a BNPL account. It seems likely that many BNPL users will have multiple accounts.

## 3. Results

We present graphs of the absolute and relative monthly BNPL demand over time in [Figs. 1a and 1b](#). [Fig. 1a](#) indicates that monthly enquiries were 800 at the start of our sample, settled in the 1000–1400 range with brief spikes higher, and have been declining to between 600 and 800 towards the end of the sample period. The results in [Fig. 1b](#) show that BNPL enquiries represent between 40 and 60 % of all personal loan enquiries during the 2018–2022 period.

We now turn our attention to investigating whether there are

**Table 1**  
BNPL Users' Characteristics

<i>Panel A: Absolute BNPL</i>						
	(1)	(2)	(3)	(4)	(5)	(6)
Female	-0.005 (-0.13)					0.049 (1.56)
[26, 35] age group		0.828*** (20.29)				0.417*** (11.34)
[36, 45] age group		0.140*** (3.71)				0.210*** (6.18)
[46, 55] age group		-0.668*** (-15.93)				-0.470*** (-11.59)
[56, 65] age group		-1.196*** (-20.55)				-1.141*** (-20.99)
> 65 age group		-1.176*** (-14.43)				-1.184*** (-15.56)
[30k, 50k] income group			-1.311*** (-19.51)			(-18.34)
[50k, 70k] income group			1.719*** (16.33)			3.653*** (49.22)
[> 70k] income group			-2.725*** (-57.54)			-1.408*** (-28.25)
Married				-2.776*** (-77.26)		-2.543*** (-77.23)
Post-graduate degrees					-1.054*** (-11.94)	0.679*** (6.98)
Intercept	2.399*** (58.84)	2.306*** (55.70)	2.879*** (69.68)	3.524*** (87.53)	2.495*** (69.14)	3.284*** (62.06)
Adj. R2	0.002	0.050	0.056	0.132	0.008	0.177
N	2,024	2,024	2,024	2,024	2,024	2,024
<i>Panel B: Relative BNPL</i>						
	(1)	(2)	(3)	(4)	(5)	(6)
Female	0.147*** (13.89)					0.163*** (15.52)
[26, 35] age group		-0.070*** (-8.72)				-0.074*** (-9.39)
[36, 45] age group		-0.153*** (-17.40)				-0.134*** (-15.31)
[46, 55] age group		-0.208*** (-20.47)				-0.193*** (-19.95)
[56, 65] age group		-0.235*** (-19.27)				-0.225*** (-18.61)
> 65 age group		-0.268*** (-16.79)				-0.265*** (-16.92)
[30k, 50k] income group			-0.141*** (-7.17)			-0.064*** (-3.28)
[50k, 70k] income group			-0.390*** (-18.86)			-0.156*** (-7.02)
[> 70k] income group			-0.029 (-1.50)			-0.011 (-0.64)
Married				-0.183*** (-14.21)		-0.166*** (-14.79)
Post-graduate degrees					0.125*** (5.86)	0.200*** (11.32)
Intercept	0.375*** (35.58)	0.549*** (55.70)	0.543*** (55.74)	0.527*** (56.93)	0.442*** (55.91)	0.544*** (35.32)
Adj. R2	0.028	0.039	0.015	0.026	0.006	0.102
N	2,048	2,048	2,048	2,048	2,048	2,048

This table presents the average coefficients from monthly Fama-Macbeth regressions. The dependent variables are *Absolute BNPL*, measured as the natural log of BNPL enquiries, or *Relative BNPL*, the ratio of BNPL enquiries to the sum of BNPL, credit card, and personal loan enquiries. *Female* is a dummy variable equal to one if the BNPL applicant is identified as a female and zero otherwise. *Age groups* indicate the age of BNPL applicants. The reference age group is 25 and below. *Income groups*, marital status, and *post-graduate degrees* are based on SA2 data from Statistics New Zealand 2018 Census. The reference income group is the percentage of people earning an annual income of less than NZD 30,000. *Married* is the proportion of census people that are married. *Post-graduate degrees* represent the combined proportion of census people having a post-graduate, masters, or doctoral degree. *t*-statistics are based on a 2-sided *t*-test on the monthly coefficients. \*\*\*, \*\*, and \* represent statistical significance at the 1%, 5%, and 10% levels, respectively.

