Motu Working Paper 21-08

The Drivers of Mothers' Parental Leave Decisions: Evidence from the Growing Up in New Zealand longitudinal survey

Motu economic & public policy research

Shakked Noy and Isabelle Sin

June 2021

Document information

Author contact details

Shakked Noy

Massachusetts Institute of Technology

77 Massachusetts Avenue

Cambridge, MA 02139, USA

shakked.noy@gmail.com

Isabelle Sin

Motu Economic and Public Policy Research

PO Box 24390

Wellington 6142, New Zealand

E-mail: isabelle.sin@motu.org.nz

Acknowledgements

We thank our policy collaborators, Deb Potter (Ministry for Women), Judy Kavanagh (Productivity Commission), Patrick Nolan (Productivity Commission), and Gail Pacheco (Productivity Commission) and our reviewers, Kate Prickett (Victoria University of Wellington) and Gail Pacheco, for their insightful input and feedback.

This report is made possible with funding from the Ministry of Social Development using Growing Up in New Zealand (GUiNZ) data collected by the University of Auckland. The data have been accessed and used in accordance with the GUiNZ Data Access Protocol.

Disclaimer

The views and interpretations in this report are those of the researchers and are not the official position of the Ministry of Social Development.

Motu Economic and Public Policy Research

PO Box 24390 info@motu.org.nz +64 4 9394250

Wellington www.motu.org.nz

New Zealand

 ISSN 1176-2667 (Print), ISSN 1177-9047 (Online).

Abstract

In this paper we compare mothers' preferred leave, anticipated leave, and realised leave to shed light on how well different types of mothers are able to predict the parental leave they will take, and the factors that drive them to deviate from their plans. We use data from the Growing Up in New Zealand longitudinal survey on mothers' preferred and anticipated leave reported antenatally, their realised leave, and the reasons they give for their leave-related choices to better understand the drivers of mothers' leave decisions. We find mothers tend to anticipate substantially less leave than they prefer, but end up taking more leave on average than they anticipate. They have a moderate ability to take their preferred leave up to a year, but very little ability to take more than a year of leave. The 52 weeks of job-protected leave specified by law may play a role in this. Financial constraints are the most important factor driving mothers back to work. Certain types of mothers, such those with low income, are particularly prone to shocks that cause them to return to work earlier than anticipated, whereas as first-time mothers who plan a longer period of leave are vulnerable to shocks that cause them to delay their return to work.

JEL codes

D1, H31, J13

Keywords

parental leave, mothers' employment, social insurance

Summary haiku

Most mothers can't pay
for the leave they want; yet some
get stuck out of work.

Contents

List of figures

List of tables

Executive summary

Research questions

Our overarching research question is why mothers take the leave they do when they have a child. To answer this question, we first examine the leave they would prefer to take, how they expect their leave to differ from this, and the constraints that drive this difference. We next analyse the reasons mothers give for returning or not returning to work. Finally, we study the extent to which mothers carry through their plans for leave and return to work, why they deviate from them, and how wellbeing nine months after the child's birth is associated with return to work and deviation from leave plans.

Data

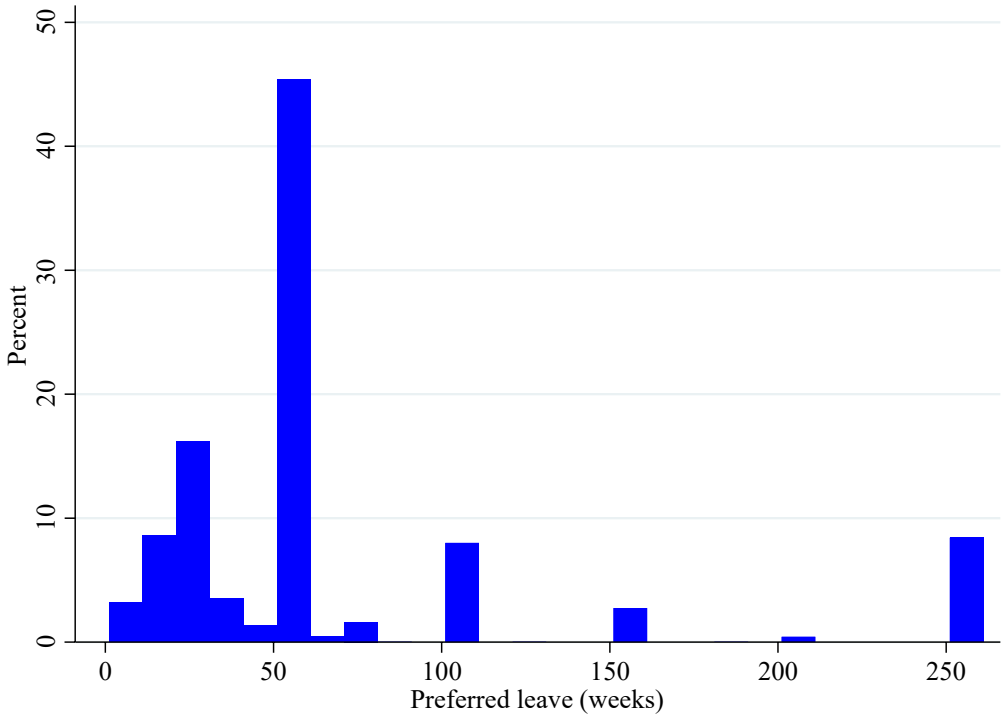
Our sample of interest is the 2,588 mothers in the *Growing Up in New Zealand* survey who were employed antenatally, who intended to take leave when their child was born, who are present in the first five survey waves, and who have non-missing data for all our major variables of interest.

The main leave variables of interest we analyse are the preferred length of leave and anticipated length of leave mothers report in the antenatal interview, and the imputed actual length of leave, which we construct from actual leave taken prior to the 9-month interview and work status in subsequent interviews.

Key findings

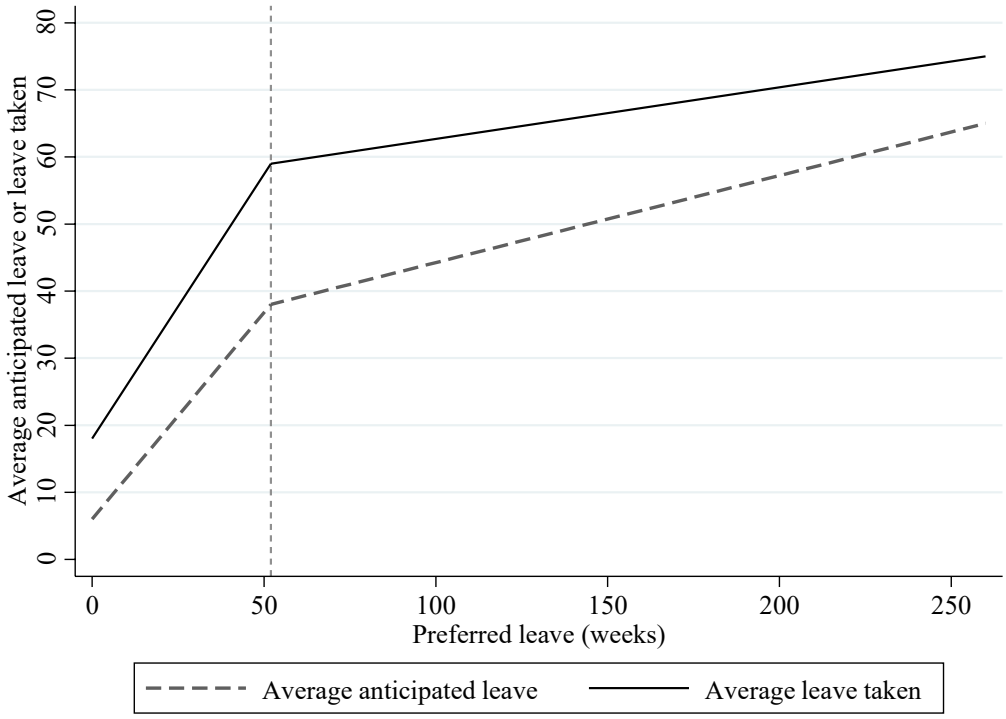
- **On average, mothers who were working antenatally preferred to take 69 weeks of parental leave, with nearly half preferring a year and 20% preferring over a year.** Conditional on personal characteristics including income, average preferred leave is particularly long for European mothers, NZ born mothers, and mothers having their first child, and is particularly short for self-employed mothers and those who work part time antenatally. However, most of the variation between individuals in preferred leave is idiosyncratic and cannot be explained by their observable characteristics.

The distribution of preferred leave for antenatally employed mothers



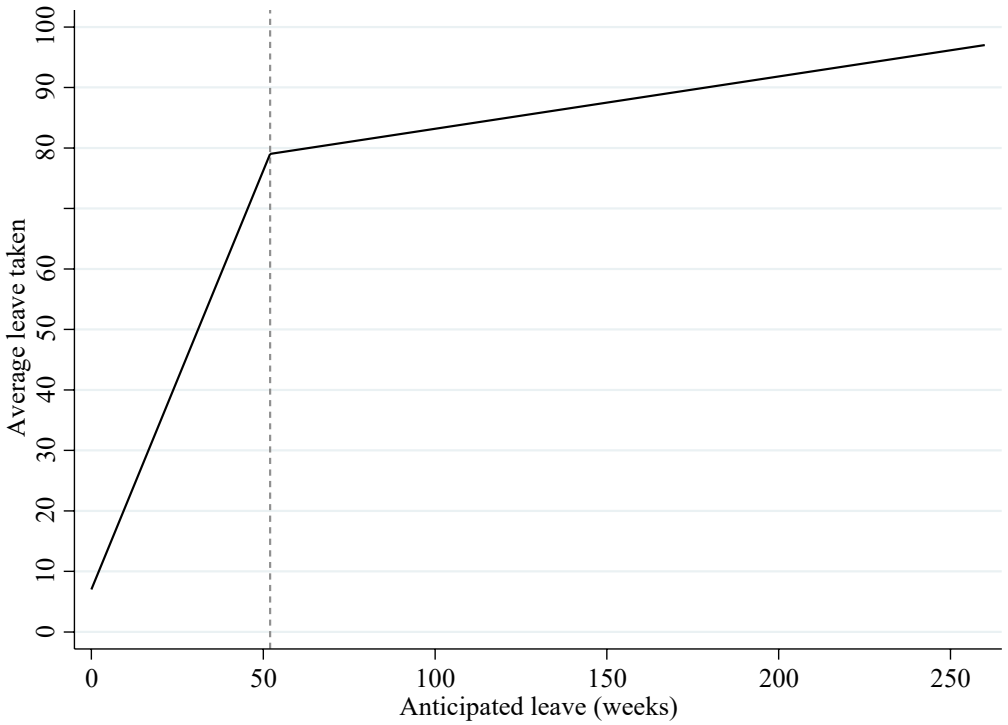
- **54% of employed mothers anticipate less parental leave than they prefer; on average they anticipate 36 weeks, and only a tiny proportion anticipate over a year.** Mothers who prefer a year or less of leave expect a moderate ability to take their preferred leave. Nearly all mothers who prefer over a year expect to take substantially less leave than they prefer. These are true regardless of self-employment status, previous children, and income. Of the mothers who anticipate less leave than they prefer, 85% report financial constraints as a reason.

Average anticipated leave and leave taken for each length of preferred leave



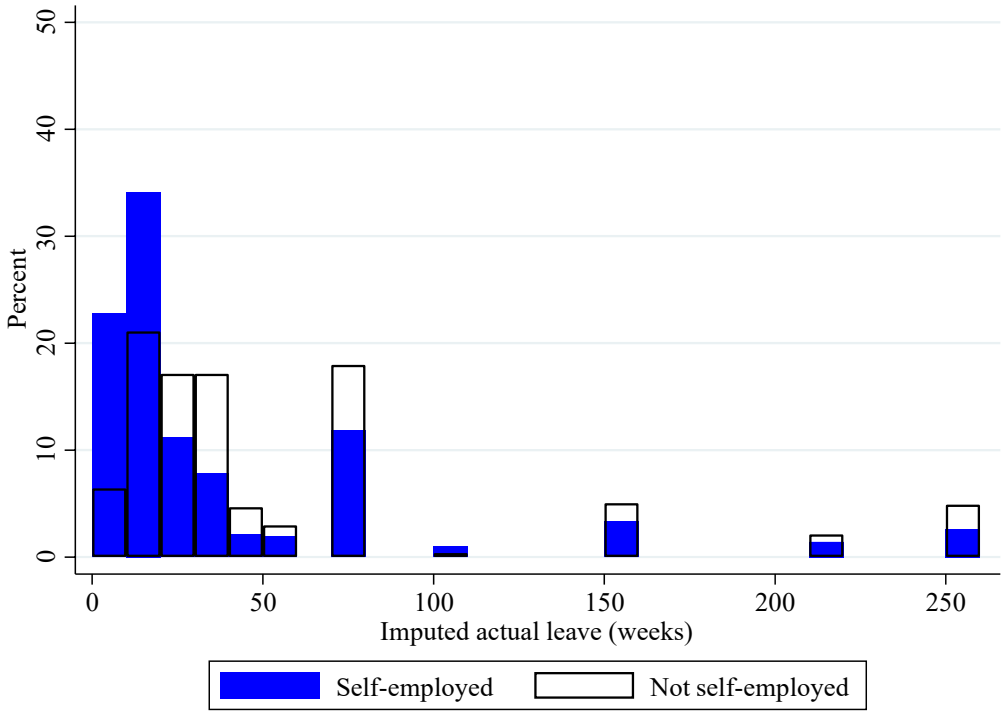
- **Fifty-six percent of mothers return to work within 9 months, and 70% of these report financial reasons for doing so.** The percentage reporting financial reasons is even higher among mothers who antenatally preferred more than 9 months of leave. However, 55% of mothers who have returned to work report returning because they enjoy work, missed their colleagues, or wanted to get out of the house. Mothers with planned pregnancies or high incomes are more likely to return because they want to, whereas those with previous children and non-Europeans are more likely to return because they have to (for example, because they run out of PPL).
- **At 45 months, 25% of mothers are not working, and 70% of these report a reason is being busy with their child or family.** Nearly half can remain out of work through their partner's financial support. However, about 20% are constrained from return to work by an inability to find a suitable job that offers the required flexibility and 20% by an inability to secure suitable childcare at a cost that makes return to work worthwhile.
- **70% of employed mothers take less leave than they would prefer and 50% take less than they anticipate; on average, they take 53 weeks.** Overall, mothers have a moderate propensity to follow through with their anticipated leave, though those who anticipate longer leave are more likely to end up away from work for much longer than they had planned.

Average leave taken for each length of anticipated leave



- **20% of mothers who are working at 9 months did not anticipate this.** Such mothers report similar reasons for returning to work to other working mothers, but are less likely to have run out of PPL. They are not more stressed about work/life balance than similar other working mothers, though working mothers in general are more stressed about work/life balance than non-working mothers.
- **Nearly a third of mothers who are not working at 9 months expected to be working.** These mothers are disproportionately likely to be constrained in their return to work, either by being busy looking after their child or family, or with challenges finding a suitable job or childcare. They are more stressed about work/life balance than similar other non-working mothers.
- **Self-employed mothers on average prefer 43 weeks of leave and take 34 weeks, compared with 71 weeks and 56 weeks respectively for employees.** They are more likely than similar employee mothers to return because of work responsibilities or enjoyment and less likely to return for financial reasons. They experience higher stress about work/life balance than working employees when they return to work.

The distribution of leave taken by self-employed vs employee mothers



Note: Self-employed mothers here may be self-employed only or both self-employed and employees.

Key implications

- Most women prefer to take more parental leave than the maximum length of PPL, which results in low-income women having less ability than high-income women to combine work with parenthood in the way they would prefer.
- The women who end up out of work for a substantial period after having a child are not necessarily those who prefer or plan this. Lack of access to suitable, affordable childcare and lack of work that accommodates parental responsibilities remain barriers to mothers returning to work and could cause long term deterioration in work skills.
- Mothers are moderately successful at taking the leave they desire up to a year, but largely unsuccessful at taking the additional leave they would like; the 52 weeks of job-protected leave may help protect the ability of mothers to take the leave they desire up to 12 months.