**Table 2**  
BNPL and Calendar Effects

	Absolute BNPL		Relative BNPL			
School and public holidays	-0.083*** (-4.31)	0.000 (0.00)		0.021*** (4.33)	0.000 (0.00)	
Tuesday		0.119*** (4.41)			0.026*** (3.86)	
Wednesday		0.205*** (7.66)			0.047*** (6.98)	
Thursday		0.171*** (6.24)			0.035*** (5.24)	
Friday		-0.041 (-1.47)			0.015** (2.03)	
Saturday		-0.173*** (-6.17)			0.040*** (5.27)	
Sunday		-0.176*** (-6.22)			0.077*** (10.51)	
February			0.056 (1.51)			-0.013 (-1.31)
March			0.005 (0.11)			0.005 (0.53)
April			0.080** (2.08)			0.069*** (6.10)
May			0.131*** (3.39)			0.023** (2.43)
June			0.161*** (4.24)			0.011 (1.21)
July			0.148*** (3.79)			-0.004 (-0.44)
August			0.139*** (3.82)			-0.002 (-0.16)
September			0.105*** (2.71)			-0.015 (-1.56)
October			0.092** (2.29)			-0.020** (-2.15)
November			0.260*** (5.87)			0.009 (0.96)
December			0.237*** (5.13)			0.036*** (3.42)
Intercept	6.886*** (761.76)	6.849*** (350.08)	6.746*** (229.17)	0.450*** (217.37)	0.421*** (82.41)	0.447*** (61.39)
Adj. R <sup>2</sup>	0.011	0.173	0.044	0.012	0.073	0.076
N	1,828	1,828	1,828	1,828	1,828	1,828

This table presents the regression results based on aggregate daily enquiries at the country level. The dependent variables are *Absolute BNPL*, measured as the natural log of aggregate BNPL enquires, or *Relative BNPL*, the ratio of aggregate BNPL enquiries to the sum of BNPL, credit card, and personal loan enquiries. School breaks and public holidays are sourced from the Ministry of Education. *t*-statistics are in parentheses. \*\*\*, \*\*, and \* represent statistical significance at the 1%, 5%, and 10% levels, respectively.

**Table 3**  
Covid-19 Lockdown Effects

	Absolute BNPL		Relative BNPL	
	[-5,+5]	[-20,+20]	[-5,+5]	[-20,+20]
During lockdown	-0.067 (-0.59)	-0.066 (-0.77)	0.151*** (5.07)	0.214*** (11.79)
Post-lockdown	0.165* (1.78)	0.267*** (6.08)	-0.008 (-0.27)	0.062*** (3.93)
Intercept	6.926*** (88.04)	6.925*** (198.23)	0.454*** (16.83)	0.391*** (29.65)
Adj. R <sup>2</sup>	-0.018	0.073	0.331	0.620
N	60	90	60	90

This table presents the regression results based on aggregate daily enquiries at the country level. The dependent variables are *Absolute BNPL*, measured as the natural log of aggregate BNPL enquires, or *Relative BNPL*, the ratio of aggregate BNPL enquiries to the sum of BNPL, credit card, and personal loan enquiries. *During lockdown* is an indicator equal to one for the lockdown period between 25 March 2020 and 13 May 2020. *Post-lockdown* is a dummy variable indicating the days after the lockdown was lifted. *t*-statistics are in parentheses. \*\*\*, \*\*, and \* represent statistical significance at the 1%, 5%, and 10% levels, respectively.

differences in BNPL enquiries by sex, age, income, marital status, and education. We do not have information on each individual's income, marital status, and education, so we source these data from the Statistics

**Table 4**  
The Effects of Credit Contracts Amendment Act

	Absolute BNPL		Relative BNPL	
	[-5,+5]	[-20,+20]	[-5,+5]	[-20,+20]
Post	-0.167* (-1.94)	-0.103* (-1.69)	0.002 (0.05)	-0.057** (-2.44)
Intercept	7.470*** (107.34)	7.278*** (146.08)	0.557*** (15.38)	0.548*** (30.23)
Adj. R <sup>2</sup>	0.123	0.023	-0.050	0.058
N	22	82	22	82

This table presents the regression results based on aggregate daily enquiries at the country level. The dependent variables are *Absolute BNPL*, measured as the natural log of aggregate BNPL enquires, or *Relative BNPL*, the ratio of aggregate BNPL enquiries to the sum of BNPL, credit card, and personal loan enquiries. *Post* is a dummy variable with a value of one for 5 or 20 days after 20 December 2019 and 1 May 2020 when stronger financial penalties were introduced for irresponsible lending and interest rate caps were introduced. *t*-statistics are in parentheses. \*\*\*, \*\*, and \* represent statistical significance at the 1%, 5%, and 10% levels, respectively.

New Zealand 2018 Census SA2 statistics.

We estimate Fama-Macbeth regressions by month for each of the above characteristics. The average coefficient and its 2-sided *t*-statistics are reported in Table 1. The results indicate that both absolute and

**Table 5**  
BNPL, Interest Rates, and Stock Markets

Panel A: Absolute BNPL							
Overnight rates	-0.179*** (-24.44)						
30-day interest rates		-0.174*** (-26.77)					
90-day interest rates			-0.178*** (-30.51)				
2-year interest rates				-0.190*** (-36.52)			
NZ50 index returns					0.019 (1.61)		
NZ50 index volatility							-0.008 (-0.49)
Intercept	7.155*** (601.06)	7.177*** (613.95)	7.202*** (640.17)	7.237*** (691.34)	6.945*** (776.34)		6.950*** (553.35)
Adj. R2	0.264	0.289	0.345	0.504	0.002		-0.001
N	1,253	1,253	1,253	1,253	1,253		1,253
Panel B: Relative BNPL							
Overnight rates	-0.034*** (-15.89)						
30-day interest rates		-0.032*** (-16.79)					
90-day interest rates			-0.030*** (-16.77)				
2-year interest rates				-0.022*** (-15.20)			
NZ50 index returns					0.006** (2.40)		
NZ50 index volatility							-0.001 (-0.27)
Intercept	0.481*** (140.44)	0.484*** (137.66)	0.484*** (136.84)	0.476*** (137.81)	0.441*** (212.91)		0.442*** (149.30)
Adj. R2	0.172	0.186	0.177	0.130	0.004		-0.001
N	1,253	1,253	1,253	1,253	1,253		1,253

This table presents the regression results based on aggregate daily enquiries at the country level. The dependent variables are *Absolute BNPL*, measured as the natural log of aggregate BNPL enquiries, or *Relative BNPL*, the ratio of aggregate BNPL enquiries to the sum of BNPL, credit card, and personal loan enquiries. All interest rates are sourced from the Reserve Bank of New Zealand website. NZ50 index returns are sourced from Refinitiv, and the index volatility is represented as the absolute value of return. *t*-statistics are in parentheses. \*\*\*, \*\*, and \* represent statistical significance at the 1%, 5%, and 10% levels, respectively.

relative BNPL demand is higher among individuals earning less. Demand is generally lower among individuals in higher income groups compared to that from individuals earning less than NZ\$30k per year. The one exception is that the absolute BNPL demand is higher for those with income in the NZ\$50–70k range. BNPL demand is lower for those who are married. It is also clear that individuals aged 46 and older have lower BNPL demand in both absolute and relative terms. The other results indicate a more nuanced picture with differences between absolute and relative BNPL demand. Females have higher relative demand but not higher absolute demand. Further, individuals with more education, as evidenced by postgraduate degrees, have lower absolute demand but higher relative demand. In the last column of Table 1, we include all variables in the regression to gauge their relative impacts on BNPL demand. The results are consistent with those for the respective groups of characteristics with the exception that the coefficients for postgraduate degrees are now positive and consistent for both absolute and relative BNPL. This result indicates that after controlling for gender, age, income, and marital status, higher-educated individuals tend to have higher demand for BNPL arrangements.