Introduction

In this paper we ask what affects mothers' work choices and outcomes after they give birth to a child. Research on gender inequality shows that parenthood is a major factor in generating gender disparities within the labour market as well as being the cause of financial hardship for a large number of families. Furthermore, decisions such as when to return to work can have long term consequences for a woman's employability and career trajectory. The decisions of mothers are partly the result of preferences, but are also influenced by constraints such as the need to cover costs of living, ability to take time away from work, eligibility for parental leave, and the availability and affordability of childcare.

We use detailed questions from the *Growing Up in New Zealand* (GUiNZ) survey, including mothers' motivations for various decisions, to examine the drivers behind women's work outcomes when they have children, particularly how various constraints affect the decisions they make and how this differs for women with different characteristics. Through comparing women's anticipated outcomes with their realised outcomes, we shed light on expectant mothers' ability to realise their plans for how they will combine parenthood with work and the factors that lead them to deviate from their plans.

Specifically, we investigate the following research questions. How much leave do mothers prefer, anticipate, and take, and how do these vary between mothers with different characteristics? How do preferred, anticipated, and realised leave differ from each other within individuals? For what reasons do mothers anticipate taking less leave than they prefer, and how do these reasons differ between mothers with different characteristics? Similarly, for what reason do mothers return or not return to work at 9 months, and how do these reasons differ by the mother's characteristics? How are stress over work-life balance and finances at 9 and 24 months associated with deviations from mothers' plans for return to work?

Particular focuses are the difference between mothers who were self-employed antenatally and those who were employees; the difference between first-time mothers and mothers with previous children; and the difference between high-income and low-income mothers. Understanding differences in how such women combine work with parenthood is important for formulating policy that caters to a diverse groups of mothers.

We conceptualise mothers before the birth of their child as having preferences about when they will return to work after the birth of their child and having expectations about the constraints they will face. Their preferences may be affected by family and cultural expectations or external factors, rather than being purely personal. Constraints may either prevent mothers remaining on

leave or prevent them returning to work. Antenatally, mothers plan their return to work based on their preferences and these expected constraints.

However, in the process of having their child and caring for her, mothers may find their preferences change, for example, if they discover they enjoy childcare more than they expected to. They may also learn their expectations of constraints were not accurate, or face changes in circumstances, such as the loss or gain of a partner, that affect their constraints. Their realised time of return to work results from the combination of their updated preferences and these realised constraints.

Within this framework, differences between the leave mothers would prefer and the leave they anticipate taking are driven by expected constraints, and differences between anticipated leave and realised leave are driven by updating of preferences, learning about true constraints, or shocks to external circumstances. For example, how much mothers enjoy spending time with their child is an example of a preference, lack of access to paid parental leave imposes a constraint, and the breakdown of a relationship would be a shock.

Our conceptual framework predicts that different groups of mothers, endowed with different preferences, constraints, and information, will react to childbirth differently. For example, self-employed mothers may have greater flexibility in adjusting their hours post-birth, but may also be so essential to their business that they are forced to return to work quickly. First-time mothers may know less about their preferences and ability to balance work and childcare than mothers with previous children, so may deviate from their plans and preferences by more. High-income mothers are likely to face fewer financial constraints than low-income mothers, but also face a higher opportunity cost of staying home.

When the GUiNZ children were born in 2009-2010, mothers who had been employed for at least 10 hours a week on average for any 26 weeks out of the 52 weeks preceding the birth of their child were entitled to 14 weeks of paid parental leave (PPL). Parental leave payments were equal to their pre-birth weekly earnings, capped at the average New Zealand wage (Forbes, 2009).

In addition, mothers who were continuously employed at the same employer for the 52 weeks prior to the birth of their child were entitled to an additional 38 weeks of unpaid job-protected leave, resulting in 52 weeks total of paid and unpaid leave. Mothers who were continuously employed at the same employer for the 26 weeks prior to the birth of their child were entitled to an additional 12 weeks of unpaid leave, resulting in 26 weeks total of paid and unpaid leave.[1]

Government policy at this time also provided several other financial supports for families. Depending on family income and number of dependents, mothers could be eligible for a Parental Tax Credit (PTC) of up to $150 per child per week for

[1] http://www.legislation.govt.nz/act/public/1987/0129/latest/whole.html

the first 8 weeks following the birth of the child.[2] This credit was unable to be received at the same time as the PPL. Mothers were also eligible for a Family Tax Credit for each child annually independent of household income, and sole parents were eligible for a Domestic Purposes Benefit of up to $316.22 per week, which was able to be claimed independently of employment status. In addition, the government subsidised any care required for children in nurseries or preschools to a maximum of $181.50 per week.[3] These historical policy settings will have shaped the constraints and outcomes of the cohort in our sample.

This research contributes to several literatures. A vast literature of both international and New Zealand research shows that women still earn less than comparable men in essentially every country, and that the difference is particularly pronounced for parents. (e.g. Pacheco et al, 2017, Sin et al, 2017, Sin et al., 2018, Olivetti and Petrongolo, 2016, Angelov and Johansson, 2016). As Kleven et al. (2018) show, the parental gender pay gap is partially driven by the post-birth labour market decisions of mothers, who tend to reduce their labour force participation and hours worked and switch to more "family-friendly" occupations and roles. Peterson et al. (2018) also show mothers struggle with work-life balance, with time management and work-related issues recorded as the biggest challenges mothers face in returning to the work force.

This research adds to this literature by elucidating the roles of preferences and various constraints in the labour market decisions New Zealand mothers make following childbirth. From a policy perspective, it provides insight into preferences for parental leave that will inform PPL policy. It also highlights how policies that affect the constraints faced by mothers, such as childcare subsidies and paid parental leave, affect the labour market outcomes of mothers, and by extension the parental gender pay gap.

Several prior New Zealand studies have investigated the effect of access to childcare on parental work decisions and the predictors of taking paid parental leave. Morton et al. (2012) find issues pertaining to childcare to be the most common reason for unemployment among mothers. Similarly, Statistics New Zealand (2018) show childcare difficulties that affect a parent's work are not uncommon and affect sole parents more than two-parent families. Several studies use GUiNZ data to analyse the characteristics that predict taking parental leave (Meissel et al., 2019) and using childcare and childcare subsidies (Bird et al., 2016). We add to this literature by presenting a more complete view of changes in mothers' work and their drivers, and implications for the gender wage gap.

[2] https://www.birthcare.co.nz/content/121_42_ir753-working-for-families.pdf
[3] https://www.workandincome.govt.nz/products/benefit-rates/benefit-rates-april-2009.html

An international literature exists on the benefits of self-employment for mothers, which shows motherhood is a predictor of self-employment among women because of the flexibility it provides, though New Zealand-specific evidence is scant (Aidis & Wetzels, 2007, Caballero, 2017, Matysiak and Mynarska, 2013, Joona, 2017). However, little attention has been paid to differences between women who are self-employed before the birth of their child and those who are employees in their take-up of parental leave and the effect of parenthood on their longer term work outcomes and careers. We help fill this gap by comparing how self-employed and employee women balance work with parenthood and drawing implications for policy that will serve both employees and self-employed mothers well.

Finally, a small literature studies parents' plans for combining work and childcare and how these compare with actual behaviour. Notably, Kuziemko et al. (2018) show women in the US and UK underestimate how hard and costly it will be to work after they become parents, which may lead to sub-optimal decisions such as over-investing in education. Meissel et al. (2019) use GUiNZ data to describe mothers' intended and actual return to work, but don't compare these within individuals. We add to this literature by describing the extent to which mothers follow their intentions for return to work and delving into the reasons they deviate from their intentions.

This research speaks to several current policy issues. The first is the enduring policy problem of unequal gender pay and lifetime earnings inequality, which affect women's material wellbeing throughout life and their ability to save for retirement, as well as the wellbeing of their children. The second is the interplay of paid and unpaid work, with caring being a major form of unpaid work. Caring is predominantly performed by women and has major consequences for their labour market participation and outcomes.

This paper faces a few key limitations. One limitation is our inability to precisely observe the leave taken by mothers who are out of work for more than 9 months; our imputed leave variable contains measurement error for mothers who had not returned to work by the 9-month interview. A second limitation is that mothers may differ in their interpretation of the question "how much leave would you prefer to take?"[4] Differences in interpretation between mothers of different demographic groups may contribute to the differences in preferred leave we observe between those groups. A final limitation is that due to the absence of quasi-random variation, this study is purely descriptive, and cannot speak to the causal effects of different factors on mothers' outcomes. This

[4] In our conceptual framework, we interpret this question as asking the leave mothers would take if they faced no constraints. However, even this definition contains ambiguity. For instance, if a self-employed mother's business would suffer in her absence, avoiding this outcome might be considered part of her preferences or an external constraint.

means the policy implications we draw from the research are speculative, albeit based in clear theoretical considerations and descriptive evidence.

Method

In this paper, we draw on data from the Growing Up in New Zealand survey, a longitudinal survey of the families of 6,846 children born in the Auckland, Waikato, and Counties-Manukau regions in 2009-2010. The participating families are roughly ethnically and socioeconomically representative of the overall New Zealand population, though Pacific and Asian mothers are slightly oversampled and Māori mothers are slightly under sampled (Morton et al. 2013; Morton et al. 2014).

We focus on the first five waves of the survey, conducted approximately three months before the children's birth (the "antenatal" survey) and approximately nine, 24, 45, and 54 months after the children's birth.

Sample construction

In our analyses, we restrict to a sample of mothers who satisfy three criteria. First, the mother must be present across the five surveys. Imposing this restriction decreases the sample size to 5,605. Second, the mother must be employed (self-employed or an employee) during the antenatal survey, because mothers must be employed to take leave, which is our focus. Antenatal employment is identified using the employment status question in the antenatal survey.[5] This restriction decreases the sample to 3,212. Mothers with previous children are more likely to be dropped in this step than are first-time mothers; the mothers with previous children retained in our sample are those who are more strongly attached to the labour market, as evidenced by their return to work after having their first child. This should be borne in mind in interpreting our results.

Finally, we keep only mothers who say they intend to take leave (because only these mothers are asked about their preferred length of leave) and give non-missing responses to the questions about anticipated and preferred leave (described in the data appendix). These restrictions drop another 421 and 203 mothers respectively.

This leaves a final sample of 2,588 mothers, whom we use in our main analyses.[6] In some sub-analyses, we distinguish between the 1,314 mothers in

[5] Specifically, mothers are considered employed if they are in paid work at the date of the survey, including if they are on leave.

[6] Mothers who were employed antenatally but were dropped for other reasons are slightly different from our full sample of mothers in terms of observable characteristics. They tend to be slightly younger, less likely to have planned their pregnancy, more likely to have previous children, more likely to belong to an ethnic minority, and less educated.

our sample for whom this is their first child and the 1,274 mothers with previous children.

Some of the mothers in our sample are missing data for covariates we use in our analyses (e.g. income). In our main regressions we retain these observations and include "missing value" dummies. In analyses where we split the sample by whether a mother is above or below median income, we exclude mothers with missing income.

Leave measures

In the antenatal survey, mothers are asked how much leave (paid and unpaid) they would prefer and how much they anticipate. We use their responses as our measures of preferred and anticipated leave. In the 9-month survey mothers who have completed their leave are asked how long it was; this is our actual leave measure, right-censored at 9 months. Our main measure of realised leave is "imputed actual leave", which is actual leave for mothers who returned to work by the 9-month survey and is imputed based on employment status in subsequent waves for mothers still on leave at 9 months. See the data appendix for a full description of the construction of our leave measures and other variables used in the analysis.

Due to its construction, our "imputed actual leave" variable is continuous up to 39 weeks, but afterwards is clustered at a few discrete points midway between survey waves. Effectively we observe realized leave measured with some non-classical error. The positive and negative measurement errors are likely to largely balance each other out; to verify measurement error is not driving our findings, we run alternative tobit regressions using actual leave right-censored at 39 weeks.

Empirical strategy

In addition to summarising the outcomes and situations of mothers, we use a range of regressions to explore the conditional relationships between outcomes and mothers' characteristics.

We first investigate how mothers' preferences and expectations of leave and leave outcomes vary with their circumstances and characteristics. We regress each of preferred, anticipated, actual, and imputed actual leave on a set of characteristics of the mother and her antenatal situation. The regressions of preferred, anticipated, and imputed actual leave are ordinary least squares regressions; to account for the right-censored nature of actual leave we use a tobit regression. In our conceptual framework, mothers are endowed with preferences and face constraints. Their preferences combine with expected constraints to give anticipated leave and combine with realised constraints to give actual leave. These regressions illuminate the demographic characteristics that predict these variables.

We next explore how the types of leave vary with each other across individuals, which sheds light on the extent to which mothers are constrained in their leave, and their ability to follow their leave plans. We run linear and piecewise linear regressions of one type of leave, such as anticipated leave, on another type, such as preferred leave. We also run versions in which we allow the relationship to differ by several maternal characteristics. These regressions are further explained in the data appendix.

We next use regressions to investigate the types of mothers who are more likely to anticipate less leave than they prefer for each different reason. We include our full sample of mothers and construct binary dependent variables that take the value 1 if the mother reported less anticipated leave than preferred leave *and* said a particular reason contributed to this. The coefficients thus give the conditional correlation between maternal characteristics and anticipating less leave than preferred for the reason. We use a similar approach to explore the relationship between mother's characteristics and either returning or not returning to work by 9 months. These analyses of mothers' stated reasons provide insight into the types of constraint that prevent mothers from taking the leave they prefer or cause them to change their leave plans.

Deviations from anticipated leave may be desirable or undesirable depending on whether they're caused by a tightening of constraints, a loosening of constraints, or a change in preferences. To explore whether deviations from plan are desirable or undesirable, we explore the relationship between deviating from leave plans and wellbeing. We regress measures of stress at 9 and 24 months on three dummy variables that represent (1) not being in work and having anticipated not being in work, (2) not being in work despite anticipating being in work, and (3) being in work despite anticipating not being in work. The omitted category consists of mothers who are in work and correctly anticipated this. We additionally control for whether the mother currently works part-time, whether she is contemporaneously partially or solely self-employed, and a full set of controls for personal characteristics and antenatal situation.

Engagement with policy collaborators

This research project was conceived and conducted in collaboration with policy experts at the Ministry for Women and the Productivity Commission. The policy collaborators were consulted on the research question, analytical approach, several rounds of empirical results, and the interpretation of the results. Their feedback was incorporated into this report. Any errors, omissions, or misinterpretations that remain are the authors' own.

Results

Descriptive statistics

The average antenatal characteristics of the mothers in our sample are given in the second column of Table 1, and the characteristics of all GUiNZ mothers are given in the first column for comparison. The two samples differ substantially in a number of characteristics. For instance, mothers in our analysis sample are older, more likely to be European, and more educated. The most important reason for the differences is likely to be our requirement for mothers to be employed antenatally.

When we focus on our sample of mothers, the table shows the majority of these mothers are aged 25 to 34, though 30% are 35 or over. Nearly two thirds are European, with significant Asian and Māori/Pacific minorities. They are highly educated, with 54% possessing a university degree and only 19% possessing a high school qualification or less. Our requirements that included mothers be present in every survey wave and be working antenatally are likely to favour more educated mothers. A sizable minority are at least partially self-employed (16%), and about a quarter of all mothers work part-time. Average log personal income is 3.738, which corresponds to $42,000 per year. Fifty percent of the mothers select "Professional" as their occupation, 18% are Administrative Workers, and 11% are Managers.

Table 1: Descriptive statistics

Variable	Full GUiNZ population	Analysis sample	Analysis sample: First-time mothers	Analysis sample: Not first-time
Age				
- Aged under 25	0.195	0.083	0.127	0.038
- Aged 25-34	0.555	0.621	0.662	0.578
- Aged 35 or over	0.250	0.296	0.211	0.384
Pregnancy was planned	0.602	0.759	0.808	0.707
Has previous children	0.582	0.492	0.000	1.000
Mother was born overseas	0.358	0.317	0.334	0.299
Ethnicity combination				
- European only	0.475	0.622	0.655	0.589
- Māori only	0.068	0.032	0.019	0.046
- Pacific only	0.125	0.061	0.041	0.081
- Asian only	0.142	0.124	0.134	0.115
- European and Māori	0.091	0.078	0.073	0.082
- Other ethnicity combination	0.099	0.083	0.078	0.088
Educational qualifications				

- None or school only	0.311	0.193	0.175	0.211
- Post-school	0.305	0.270	0.259	0.283
- University degree	0.383	0.536	0.566	0.505
- Missing qualification info	0.001	0.001	0.000	0.002
Antenatal employment status				
- Employee only	0.452	0.837	0.865	0.807
- Self-employed only	0.047	0.082	0.057	0.108
- Unemployed	0.080	-	-	-
- Studying	0.268	-	-	-
- Not in the labour force	0.068	-	-	-
- Missing employment status	0.046	-	-	-
Works part time antenatally	0.140	0.262	0.113	0.415
Antenatal personal income (log)				
- mean	3.362	3.738	3.896	3.574
- standard deviation	0.816	0.033	0.027	0.039
Occupation (employed mothers only)				
- Professional	0.453	0.500	0.508	0.495
- Manager	0.100	0.107	0.121	0.093
- Technician or trade worker	0.039	0.037	0.041	0.033
- Service worker	0.089	0.072	0.072	0.071
- Administrative worker	0.198	0.182	0.168	0.195
- Sales worker	0.070	0.065	0.058	0.072
- Machinery operator/driver	0.007	0.005	0.005	0.005
- Labourer	0.046	0.032	0.027	0.036
Observations	6,822	2,588	1,314	1,274

This table displays antenatal descriptive statistics for the full GUiNZ population of mothers, our full analysis sample of mothers, and then splits up the statistics according to whether this is the mother's first child.

Comparing the third and fourth columns, which present characteristics of first-time mothers and mothers with previous children respectively (each 50% of the sample), we see first-time mothers are younger than mothers with previous children and slightly more educated. First-time mothers are more likely to be European, whereas mothers with previous children are more likely to be Māori or Pacific, reflecting the lower average number of children borne by European mothers. These ethnic differences likely contribute to the difference in education. Mothers with previous children are about 4 times as likely to be working part-time than first-time mothers, which is reflected in their lower antenatal personal incomes, and about twice as likely to be exclusively self-employed.

One important question is how commonly mothers lose their jobs while on leave. Although we do not observe this specifically, we can observe if mothers transition from leave to being out of employment between survey waves. Table 2 show the distribution of mothers by labour force status in each survey wave. Mothers classified as “employed and working” are mothers who currently have a

paid job and are not still on leave. Mothers classified as "starting work in the next 4 weeks" are those who do not currently have a paid job, but "have a job they will be starting in the next 4 weeks." Mothers classified as "searching for a job" are those who are not in a paid job, are not starting a paid job in the next 4 weeks, looked for paid work in the last 4 weeks, and reported using at least one of the provided list of methods of searching for work. Mothers "on parental leave" are those who are still on leave and who say the type of leave they took was parental leave. Mothers "on other type of leave" are those who are still on leave and say they took some non-parental type of leave. Mothers "not employed and not seeking work" are those who fall into none of the above categories.[7]

Table 2: Mothers' labour market status

Status	9 months	24 months	45 months	54 months
Employed and working	0.564	0.701	0.751	0.806
Starting work in the next 4 weeks	0.022	0.014	Included with "employed and working"	0.007
Searching for a job	0.009	0.017	Included with "not employed and not seeking work"	0.029
On parental leave	0.254	0.045	0.033	0.005
On other type of leave	0.004	Included with "not employed and not seeking work"		
Not employed and not seeking work	0.146	0.223	0.216	0.154

This table presents the percentage of our full sample of mothers who fall into each of the labour market status categories in each postnatal survey.

The table shows that by the 9-month survey, only 25% remain on parental leave, but less than 1% are out of work and searching for a job. If a high proportion of mothers lost their jobs during the first 9 months of their parental leave and struggled to find new jobs, we would expect the percentage searching for work to be higher. We note, however, that 15% of mothers have exited the labour force at this stage. Some of these may have exited after losing their jobs and becoming discouraged in their job search. Others may have lost their jobs and plan to begin searching for new ones at their preferred date of return to work. The unemployment rate for women in NZ in 2010 was 6.3-6.6%, relatively

[7] Our "employed and working", "on parental leave", and "on other type of leave" mothers would be classed by the Household Labour Force Survey as "employed", our "starting a job" and "searching" mothers would fall into the "unemployed" category, and our mothers "not employed and not seeking work" would fall into the "not in the labour force" category.

high due to the Global Financial Crisis, which could have discouraged mothers who lost their jobs from searching for work.[8]

The percentage of mothers in our sample searching for work remains below 2% in the 24-month survey, whereas the percentage outside the labour force rises to 22%. These statistics do not suggest mothers commonly lose their jobs while on parental leave, in line with employment protection policy being generally effective, though we can't conclude this definitively.

More broadly, Table 2 shows the percentage of mothers who are working increases steadily over survey waves to reach 81% in the 54-month survey, while the percentage on parental leave steadily decreases and is near zero by 54 months. The percentage of mothers who are not in the labour force, meaning they are neither employed (whether working or on leave) nor seeking work, peaks at 24 months as some mothers end their leave by exiting the labour force, and subsequently declines as they return to employment. These patterns are consistent with prior research based on administrative data (Sin et al., 2018).

Appendix Table 3 replicates the layout of Table 2 (excluding the 45 month column due to data availability) and presents for each category the percentage whose household is receiving benefit income. Benefit rates overall are high; even among those employed and working at 9 months, 32% received some benefit support, though by 54 months the proportion of this group receiving a benefit had fallen to 24%. In each wave, at least half those searching for a job are receiving a benefit, and 46 to 51% of those not employed and not seeking work are receiving a benefit.

The leave mothers prefer, anticipate, and take

Distribution of leave

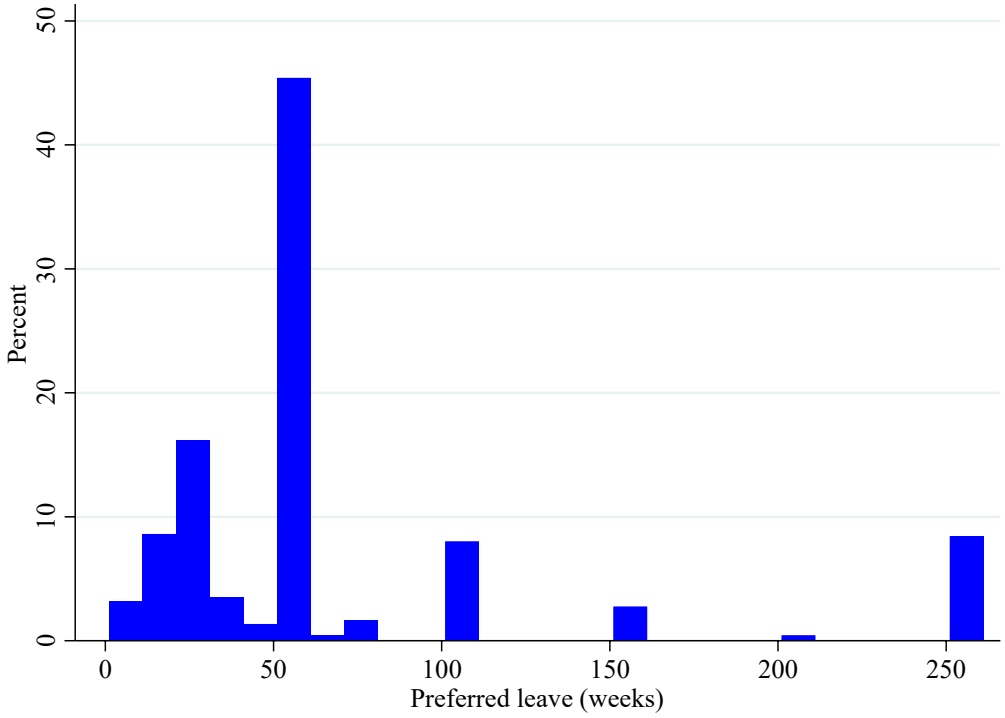
We begin by exploring the distributions of leave lengths. The three panels of Figure 1 show the distributions of preferred, anticipated, and imputed actual leave; the means and standard deviations of the types of leave length are given in Appendix Table 1. Average preferred leave is 69 weeks, with nearly half of expectant mothers preferring to take a year of leave and about 20% preferring more.

By contrast, anticipated leave is much more compressed towards zero; it is only 36 weeks on average, and very few mothers anticipate over a year. As with preferred leave, there is a peak at a year. As well as being a focal point because it is a round number, this is the total length of paid and unpaid job-protected leave for which mothers in our sample with antenatal job stability were eligible.

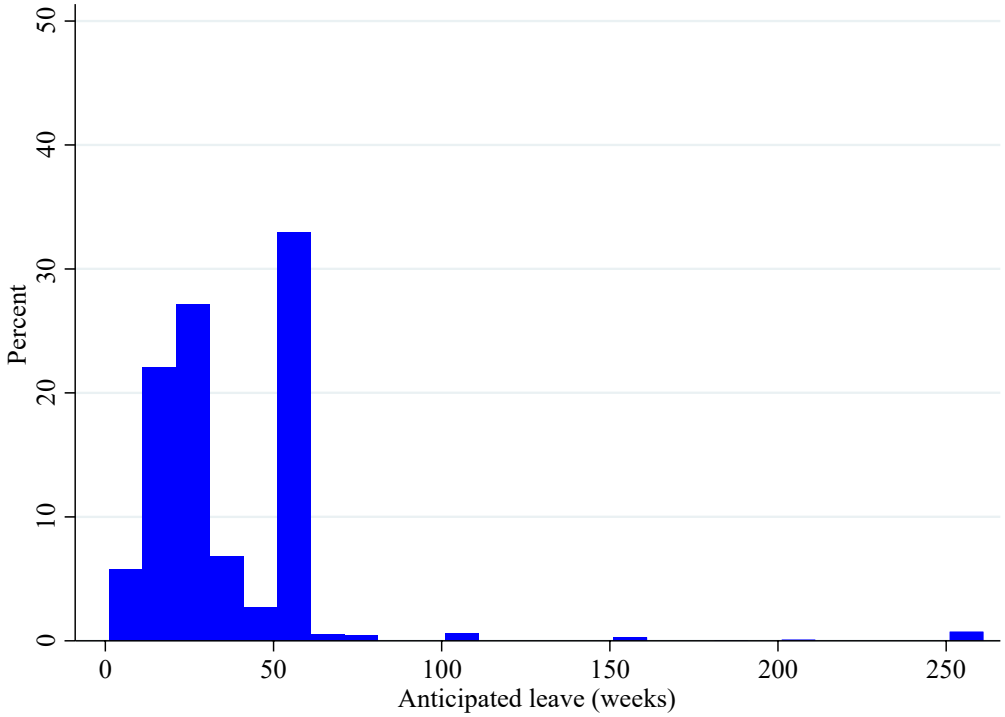
[8] https://www.stats.govt.nz/indicators/unemployment-rate

Figure 1: The distributions of preferred, anticipated, and imputed actual leave

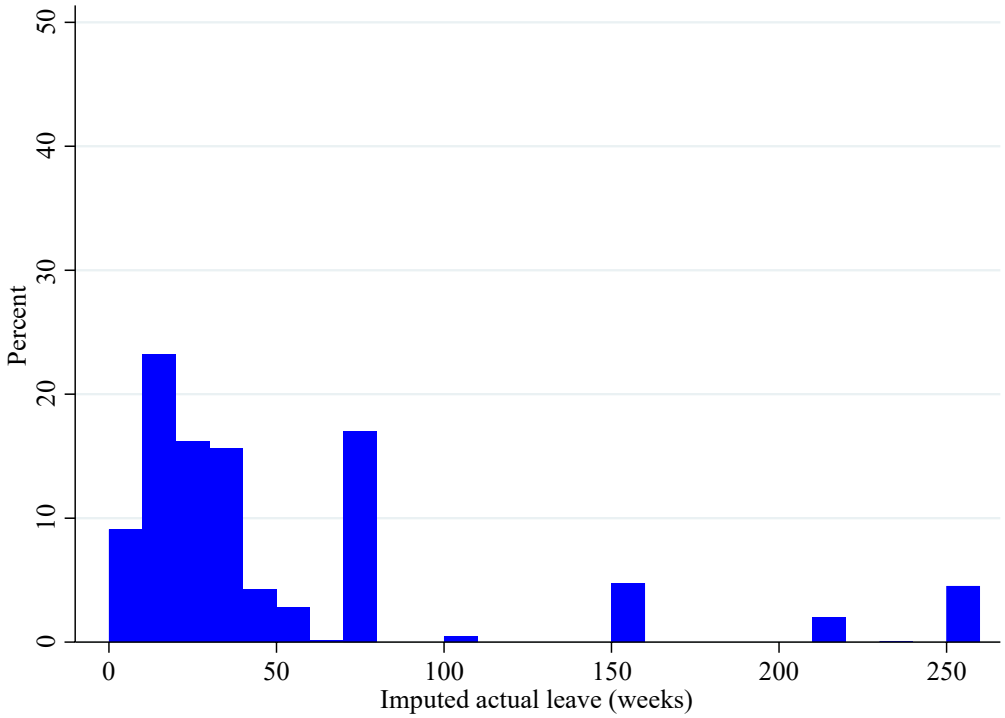
Panel A: Preferred leave



Panel B: Anticipated leave



Panel C: Imputed actual leave



Notes: The three panels of this figure are histograms of preferred (Panel A), anticipated (Panel B), and imputed actual leave (Panel C). The sample is the 2,588 antenatally employed mothers who say they intend to take some post-birth leave. Construction of imputed actual leave is described in the data appendix.

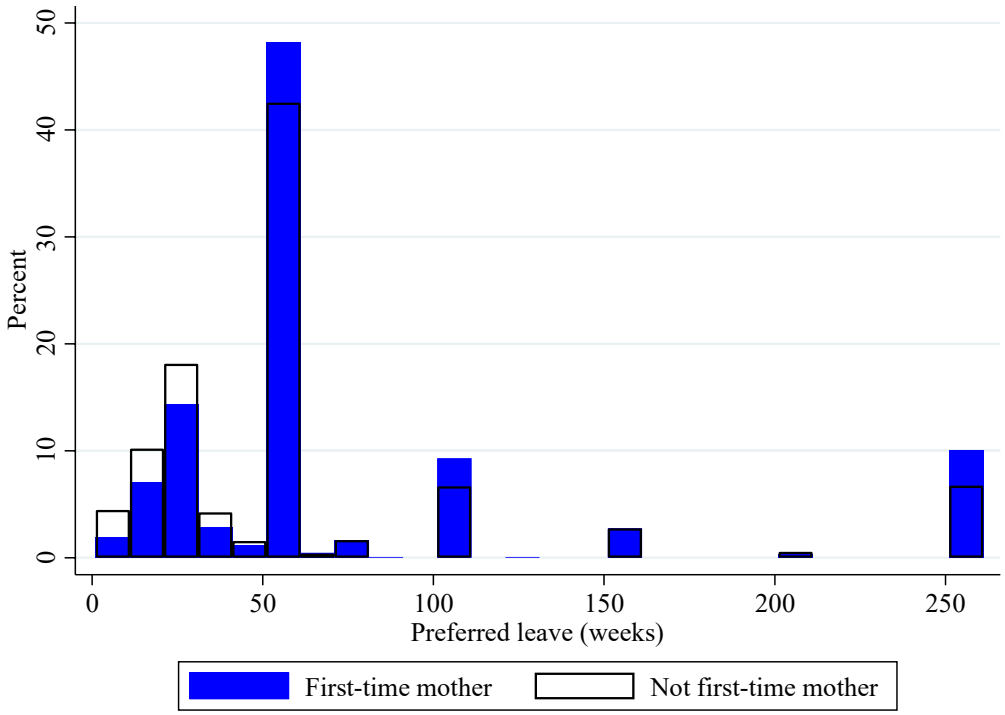
Imputed actual leave is more likely than anticipated leave to be very short or very long.[9] Around 32% of mothers take less than 20 weeks of leave, whereas about 28% anticipate taking this little. Average imputed actual leave is 53 weeks, between preferred and anticipated leave.

These differences between leave types suggest a substantial proportion of expectant mothers anticipate being constrained in the amount of leave they can take, particularly if they would prefer over a year of leave, and many end up being constrained. In addition, a substantial minority of mothers take much more leave than they anticipated: very few mothers expect to take over a year of leave, but a substantial percentage do so. These may be mothers who find themselves unexpectedly detached from the labour market.