In Table 2, we present results that relate to possible seasonal effects on BNPL demand at the country level.<sup>2</sup> These indicate there is higher absolute and relative demand on Tuesdays, Wednesdays, and Thursdays (compared to Mondays). However, there is variation in the weekend results. Absolute demand is lower on weekends than on Mondays, and relative demand is higher on weekends. Both absolute and relative

<sup>2</sup> We aggregate all enquiries across different applicants' characteristics and regions into country-level daily observations. This is to minimize potential biases driven by these personal and regional characteristics.

demand is higher in April, May, and December than it is in January. However, there is not a consistent pattern in other months. Absolute demand is lower on school and public holidays than on other days, but relative demand shows an opposite pattern. We have not been able to develop plausible reasons for the seasonality we document, so encourage future research in this area.<sup>3</sup>

New Zealand enforced the first COVID-19 lockdown across the country between 25 March 2020 and 13 May 2020. This had a big impact on the economy, so we investigate if this lockdown significantly impacts absolute and relative BNPL demands using country-level data

<sup>3</sup> We also check whether consumers in different regions could behave differently in terms of BNPL demand (we thank an anonymous referee for suggesting this). We split our sample and compare the results between Auckland region and all other regions, and between North Island and South Island. We reproduce the results in Tables 1 and 2. We find that despite some variations in the magnitude of the coefficients, the statistical significance and sign of the coefficients are similar to those in Table 1. The coefficients for postgraduate degrees are apparently sensitive to the sub-samples for the dependent variable of absolute BNPL, though. The sub-sample results for Table 2 generally indicate that there are not considerable discrepancies across the sub-samples for both absolute and relative BNPL dependent variables. We, therefore, conclude that there are no discernible differences between consumers in Auckland region and other regions or between north and south islands in the effects of their characteristics and behaviors on their demand for buy now pay later arrangements. The additional results are not reported to save space but are available upon request.

from 20 (5) days before through 20 (5) days after the lockdown period.<sup>4</sup> The results in Table 3 indicate that both absolute and relative BNPL demand increased following the lockdown. This is evident in the [-20, +20] and [-5, +5] windows for absolute demand and in the [-20, +20] interval for relative demand. Relative demand was also higher during the lockdown than it was prior to lockdown. The increase in absolute demand following the lockdowns is somewhat expected given the likely instances of deferred consumption. However, the increased relative demand during lockdowns indicates that consumers found BNPL more accessible than credit such as personal loans during this time. The higher relative demand following lockdowns points to a continuation in the popularity of BNPL.

In 2019 and 2020, New Zealand introduced stricter personal lending regulations. For instance, on 20 December 2019, stronger financial penalties were introduced for irresponsible lending, with borrowers given unsuitable loans able to claim statutory damages. Then, on May 1, 2020, interest rate caps were introduced, with interest and fees limited to 100 % of the amount borrowed.<sup>5</sup> Although this regulation did not apply to BNPL credit, it was widely discussed in the media.

We use the above two events to investigate whether they impact BNPL demand. The results in Table 4 indicate that both absolute and relative BNPL demand decline following these regulation changes. This is reflected by the [-20, +20] and [-5, +5] window results for absolute demand and the [-20, +20] window results for relative demand.

Finally, we use the aggregated country-level daily data to examine the relation between BNPL demand and interest rates, stock returns, and stock volatility. The results reported in Table 5 indicate that both absolute and relative demand have a negative relation with interest rates. This suggests that interest rate increases reduce the spending capacity of individuals, especially those who hold mortgages, resulting in a reduction in BNPL demand that more than offsets an assumed substitution effect. Relative BNPL demand is higher on days when stock returns are positive. However, there is no relationship between stock returns and absolute BNPL demand.

#### 4. Conclusions

We investigate the determinants of BNPL demand using a novel New Zealand database. We find that BNPL is most popular with single individuals, younger people, and those on lower incomes. Increasing interest rates tend to reduce BNPL demand. Regulations relating to

responsible lending led to a decline in BNPL demand even though these regulations did not specifically impact this sector. Finally, BNPL was a popular spending mechanism following COVID-19 lockdowns.

#### Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

#### Data availability

The authors do not have permission to share data.

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<sup>4</sup> The reasons for us to focus on the first lockdown are as follows. The first lockdown is expected to have the largest impact on people's behavior. It also takes time for people to change their behavior or purchasing habits due to changes in their living environments and financial conditions. Moreover, the first lockdown represents the highest level (level 4) of restrictions applied throughout New Zealand. Other restrictions afterward are either at lower levels or limited to certain cities or (part of) regions. They do not provide the cleanest and most restricted events for our analysis; therefore, we do not use them.

<sup>5</sup> <https://www.mbie.govt.nz/business-and-employment/consumer-protection/review-of-consumer-credit-law/changes-to-consumer-credit-law-2020/>