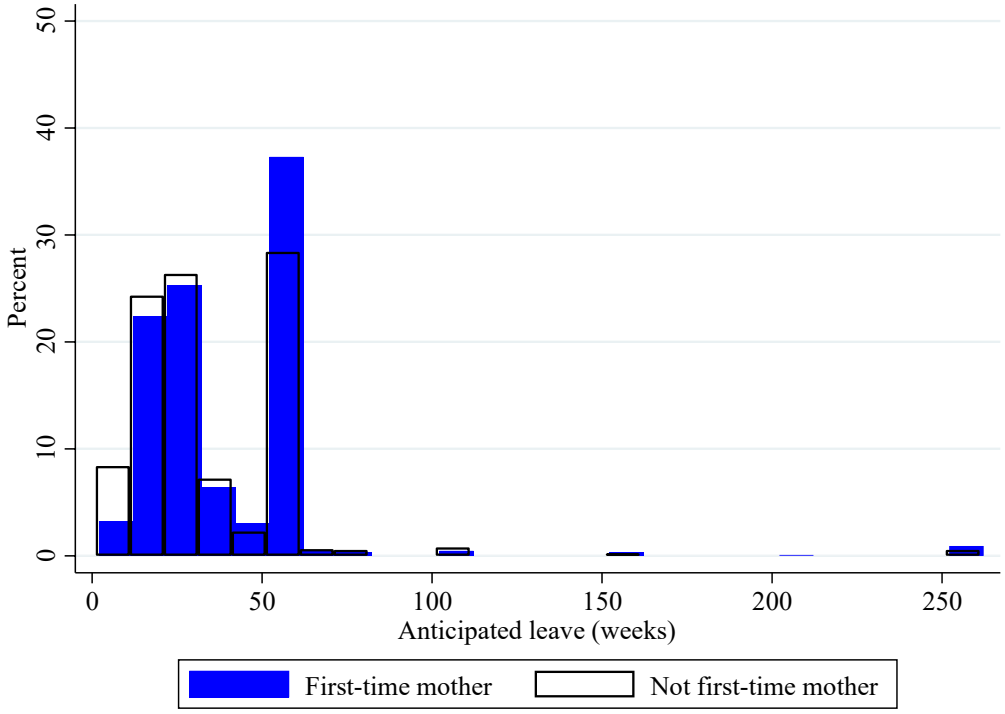
[9] Note some mothers we record as taking very long periods of leave may in fact have returned to work between survey waves, then left again.

Figure 2: The distributions of preferred, anticipated, and imputed actual leave by whether first-time mother

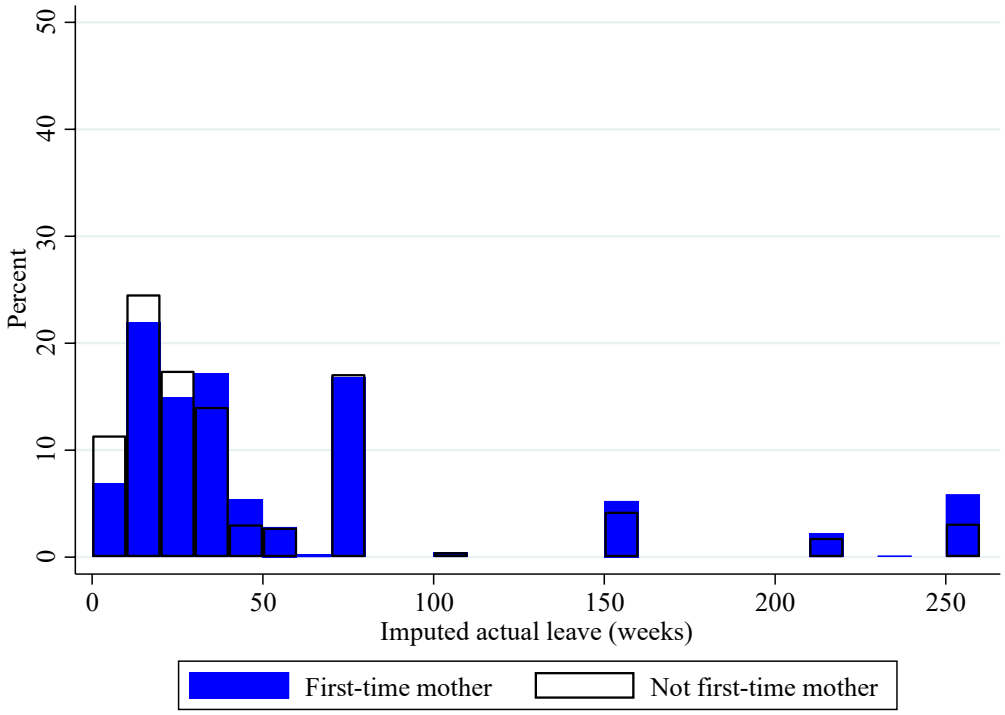
Panel A: Preferred leave



Panel B: Anticipated leave



Panel C: Imputed actual leave

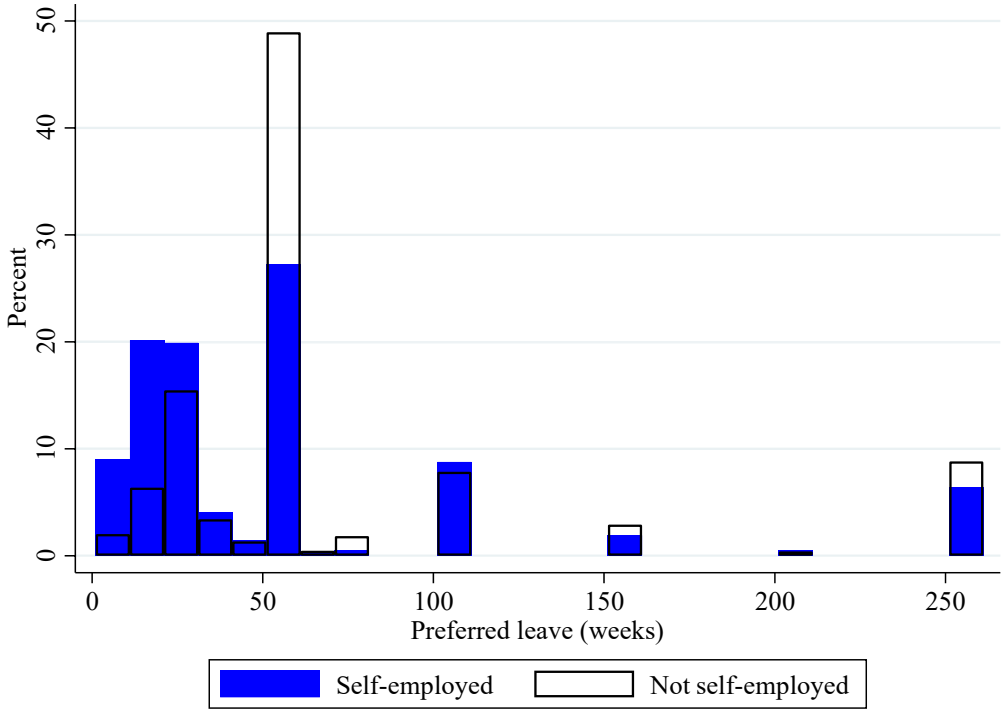


Notes: This figure replicates Figure 1, except splits the population by whether the mother has previous children. Fifty percent of mothers in the sample have previous children (1,274 observations) and 50% are first-time mothers (1,314 observations).

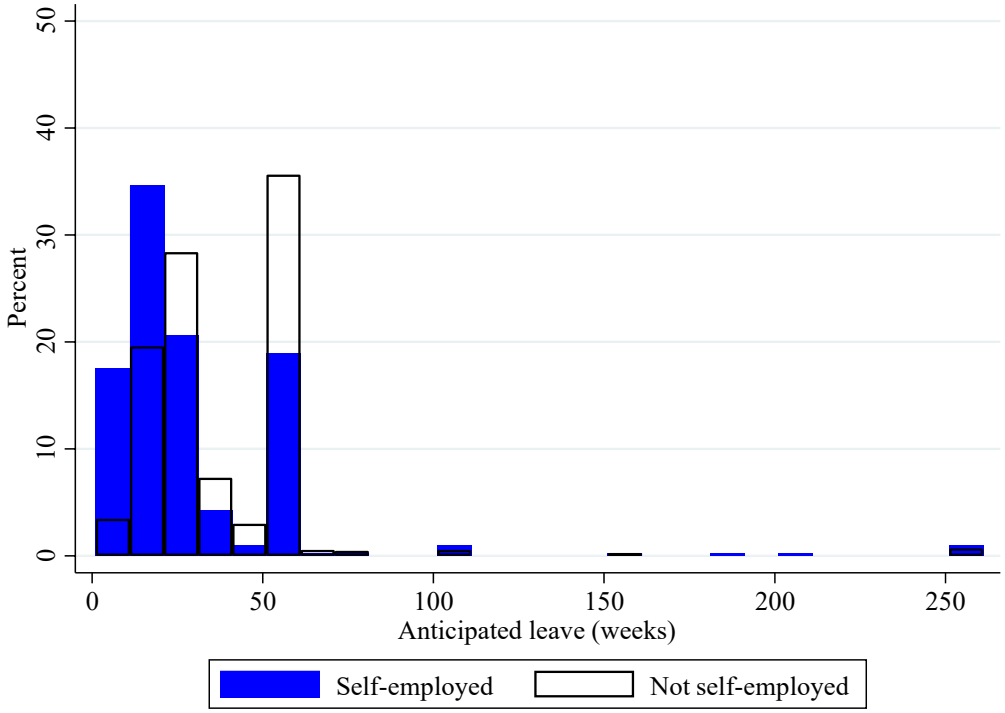
Figure 2 shows how preferred, anticipated, and actual imputed leave differ for first-time mothers compared with mothers with previous children. It shows first-time mothers prefer, anticipate, and take more leave than mothers with previous children. A contributing factor may be that first-time mothers want more time away from work to adjust to or enjoy being parents, but sample selection likely also plays a role: as discussed in the data section, the mothers with previous children included in our sample are committed workers.

Figure 3: The distributions of preferred, anticipated, and imputed actual leave by whether self-employed antenatally

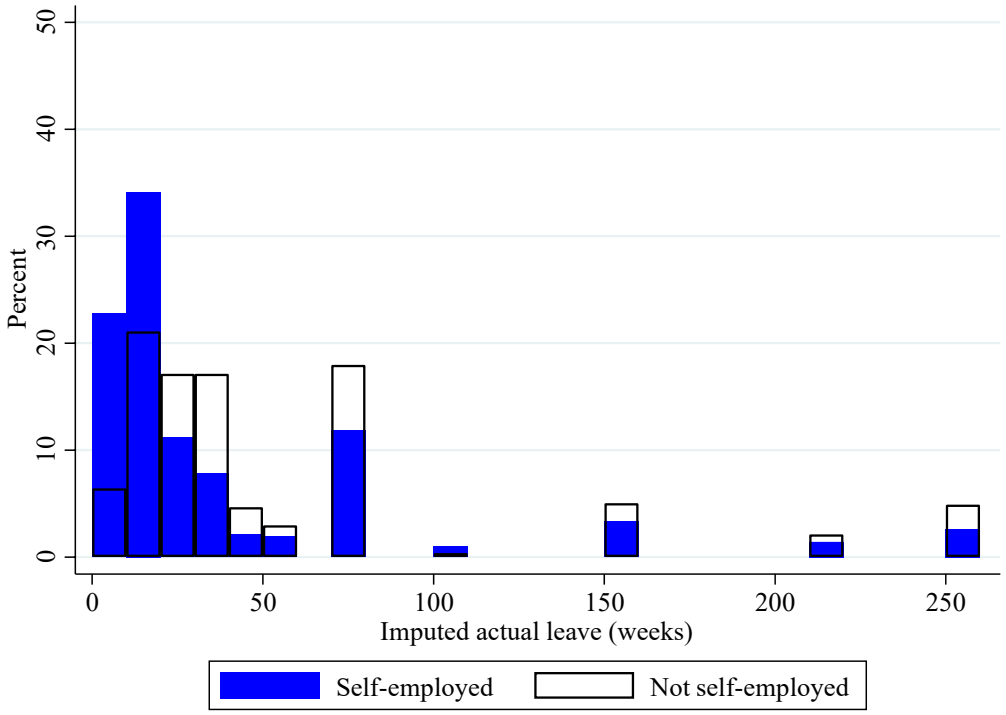
Panel A: Preferred leave



Panel B: Anticipated leave



Panel C: Imputed actual leave



Notes: This figure replicates Figure 1, except splits the population by whether the mother was antenatally self-employed. Self-employed mothers could also have been employees; mothers not self-employed were employees only. Of the mothers in this sample, 84% were antenatally employees only (2,166 observations) and 16% were antenatally at least partially self-employed (422 observations).

Similarly Figure 3 shows how preferred, anticipated, and actual imputed leave differ for mothers who were self-employed antenatally (who may have been employees as well) compared with mothers who were employees only. It shows self-employed mothers prefer, anticipate, and take substantially less leave. For instance, self-employed mothers are more than three times as likely as employee mothers to take less than 10 weeks of leave. This may reflect a greater ability on the part of self-employed mothers to flexibly adjust their work schedule and thereby enable an early return to work. Alternatively, it may reflect the necessity of self-employed mothers personally being back at work to keep their businesses going. It should be noted self-employed mothers are very heterogeneous: some are highly successful entrepreneurs, whereas others are marginalized workers who would prefer waged work but are unable to secure it. Different types of self-employed mothers could have very different preferences and constraints.

Leave of mothers in disadvantaged groups

Appendix Table 2 presents the means and standard deviations of leave lengths among a number of subgroups of mothers who might be considered disadvantaged: mothers who are below the median personal income in the antenatal survey, mothers who report receiving government benefits of any kind in the 12 months before the antenatal survey, mothers who lack a partner either during the antenatal or 9 month survey, and mothers who live in the 30% most socioeconomically deprived areas in New Zealand.

The table does not reveal consistent differences between disadvantaged groups and the population as a whole. With exception of single mothers, disadvantaged groups have preferred leave somewhat below average.[10] Single mothers would prefer slightly longer leave than average. Disadvantaged groups anticipate similar leave to average, except for single mothers, who anticipate less leave. Mothers who received a benefit and those who live in deprived areas end up taking less leave than average, whereas single mothers end up taking more than average. Overall, these comparisons suggest disadvantaged mothers could be differently affected both by constraints that shorten their leave and ones that extend it.

Characteristics that predict leave length

In this section we investigate how a mother's characteristics are associated with leave length after controlling for their other characteristics and antenatal situation. Table 3 presents the results of regressions of preferred leave, anticipated leave, actual leave right-censored at the 9-month interview, and imputed actual leave on a range of variables that capture the mother's personal characteristics and antenatal situation.

Appendix Table 4 presents related regressions that show the characteristics that predict anticipated leave being less than preferred leave, imputed actual leave being less than preferred leave, and imputed actual leave being less than anticipated leave. Overall, 54% of mothers in our sample anticipated less leave than they preferred, 70% took less than they preferred, and 50% took less than they anticipated.

[10] Note these differences do not control for other personal characteristics that may also be associated with different leave preferences and behaviour. For instance, once we control for personal characteristics and antenatal situation in the regressions below, low-income mothers actually prefer longer leave.

Table 3: Regressions of leave types on antenatal characteristics

Dependent variable:	Preferred leave (weeks)	Anticipated leave (weeks)	Actual leave (weeks) (tobit)	Imputed actual leave (weeks)
Age (omitted category: 25-34)				
Aged under 25	1.799	0.954	-3.133**	-10.761**
	(5.628)	(2.542)	(1.562)	(5.094)
Aged 35 or over	5.412	1.841	-0.516	-0.402
	(2.958)	(1.275)	(0.827)	(2.753)
Pregnancy was planned	8.368***	4.780***	3.901***	7.855***
	(2.889)	(1.141)	(0.880)	(2.823)
Has previous children	-8.016***	-3.440***	-1.887**	-11.381***
	(2.868)	(1.214)	(0.776)	(2.664)
Born overseas	-15.463***	-2.858	0.085	-2.285
	(3.100)	(1.587)	(0.955)	(3.296)
Ethnicity (omitted category: European only)				
Māori only	-16.518**	-9.896***	-5.127***	-15.725***
	(7.234)	(1.845)	(1.913)	(5.664)
Pacific only	-17.682***	-5.559**	-4.959***	-1.129
	(4.862)	(2.340)	(1.578)	(5.827)
Asian only	-19.903***	-5.226**	-5.567***	-9.373**
	(3.948)	(2.328)	(1.345)	(4.686)
European and Māori	-7.997	-4.473***	-2.500	-1.975
	(5.126)	(1.664)	(1.405)	(5.013)
Other ethnicity	-11.363***	-1.827	-0.847	0.528
	(4.018)	(2.021)	(1.319)	(4.660)
Educational qualifications (omitted category: degree)				
None or school	-6.435	0.222	-0.972	4.083
	(3.799)	(1.656)	(1.111)	(3.817)
Post-school	-0.167	-0.273	-1.732	-5.773
	(3.382)	(1.502)	(0.934)	(3.032)
Self-employment status (omitted category: waged only)				
Self-employed only	-26.915***	-14.480***	-15.561***	-23.512***
	(4.007)	(1.960)	(1.372)	(4.153)
Self-employed and employee	-5.657	-5.373**	-9.848***	-16.985***
	(5.126)	(2.682)	(1.449)	(4.084)
Works part-time antenatally	-13.593***	0.757	-0.031	4.700
	(3.415)	(1.776)	(1.152)	(3.798)
Antenatal personal income (ln)	-4.867**	0.280	4.029***	0.304
	(2.361)	(1.144)	(0.791)	(2.413)
Stress about money	3.522***	-0.364	0.008	-1.517
	(1.250)	(0.588)	(0.369)	(1.210)
Occupation (omitted category: professional)				
Manager	-5.537	-4.872***	0.096	1.633
	(4.366)	(1.576)	(1.243)	(3.737)
Technician or trade worker	1.287	-1.024	-2.029	0.295

	(7.364)	(2.366)	(1.829)	(6.520)
Service worker	0.258	-0.432	1.606	5.719
	(5.423)	(2.109)	(1.523)	(5.189)
Administrative worker	1.902	-0.952	-0.556	2.343
	(3.893)	(1.796)	(1.101)	(3.671)
Sales worker	7.294	7.837**	3.330	17.678***
	(6.010)	(3.185)	(1.728)	(6.217)
Machinery operator/driver	10.496	7.938	0.452	28.249
	(16.404)	(9.311)	(4.838)	(23.795)
Labourer	-7.145	-1.841	1.501	29.576***
	(7.234)	(2.379)	(2.440)	(10.012)
R-squared	*0.07*	*0.05*		*0.04*
Pseudo R-squared			*0.02*	
% of right-censored observations			*31%*	
Observations	*2,588*	*2,588*	*2,588*	*2,588*

Results from regressions of preferred, anticipated, actual, and imputed actual leave on antenatal characteristics. Standard errors in parentheses. The sample consists of mothers who were antenatally employed and intended to take leave when their baby was born. The actual leave variable is right-censored at 39 weeks (the time of the 9-month survey) and the regression in Column 3 is a Tobit regression. Table includes dummies for 'missing qualifications', 'missing marital status', and 'missing income'. ** p<0.05, *** p<0.01

Table 3 shows mothers with planned pregnancies prefer 8 weeks more leave on average than those with unplanned pregnancies, anticipate 5 more weeks, and take 4 to 8 more weeks.

Having previous children is associated with preferring 8 fewer weeks of leave, anticipating 3 fewer weeks, and taking 2 to 11 fewer weeks.

Those born overseas prefer 15 fewer weeks of leave than the NZ born, even conditional on ethnicity and other controls, but anticipate and take similar amounts of leave to NZ born mothers.[11] However, the probabilities that each of anticipated leave and imputed actual leave are less than preferred leave are only 3 percentage points lower for foreign born than for NZ born, and neither difference is statistically significant (Appendix Table 4).

We find large ethnic differences: sole Māori, Pacific, and Asian mothers all prefer 17 to 20 weeks less leave than similar mothers who are European only. Note this result is conditional on our other controls, so compares mothers of different ethnicities with the same antenatal income who are similar in other ways. These differences may come from differing cultural norms, expectations, reference points, or interpretations of the question. Ethnic differences are also present for anticipated and actual leave, though the magnitudes of these ethnic differences are smaller than for preferred leave, at 1 to 16 weeks. Asians expect to be particularly unconstrained in their leave, being 9 percentage points less likely

[11] Note mothers born overseas are eligible for the same leave as NZ born mothers if they meet the employment history requirements.

than Europeans to anticipate less than their preferred length of leave, conditional on other controls including income. This is largely because they prefer short lengths of leave.

Antenatal self-employment is also strongly negatively correlated with all three types of leave, with those solely self-employed preferring 27 fewer weeks of leave than mothers who are employees only, anticipating 15 fewer weeks, and taking 16 to 24 fewer weeks. This may be because they are better able to balance work and childcare, and therefore prefer to return to work earlier or because it is too harmful to their business to be away for long. Mothers who are both employees and self-employed are intermediate in each case, and seem particularly likely to overestimate their leave: they are 9 percentage points more likely than employees to take less leave than they anticipate.

Mothers who work part time prefer 14 fewer weeks than mothers who work full time. This may be because they expect less conflict between their part-time work and raising a child. However, they anticipate and take similar amounts of leave to mothers who work full time. Correspondingly, they are 12 percentage points less likely to anticipate less than their preferred amount of leave, and 11 percentage points less likely to take less than their preferred leave (Appendix Table 4). The fact that mothers who work part-time prefer less leave and are better able to take their preferred leave may be partially explained by the fact that these mothers are much more likely to have previous children: after having their first child they may have shifted to part-time work that more easily accommodates the demands of parenthood.

We capture the mother’s antenatal financial situation using log of antenatal personal income and reported stress about money, which is normalised to have a mean of 0 and a standard deviation of 1. Higher-income mothers prefer less leave. However, income is essentially uncorrelated with anticipated leave, and those with higher income end up actually taking more leave than those with lower income. Mothers with higher incomes are significantly less likely to underestimate the leave they will take. These relationships strongly suggest higher pre-parenthood earnings relax the financial constraints that drive mothers back to work, enabling them to better follow their preferences for time away from work, and insulating them against shocks that would prematurely drive them back to work.

In contrast, mothers who are a standard deviation more stressed about money antenatally prefer 4 weeks more leave, but do not anticipate being able to take any more leave and in fact do not. Correspondingly, they are 7 percentage points more likely to anticipate taking less leave than they prefer.

We find some differences between occupations, though low statistical power means most are not statistically significant, and those few that are could reflect statistical noise.

We find mothers under 25 years old prefer and anticipate similar leave to those aged 25 to 34 but end up taking 3 to 11 fewer weeks of leave, suggesting young mothers are more susceptible to shocks that mean they need to return early to work.

We find no statistically significant differences in leave length by level of education, conditional on the other controls, though mothers with non-degree post-school qualifications are 7 percentage points more likely than mothers with degrees and substantially more likely than mothers with lower qualifications to end up taking less leave than they prefer, and similarly less leave than they anticipate.

Notably, the personal characteristics and antenatal situation controls we include have very low explanatory power for all three types of leave length, with the highest R-squared being 0.07. This suggests most of the between-person variation in preferred, anticipated, and actual leave is idiosyncratic, perhaps reflecting personality-based variation in preferences about work and childcare.

Comparisons between leave types

Having explored the distributions and correlates of each type of leave individually, in this section we explore how the three types of leave vary with each other across individuals. This shows the extent to which those who prefer longer leave are the ones who anticipate it, and the extent to which those who anticipate longer leave are those who take it. This sheds light on how expected and unexpected constraints moderate women's abilities to take the leave they prefer.

Table 4 presents the results of regressions of anticipated leave on preferred leave. Column 1 shows that, over the full range of preferred leave, average anticipated leave increases by only 1.3 days for each week-long increase in preferred leave. However, Panel A of Figure 4 reveals this relationship is nonlinear, being much stronger for preferred leave of less than a year.

Table 4: Anticipated compared with preferred leave

Dependent variable: anticipated leave (weeks)	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**
Interaction variable:			Has previous children	Self-employed	Below median personal income
Main effects					
Preferred leave	0.182***				
	(0.017)				
Preferred leave (<52)		0.619***	0.618***	0.603***	0.620***
		(0.017)	(0.025)	(0.020)	(0.020)
Preferred leave (>52)		0.130***	0.132***	0.119***	0.103***

		(0.020)	(0.026)	(0.020)	(0.019)
Interaction variable			-0.891	-4.943***	-0.144
			(0.910)	(1.682)	(1.267)
Interaction effects					
Preferred leave (<52)*interaction variable			-0.003	-0.046	-0.008
			(0.034)	(0.050)	(0.042)
Preferred leave (>52)*interaction variable			-0.005	0.100	0.094
			(0.040)	(0.075)	(0.058)
Constant	23.190***	38.179***	38.593***	38.663***	38.264***
	(0.854)	(0.452)	(0.597)	(0.467)	(0.490)
R-squared	0.19	0.24	0.24	0.25	0.25
Number of observations	2,588	2,588	2,588	2,588	2,502

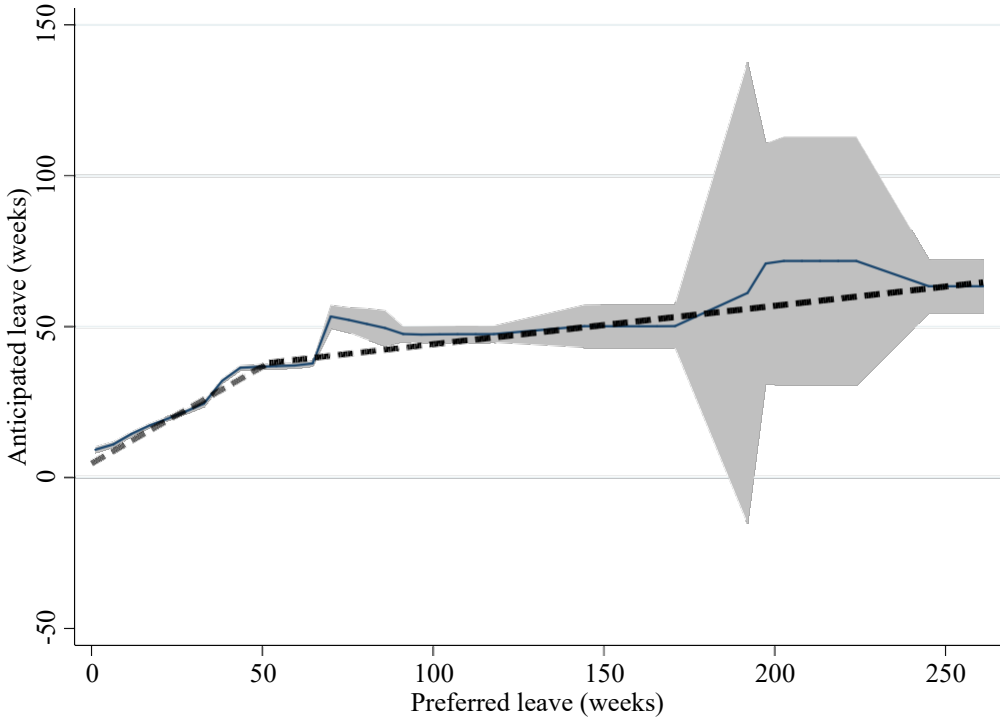
Standard errors in parentheses. Results from OLS regressions of anticipated leave on preferred leave, interaction terms, and main effects. The sample consists of mothers who were antenatally employed and who say they intend to take leave from employment when their baby is born. All leave lengths are measured in weeks. Additional controls are not included. ** p<0.05, *** p<0.01

Column 2 of the table accounts for this nonlinearity by allowing the slope of the relationship between preferred and anticipated leave to change at 52 weeks but does not allow a discrete jump in the relationship at this point.[12] The constant in the regression can be interpreted as the expected anticipated leave of a mother who prefers 52 weeks of leave. It shows that, for mothers who would like up to a year of leave, preferred leave seems to be an important driver of anticipated leave, with anticipated leave increasing by 4.3 days for every week preferred leave increases. Above a year of preferred leave, anticipated leave increases by less than a day for every week preferred leave increases. Overall, 25% of the variation in anticipated leave can be explained by this piecewise linear preferred leave function. This shows those who prefer up to a year of leave have moderate ability to plan the leave they prefer, but those who prefer over a year anticipate much less leave than they'd like.

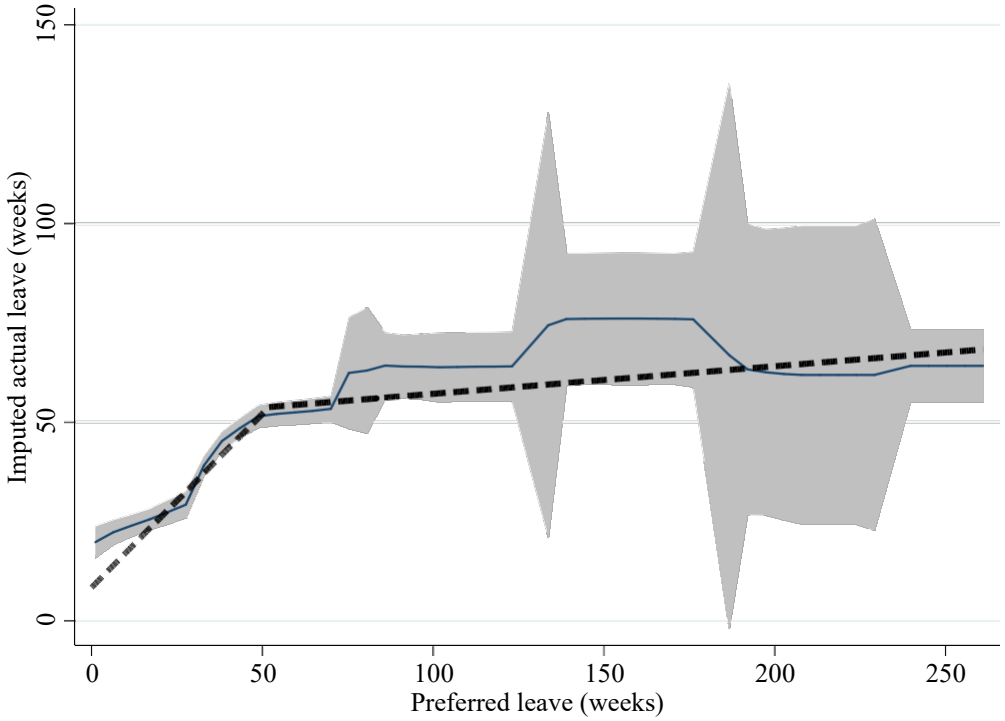
[12] Specifically, it includes two preferred leave variables. The first is preferred leave minus 52 for those with preferred leave of 52 weeks or fewer and is zero for everyone else. The second is preferred leave minus 52 for those with preferred leave of 52 weeks or more and is zero for everyone else.

Figure 4: Comparisons between leave types

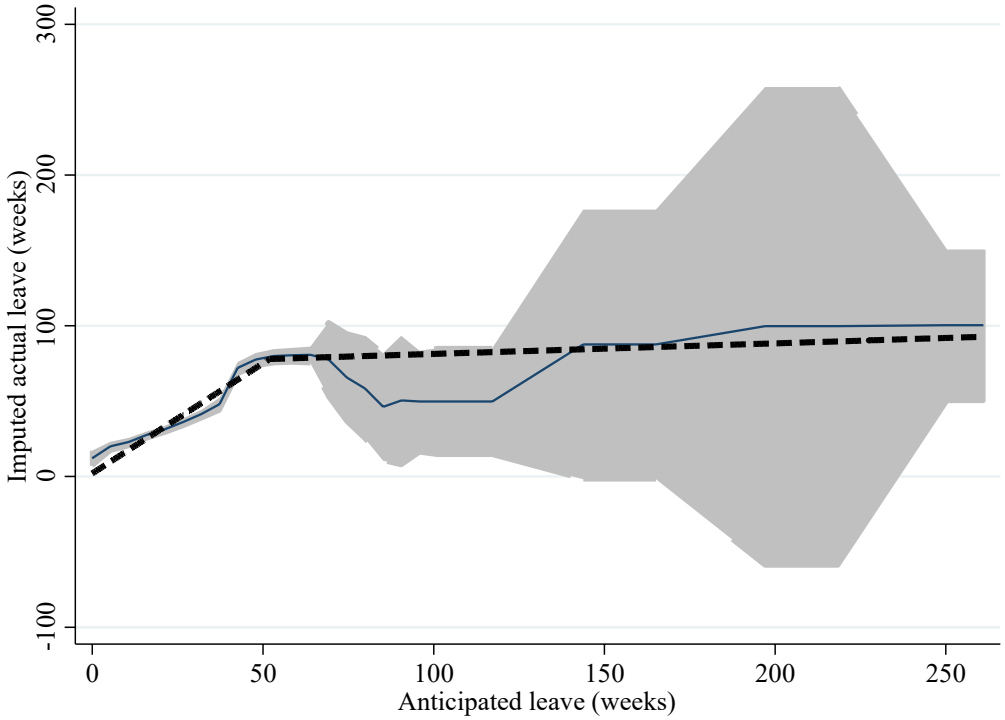
Panel A: Anticipated versus preferred leave



Panel B: Imputed actual versus preferred leave



Panel C: Imputed actual versus anticipated leave



Notes: This figure shows how the mean of anticipated or imputed actual leave varies locally with preferred or anticipated leave, as well as two fitted linear regression lines for above and below 52 weeks. Shaded areas are 95% confidence intervals. The sample is all mothers who were employed antenatally and said they intended to take some amount of leave (2,588 observations).

Subsequent columns of Table 4 show the strength of the relationship between preferred and anticipated leave is not significantly related to whether the mother has previous children, is antenatally self-employed, or is low-income. This suggests such mothers do not anticipate being differently constrained in their ability to take leave.

In the upper panel of Table 5, we similarly explore the relationship between preferred leave and imputed actual leave, and Panel B of Figure 4 plots the relationship. Again, we see an overall weak relationship between the types of leave, but that for preferred leave under a year imputed actual leave increases by 5.5 days for each week increase in preferred leave. Above a year of leave, the relationship is minimal. However, overall, the R-squared is only 0.05, suggesting factors other than preferred leave drive the majority of variation in imputed actual leave.[13]

[13] The clustering of imputed actual leave around the midpoints between survey waves also contributes to the low R-squared.

Table 5: Imputed leave versus preferred and anticipated leave

Dependent variable: imputed actual leave	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**
Interaction variable:			Has previous children	Self-employed	Below median personal income
Main effects					
Preferred leave	0.153***				
	(0.021)				
Preferred leave (<52)		0.775***	1.083***	0.831***	1.033***
		(0.076)	(0.103)	(0.090)	(0.073)
Preferred leave (>52)		0.079***	0.093***	0.096***	0.117***
		(0.024)	(0.033)	(0.026)	(0.027)
Interaction variable			-11.724***	-14.957***	0.346
			(3.257)	(4.622)	(4.619)
Interaction effects					
Preferred leave (<52) * interaction variable			-0.583***	-0.433**	-0.569***
			(0.148)	(0.179)	(0.191)
Preferred leave (>52) * interaction variable			-0.043	-0.119**	-0.173***
			(0.047)	(0.056)	(0.055)
Constant	42.710***	58.502***	64.508***	60.202***	58.199***
	(1.673)	(1.651)	(2.434)	(1.777)	(1.777)
R-squared	0.03	0.05	0.06	0.06	0.06
Number of observations	2,588	2,588	2,588	2,588	2,502
Dependent variable: imputed actual leave	**(6)**	**(7)**	**(8)**	**(9)**	**(10)**
Interaction variable:			Has previous children	Self-employed	Below median personal income
Main effects					
Anticipated leave	0.619***				
	(0.079)				
Anticipated leave (<52)		1.386***	1.761***	1.491***	1.683***
		(0.075)	(0.110)	(0.085)	(0.082)
Anticipated leave (>52)		0.086	0.072	0.148	-0.030
		(0.102)	(0.150)	(0.115)	(0.120)
Interaction effects					
Interaction variable			-19.997***	-23.371***	-15.315***
			(4.223)	(6.483)	(5.676)
Anticipated leave (<52) * interaction variable			-0.763***	-0.733***	-0.920***
			(0.148)	(0.194)	(0.188)
Anticipated leave (>52) * interaction variable			0.035	-0.198	0.219
			(0.195)	(0.235)	(0.217)
Constant	31.118***	79.305***	88.387***	81.812***	83.310***
	(2.686)	(2.163)	(3.129)	(2.315)	(2.412)
R-squared	0.08	0.14	0.15	0.14	0.15
Number of observations	2,588	2,588	2,588	2,588	2,502

Standard errors in parentheses. Results from OLS regressions of imputed leave on preferred and anticipated leave, interaction terms, and main effects. The sample consists of mothers who were antenatally employed and who say they intend to take leave from employment when their baby is born. All leave lengths are measured in weeks. Additional controls are not included. ** p<0.05, *** p<0.01

Columns 3 to 5 of the upper panel of Table 5 show that among mothers with previous children, self-employed mothers, and low-income mothers, imputed leave increases less strongly with preferred leave under 52 weeks of preferred leave, and there is no relationship between the two variables over 52 weeks. This suggests that, although these groups do not anticipate being more constrained in the leave they take, they do end up being more constrained than other mothers.

Finally, the lower panel of Table 5 and Panel C of Figure 4 show the relationship between anticipated leave and imputed actual leave. Below a year of anticipated leave, imputed actual leave increases by more than a week for each increase of a week in anticipated leave. The average length of leave for those anticipating taking a year of leave is 79 weeks. This may suggest mothers who anticipate a longer period of leave are more likely to experience changes in circumstances during that leave that further delay their return to work. These could be desirable, such as changes in preferences that favour staying out of paid work, or undesirable such as losing their job and being unable to find a new one. The way actual leave is imputed may also contribute.

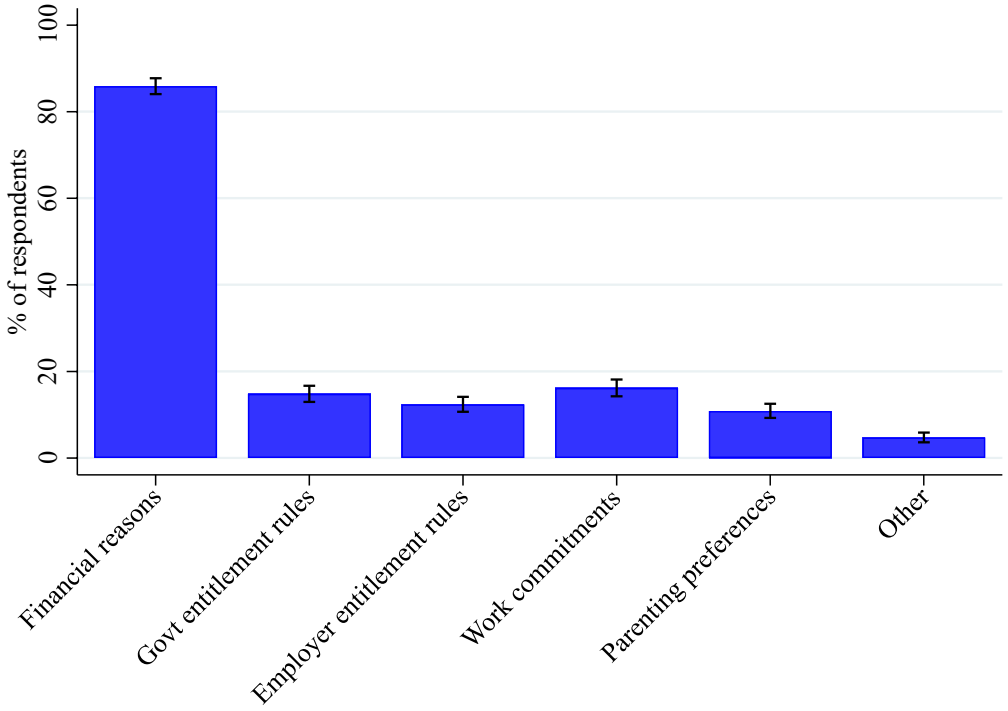
Mothers with previous children seem particularly accurate at predicting the leave they will take; below a year of anticipated leave, their average imputed actual leave increases by 7 days for each week anticipated leave increases. Experience with prior children may play a role. Once again, self-employed mothers and low-income mothers display a smaller increase in imputed actual leave for each week extra of anticipated leave. This suggests they are more affected by shocks that lead them to deviate from their leave plans.

Why mothers anticipate less leave than they prefer

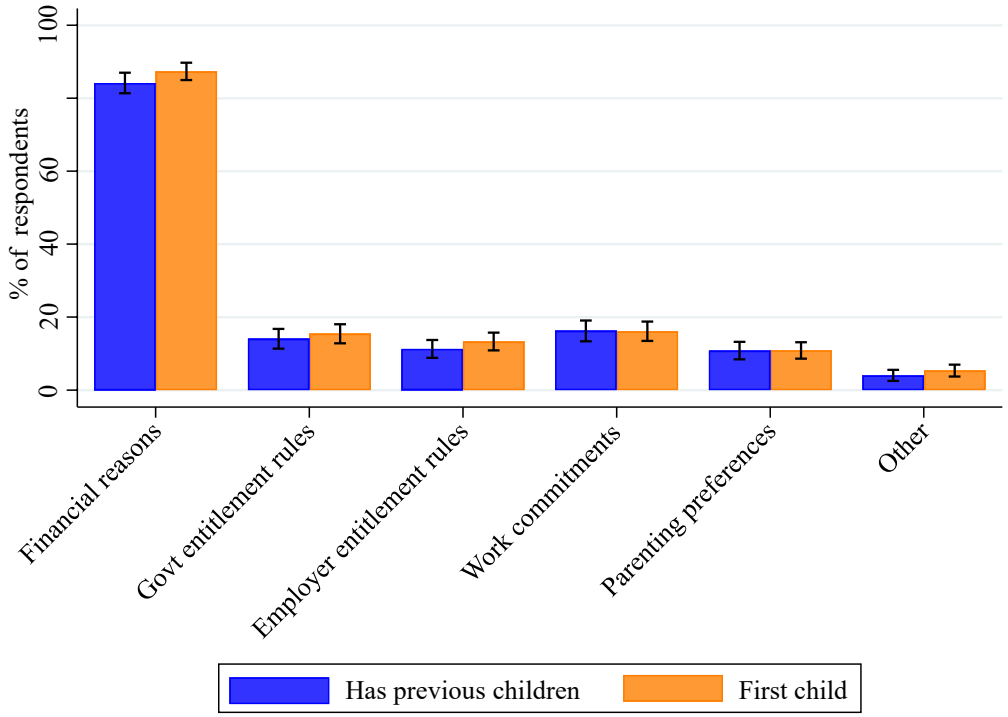
Fifty-four percent of antenatally employed mothers report anticipated leave that is shorter than their preferred leave. Figure 5 graphs the reasons these mothers give for this difference overall, by whether they have previous children, and by whether they were self-employed antenatally. In the context of our model, these reasons are the constraints that prevent mothers taking the leave they would prefer.

Figure 5: Why mothers anticipate less leave than they prefer

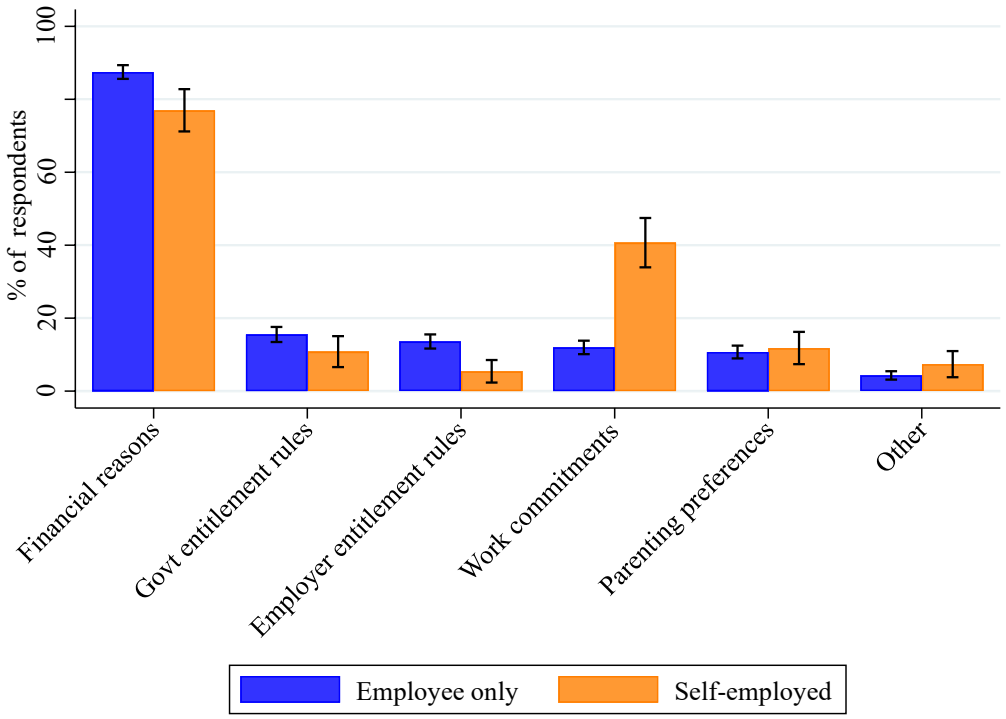
Panel A: Full sample



Panel B: By whether the mother has previous children



Panel C: By the mother's antenatal self-employment status



Notes: This figure displays the reasons mothers give for why their anticipated length of leave is less than their preferred length of leave. All mothers in our sample who gave an anticipated leave length less than their preferred leave length (1,404 mothers) are asked the reasons for this, with multiple reasons permitted. Panel A presents results for all mothers in our sample. Panel B splits the population by whether the mother has previous children; the orange bars represent first-time mothers (53%, 750 observations) and the blue bars represent mothers with previous children (47%, 654 observations). Panel C splits the population by whether the mother was antenatally self-employed; the orange bars represent mothers who were at least partially self-employed (15%, 209 observations) and the blue bars represent mothers who were employees only (85%, 1,195 observations).

Overwhelmingly, financial constraints are the most common reason women anticipate less leave than they would prefer, at about 85%. Leave entitlement rules, work commitments, and parenting preferences all play more minor roles, at under 20%. First-time mothers have similar reasons to mothers with previous children for anticipating less leave than they prefer. However, the patterns differ substantially for self-employed mothers compared with employees. Self-employed mothers are less likely to be driven by financial considerations or leave entitlements but are nearly three times as likely to be constrained by work commitments, with around 40% reporting this reason, presumably because they are more essential to their businesses.

Table 6: Why anticipated leave is less than preferred leave

Dependent variable:	Antic. < pref.	Money	Govt entitle.	Employer entitle.	Work commit.	Pref.
Age (omitted category: 25-34)						
Under 25	-0.016	-0.019	-0.028	-0.005	-0.010	0.015
	(0.039)	(0.040)	(0.021)	(0.022)	(0.017)	(0.021)
35 or over	0.012	0.003	-0.001	-0.013	0.015	0.010
	(0.022)	(0.022)	(0.012)	(0.010)	(0.013)	(0.011)
Pregnancy was planned	-0.022	-0.034	-0.013	0.006	-0.004	0.009
	(0.023)	(0.023)	(0.014)	(0.012)	(0.013)	(0.012)
Has previous children	-0.029	-0.033	-0.015	-0.005	-0.006	-0.015
	(0.022)	(0.021)	(0.012)	(0.011)	(0.012)	(0.010)
Born overseas	-0.027	-0.035	-0.022	0.005	-0.014	-0.024**
	(0.026)	(0.025)	(0.013)	(0.012)	(0.014)	(0.012)
Ethnicity (omitted category: European only)						
Māori only	0.075	0.095	0.028	0.007	-0.027	0.017
	(0.056)	(0.057)	(0.038)	(0.032)	(0.022)	(0.030)
Pacific only	-0.022	-0.005	-0.014	-0.023	-0.041***	0.017
	(0.045)	(0.045)	(0.025)	(0.021)	(0.014)	(0.022)
Asian only	-0.089**	-0.101***	-0.010	-0.011	-0.022	-0.002
	(0.037)	(0.035)	(0.016)	(0.018)	(0.017)	(0.016)
European and Māori	0.013	0.012	0.027	0.028	0.012	0.001
	(0.037)	(0.037)	(0.023)	(0.021)	(0.022)	(0.019)
Other ethnicity	-0.021	-0.015	0.040	-0.017	-0.004	0.002
	(0.037)	(0.036)	(0.023)	(0.017)	(0.021)	(0.017)
Educational qualifications (omitted category: degree)						
None or school	-0.000	-0.027	0.004	-0.012	-0.005	0.011
	(0.030)	(0.030)	(0.017)	(0.015)	(0.016)	(0.015)
Post-school	0.010	-0.008	0.009	0.008	0.008	0.009
	(0.025)	(0.025)	(0.014)	(0.013)	(0.015)	(0.013)
Self-employment status (omitted category: waged only)						
Self-employed only	-0.091**	-0.105***	-0.054***	-0.060***	0.119***	-0.022
	(0.036)	(0.034)	(0.012)	(0.007)	(0.028)	(0.016)
Self-employed and employee	0.064	0.003	0.006	-0.012	0.131***	0.009
	(0.036)	(0.035)	(0.021)	(0.017)	(0.029)	(0.019)
Works part-time antenatally	-0.123***	-0.164***	-0.016	-0.044***	-0.007	0.015
	(0.029)	(0.028)	(0.015)	(0.014)	(0.016)	(0.015)
Antenatal personal income (ln)	0.006	-0.010	0.003	-0.016	0.028**	-0.008
	(0.019)	(0.018)	(0.008)	(0.009)	(0.011)	(0.009)
Stress about money	0.069***	0.085***	0.017***	0.000	0.007	0.000
	(0.010)	(0.010)	(0.005)	(0.005)	(0.006)	(0.005)
Occupation (omitted category: professional)						
Manager	-0.033	-0.045	-0.001	0.001	0.012	-0.028**
	(0.033)	(0.032)	(0.018)	(0.016)	(0.023)	(0.013)

Technician or trade worker	-0.023	-0.052	-0.019	0.007	-0.044	-0.010
	(0.054)	(0.053)	(0.028)	(0.029)	(0.025)	(0.026)
Service worker	0.000	0.008	-0.035	-0.022	-0.048**	0.003
	(0.042)	(0.042)	(0.020)	(0.019)	(0.019)	(0.022)
Administrative worker	-0.001	-0.022	-0.007	0.020	-0.045***	-0.009
	(0.030)	(0.029)	(0.017)	(0.016)	(0.015)	(0.014)
Sales worker	-0.107**	-0.088**	0.013	0.021	-0.034	-0.021
	(0.044)	(0.043)	(0.026)	(0.024)	(0.021)	(0.020)
Machinery operator/driver	-0.042	-0.108	0.073	0.065	-0.042**	0.003
	(0.122)	(0.115)	(0.097)	(0.097)	(0.018)	(0.069)
Labourer	-0.153**	-0.143**	0.009	0.007	-0.063***	-0.077***
	(0.060)	(0.058)	(0.034)	(0.031)	(0.015)	(0.013)
R-squared	0.05	0.08	0.02	0.02	0.05	0.01
% of successes	54%	46%	8%	7%	9%	6%
Observations	2,588	2,588	2,588	2,588	2,588	2,588

Regressions of reasons 'anticipated leave < preferred leave' on antenatal characteristics. Standard errors in parentheses. The dependent variable in the first column is a dummy for anticipated leave being less than preferred leave. Subsequent dependent variables are dummies for anticipated leave < preferred leave *and* the stated reason is a factor in this. (Mothers who have anticipated leave >= preferred leave are coded as zero for all of the reasons variables.) The sample is mothers who were antenatally employed and intended to take leave when their child was born. The reasons are "financial reasons," "government entitlement rules," "employer entitlement rules," "work commitments," and "preferences". % of successes is the percentage of the sample for which the dependent variable takes the value 1. ** p<0.05, *** p<0.01

In Table 6 we use regressions to explore the other characteristics of mothers who are more likely to anticipate less leave than they would prefer for each reason. We include all mothers in our sample in the regressions, and mothers who do not satisfy the "anticipated leave is less than preferred leave" condition are coded as zero for all the reasons. Thus, the coefficients shed light on the characteristics associated with reporting anticipated leave that is shorter than the preferred leave reported *and* the stated reason being a factor in this, conditional on the other characteristics controlled for.

Mothers born overseas are 2.5 percentage points less likely than NZ born mothers to anticipate less leave than they prefer due to preferences. Ethnic differences are not large, though Asians are 10.1 percentage points less likely than Europeans to report financial reasons (conditional on other controls including income), and Pacific mothers are 4.1 percentage points less likely than Europeans to report work commitments.

As the figure suggests, self-employed mothers report very different reasons to employees; conditional on other controls, they are 10.5 percentage points less likely to report financial reasons, 5.4 and 6.0 percentage points less likely to report government entitlement and employer entitlement reasons respectively, and 11.9 percentage points more likely to report work commitments. The lower relevance of financial constraints for self-employed mothers, which is conditional

on personal income, may suggest they have higher non-income affluence, such as business assets. Mothers who were both employees and self-employed antenatally are like employees on most of these dimensions, except that they report work commitments at a similar level to those solely self-employed.

Part-time workers are 16.4 percentage points less likely than full-time workers to report financial reasons, consistent with them already earning lower income and having other means to attain financial stability, such as partner income. In addition, they are 4.4 percentage points less likely to report employer entitlement rules.

Antenatal personal income, conditional on working part time or full time and other controls, is minimally related to the reasons for anticipating less than the preferred amount of leave, except that those with higher income are slightly more likely to be constrained by work commitments, consistent with them working at more senior levels in jobs with greater responsibility.

In contrast, a standard deviation higher antenatal stress about money (conditional on personal income and the other controls) is associated with a 6.9 percentage point higher likelihood of reporting financial reasons and slightly higher likelihood of reporting government entitlement. These individuals may be more likely to be in irregular or unstable employment, with the associated stress and lower eligibility for government PPL.

Differences between occupations are generally not large, though many are likely captured by the personal income and stress about money controls. Mothers in lower skill occupations are less likely to report work commitments, likely because is it easier for other employees to do their jobs in their absence. In most cases they are also less likely to report financial reasons.

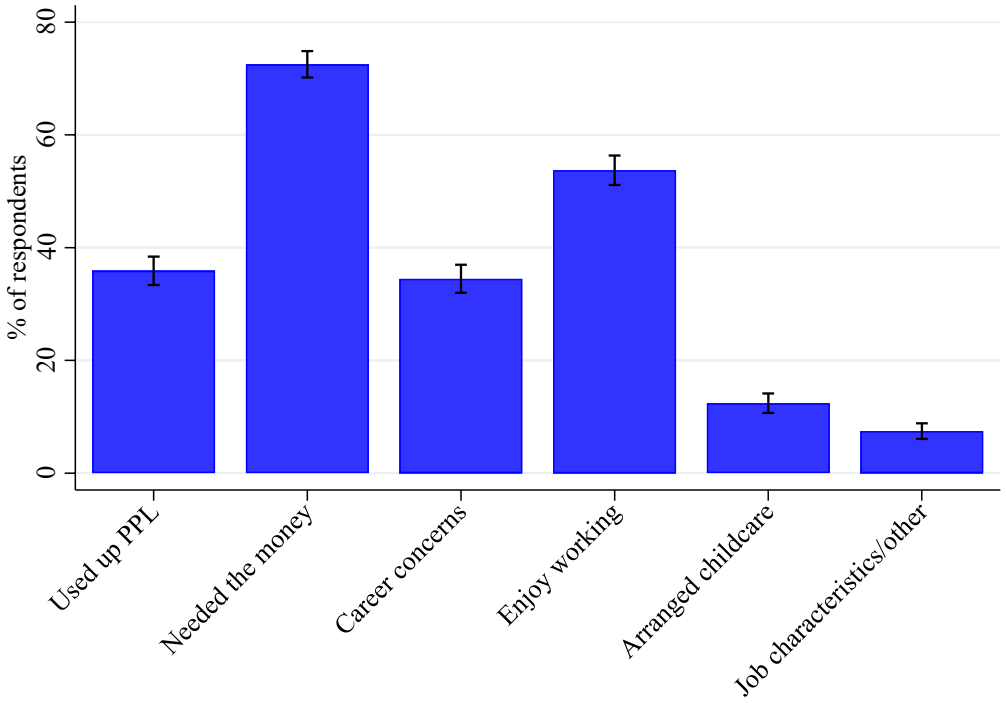
We find no significant differences by age, whether the pregnancy was planned, or education.

Why mothers return to work

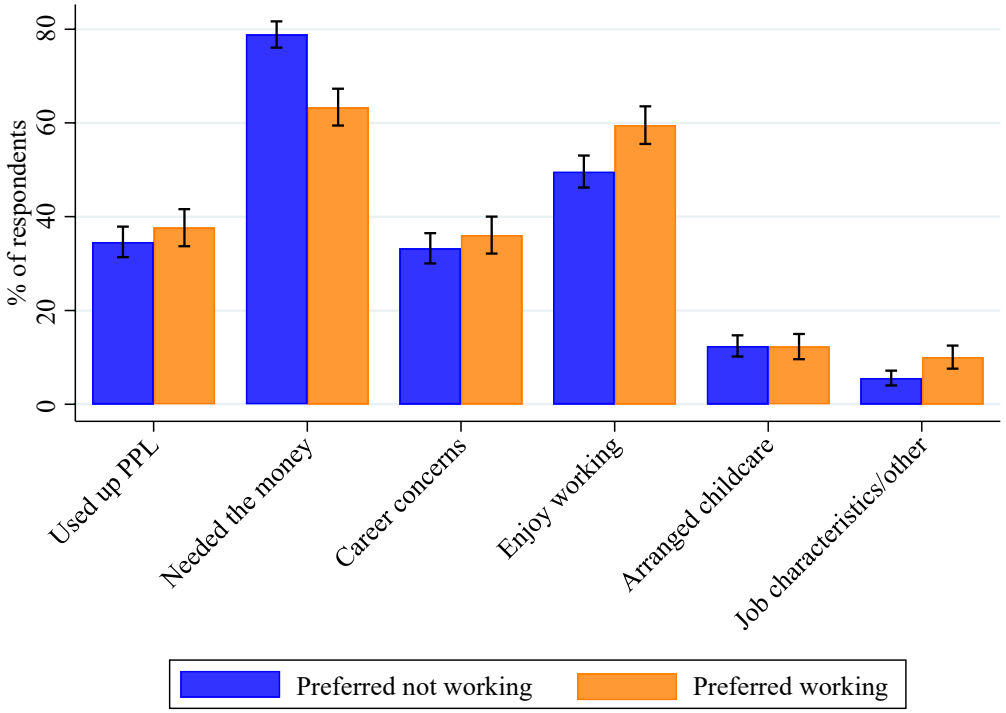
At the time of the 9-month survey, 59% of the mothers in our sample have returned to work or are about to. In this section we explore the reasons they give for this. Figure 6 plots the percentage of mothers who are employed at 9 months who give each reason.

Figure 6: Reasons mothers return to work by 9 months

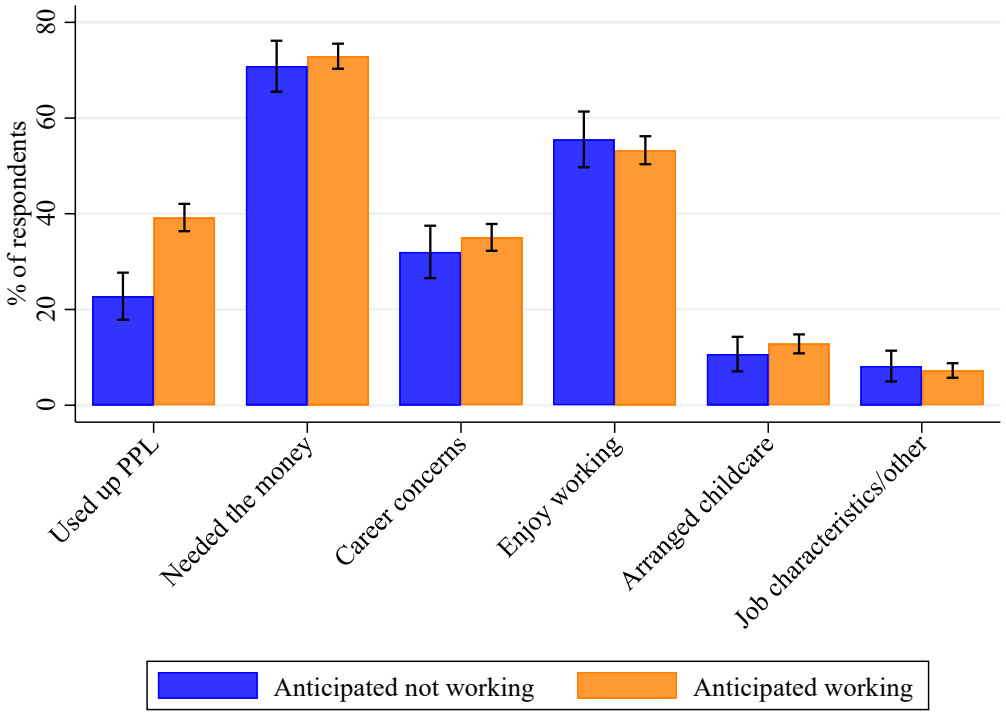
Panel A: All mothers



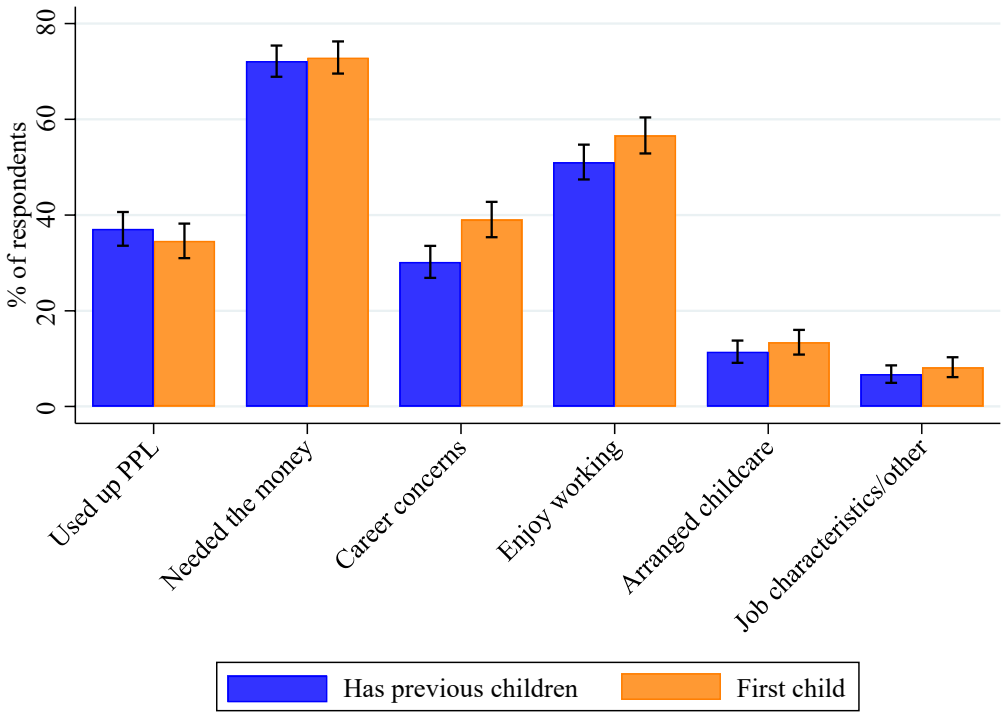
Panel B: By whether the mother preferred being back



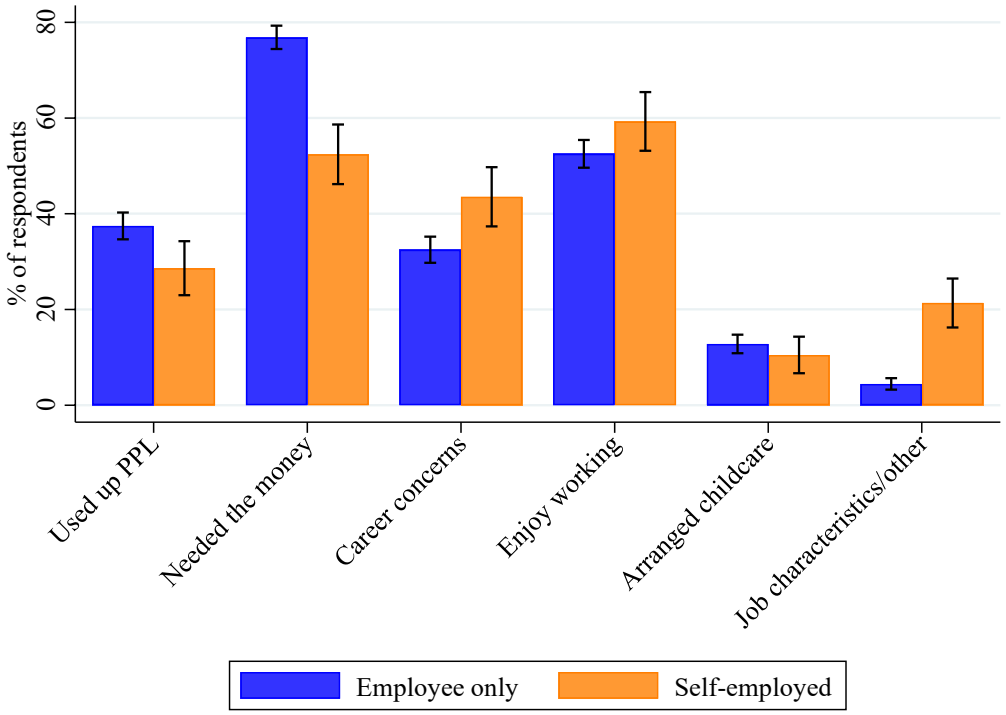
Panel C: By whether the mother anticipated being back



Panel D: By whether the mother has previous children



Panel E: By the mother's antenatal self-employment status



Notes: Among the 1,460 mothers who were working at the 9-month interview, this figure shows the percentage who report each reason for why they have returned to work. Multiple reasons are permitted. The sample consists of all mothers who were antenatally employed and are employed at the time of the 9-month survey or starting work in the next four weeks. Panel A presents percentages for all mothers; Panel B divides mothers by whether they preferred to be back at work (42%, 603 observations, orange bars); Panel C divides mothers by whether they anticipated being back at work (79%, 1,153 observations, orange bars); Panel D divides mothers by whether they were first-time mothers (48%, 694 observations, orange bars); Panel E divides mothers by whether they were at least partially self-employed antenatally (19%, 277 observations, orange bars).

In line with the reasons for anticipating less leave than preferred, Panel A of the figure shows money is the biggest reason mothers return to work by 9 months, with over 70% reporting this reason. Enjoying work is the next most common reason at about 55%. Having used up PPL and career concerns are also common reasons.

Fifty-eight percent of mothers who are working at 9 months stated antenatally they preferred not to be working at that stage. Panel B shows these mothers are more likely to return to work for financial reasons and less likely to return because they enjoy work. However, half still reported returning because they enjoy work; this could suggest a change in preferences, wherein some mothers

decide they want to return earlier than they had thought, but it may be that enjoying work alone would have been insufficient to entice them back.

Only 20% of those working at 9 months did not anticipate this. Panel C shows those who anticipated still being on leave return for very similar reasons to those who anticipated being back, except that the former is less likely to have used up their PPL. This suggests most reasons that induce mothers back to work, both on the constraint side (e.g. needed the money) and on the preferences side (enjoy work), have a degree of unpredictability to them. That running out of PPL is a less important reason for those unexpectedly returning to work is a promising sign, suggesting women who will run out of PPL are disproportionately likely to know of this antenatally.

Panel D of Figure 6 shows the reasons for returning to work are similar for first-time mothers and mothers with previous children, though first-time mothers are slightly more likely to return due to career concerns.

Panel E shows the reasons for returning to work are different for employees and self-employed mothers. Table 7, which presents regressions of having returned to work by 9 months *and* giving a particular reason for this on personal characteristics sheds further light on the differences. Overall, those self-employed antenatally are 21 percentage points more likely than employees who are otherwise similar to return to work by 9 months, with those who were both self-employed and employees antenatally falling mid-way between the two. In our full sample, the self-employed are 11.6 percentage points more likely than similar employees to return due to career concerns and 10.7 percentage points more likely to return because they enjoy work.

Table 7 also shows the reasons for returning to work vary substantially across mothers with other different characteristics, with some groups such as those with planned pregnancies showing clear evidence of advantage--being less likely to return and report constraints as a reason and more likely to return and report enjoying work as a reason--and others showing clear evidence of disadvantage.[14] For instance, higher income is more associated with returning due to career concerns or enjoying work, having previous children or being Māori, Pasifika, or Asian is more associated with returning due to financial issues or running out of PPL. Those who worked part-time antenatally are less likely to have returned overall, and are particularly less likely to be driven back by running out of PPL or by financial issues.

[14] Again, the sample in Table 7 includes all mothers, and mothers who did not return to work by 9 months are coded as zero for all of the reasons.

Table 7: Reasons for returning to work by 9 months

Dependent variable:	Back at work	PPL ended	Money	Career concerns	Enjoy work	Childcare arranged
Age (omitted category: 25-34)						
Under 25	-0.082**	-0.102***	-0.110***	-0.054**	-0.003	0.003
	(0.039)	(0.029)	(0.037)	(0.025)	(0.034)	(0.018)
35 or over	-0.027	-0.015	-0.015	-0.000	-0.009	0.004
	(0.022)	(0.017)	(0.021)	(0.018)	(0.021)	(0.012)
Pregnancy was planned	-0.057**	-0.056***	-0.060**	-0.035	0.030	0.025**
	(0.023)	(0.020)	(0.023)	(0.019)	(0.022)	(0.012)
Has previous children	0.088***	0.038**	0.065***	-0.026	0.021	0.004
	(0.021)	(0.017)	(0.021)	(0.017)	(0.020)	(0.012)
Born overseas	0.068***	0.041**	0.037	0.000	0.011	0.001
	(0.025)	(0.020)	(0.024)	(0.019)	(0.024)	(0.013)
Ethnicity (omitted category: European only)						
Māori only	0.158***	0.142***	0.162***	0.024	0.049	0.071**
	(0.053)	(0.053)	(0.056)	(0.043)	(0.054)	(0.036)
Pacific only	0.116***	0.132***	0.176***	-0.001	-0.042	0.079***
	(0.043)	(0.041)	(0.044)	(0.031)	(0.040)	(0.028)
Asian only	0.079**	0.105***	0.084**	0.066**	-0.008	0.059***
	(0.036)	(0.031)	(0.036)	(0.029)	(0.034)	(0.021)
European and Māori	0.031	0.037	0.059	0.010	0.016	-0.020
	(0.038)	(0.030)	(0.037)	(0.029)	(0.035)	(0.014)
Other ethnicity	0.041	0.033	0.089**	0.022	-0.024	0.015
	(0.036)	(0.030)	(0.036)	(0.029)	(0.033)	(0.018)
Educational qualifications (omitted category: degree)						
None or school	0.037	0.025	0.003	-0.038	-0.036	-0.002
	(0.029)	(0.025)	(0.029)	(0.023)	(0.027)	(0.015)
Post-school	0.072***	0.021	0.042	-0.022	-0.010	0.004
	(0.025)	(0.021)	(0.025)	(0.021)	(0.025)	(0.014)
Self-employment status (omitted category: waged only)						
Self-employed only	0.210***	0.014	-0.021	0.116***	0.107***	0.009
	(0.034)	(0.028)	(0.035)	(0.033)	(0.036)	(0.018)
Self-employed and employee	0.101***	0.041	-0.031	0.039	0.014	0.003
	(0.036)	(0.028)	(0.033)	(0.030)	(0.034)	(0.018)
Works part-time antenatally	-0.096***	-0.100***	-0.141***	0.025	0.001	-0.008
	(0.028)	(0.021)	(0.027)	(0.022)	(0.026)	(0.014)
Antenatal personal income (ln)	0.029	-0.015	0.027	0.052***	0.055***	0.025***
	(0.018)	(0.013)	(0.017)	(0.015)	(0.017)	(0.009)
Stress about money	0.014	0.023***	0.059***	-0.003	-0.001	-0.002
	(0.010)	(0.008)	(0.009)	(0.008)	(0.009)	(0.005)
Occupation (omitted category: professional)						
Manager	0.015	-0.012	-0.047	-0.008	0.008	-0.005
	(0.033)	(0.025)	(0.032)	(0.029)	(0.032)	(0.017)
Technician or trade worker	-0.046	-0.056	-0.068	0.017	0.050	-0.046**
	(0.053)	(0.040)	(0.051)	(0.044)	(0.051)	(0.019)
	-0.075	0.031	-0.036	-0.037	0.028	0.003

Service worker	(0.041)	(0.036)	(0.041)	(0.031)	(0.039)	(0.022)
Administrative worker	-0.020	0.024	-0.007	-0.052**	-0.034	-0.002
	(0.029)	(0.025)	(0.029)	(0.023)	(0.027)	(0.016)
Sales worker	-0.157***	0.006	-0.133***	-0.100***	-0.021	0.003
	(0.043)	(0.035)	(0.041)	(0.027)	(0.039)	(0.021)
Machinery operator/driver	-0.210	-0.050	-0.131	-0.173***	-0.178**	-0.104***
	(0.125)	(0.115)	(0.132)	(0.030)	(0.072)	(0.021)
Labourer	-0.189***	-0.038	-0.119**	-0.041	-0.042	-0.018
	(0.060)	(0.052)	(0.057)	(0.041)	(0.050)	(0.027)
R-squared	0.06	0.06	0.08	0.04	0.02	0.02
% of successes	56%	19%	39%	19%	29%	7%
Observations	2,588	2,588	2,588	2,588	2,588	2,588

Regressions of reasons mothers' return to work by 9 months on antenatal characteristics. Standard errors in parentheses. The dependent variable in the first column is a dummy for mother returned to work by 9 months. Subsequent dependent variables are dummies for returned to work by 9 months and the stated reason is a factor in this. (Mothers who have not returned to work at 9 months are coded as zero for all of the reasons variables). The sample is mothers who were antenatally employed and intended to take leave when their child was born. The full list of reasons is "used up paid parental leave/paid parental leave ended", "needed the money", "employer wanted me back/it would hurt my career not to return", "enjoy work/missed my co-workers/wanted to get out of the house", and "childcare arranged/father looking after baby". We do not present results for the reason "seasonal job/self-employed/other". ** p<0.05, *** p<0.01

Why mothers do not return to work

At the time of the 9-month survey, 41% of the mothers in our sample are not working or about to start work (Table 2). By the 2-year survey this has fallen to 29%, and by the 45 month survey it has fallen to 25%. In this section, we explore the reasons mothers remain out of work after their children are born, which may relate to preferences or constraints.

Figure 7 plots the percentage of mothers not in work who give each reason at 9, 24, and 45 months. It shows at 9 months, over 60% of mothers who are not working are still on parental leave. We interpret this as a preference-related reason for not working; these mothers have a job to return to, but they choose to take some time away from paid employment to care for their child and adjust to life as a mother. Other interpretations are possible; the survey could have asked mothers on leave the reasons for being on leave, with both preference-related and constraint-related reasons being possible, but did not.

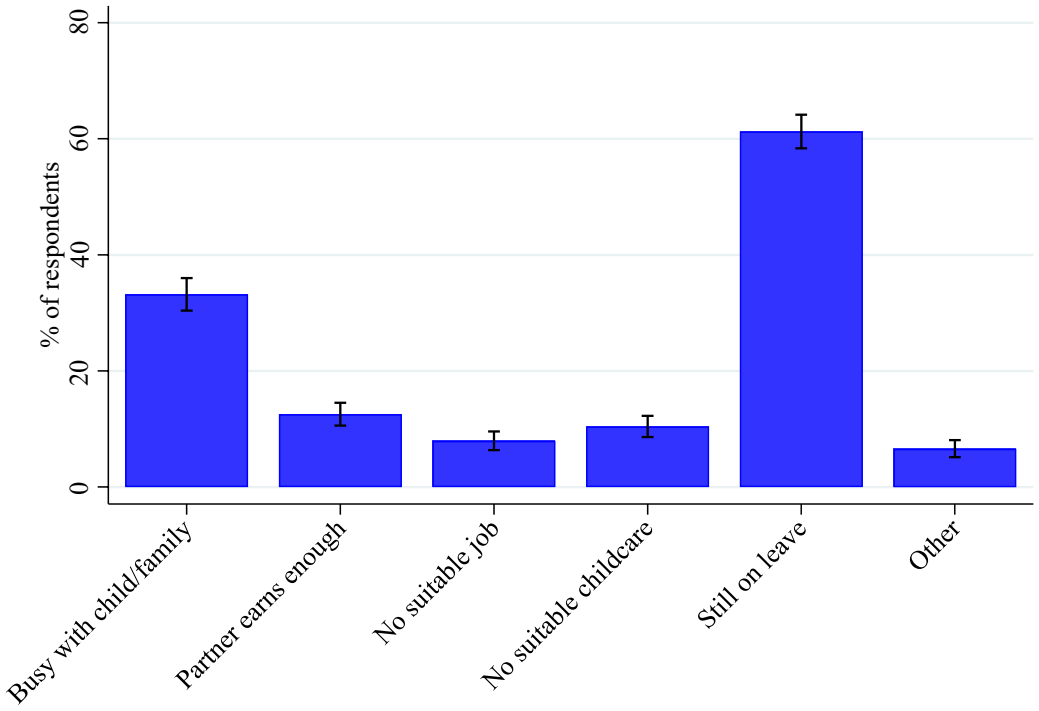
Being busy with family or the child is the next most common reason, at 30%. At 2 years and 45 months, being busy with family or the child has risen to the most common reason, at around 70%. These responses underscore caring as an unpaid and perhaps underappreciated job that requires a great deal of energy and may not leave parents with the capacity to also perform paid work.

The importance of the partner earning enough to support the family increases steadily over time to reach almost 50% by 45 months, consistent with financial issues become a substantial issue for mothers who are out of work for longer periods. This pattern highlights one of the disadvantages single mothers face in being able to parent according to their preferences.

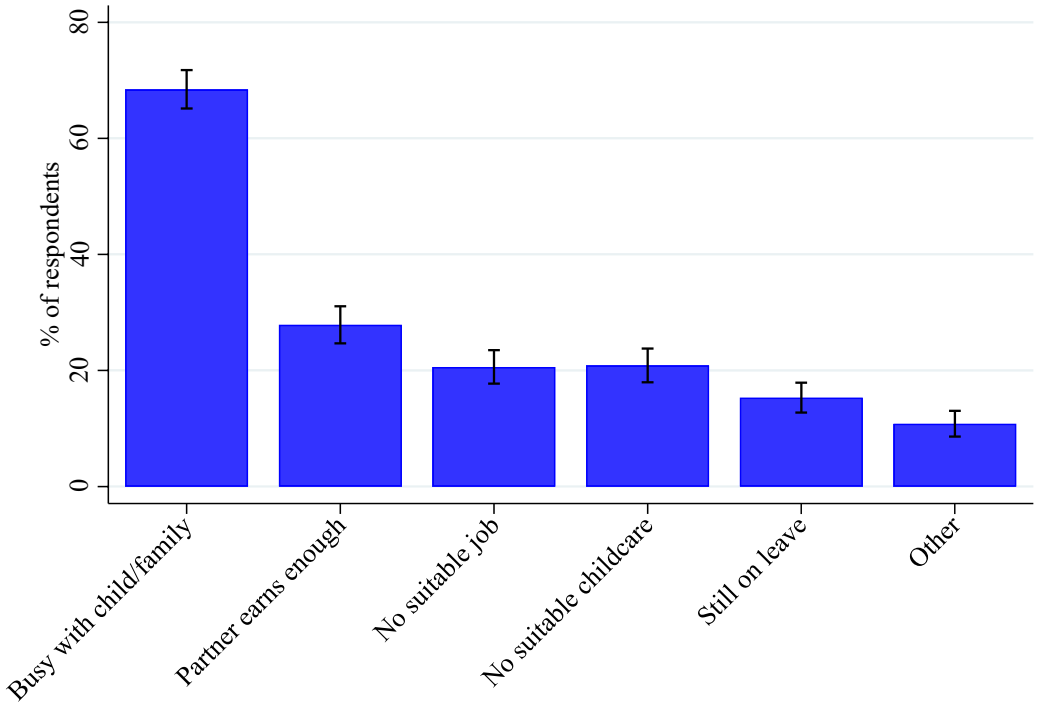
Inability to find a suitable job or suitable, affordable childcare also increase in importance from around 10% at 9 months to around 20% at 2 years and at 45 months. These are clearly constraint-related reasons for not working and may indicate mothers at risk of severing their attachment to the labour market, with negative long-term consequences for their ability to earn a living.

Figure 7: Reasons for not being in work at 9, 24, 45 months

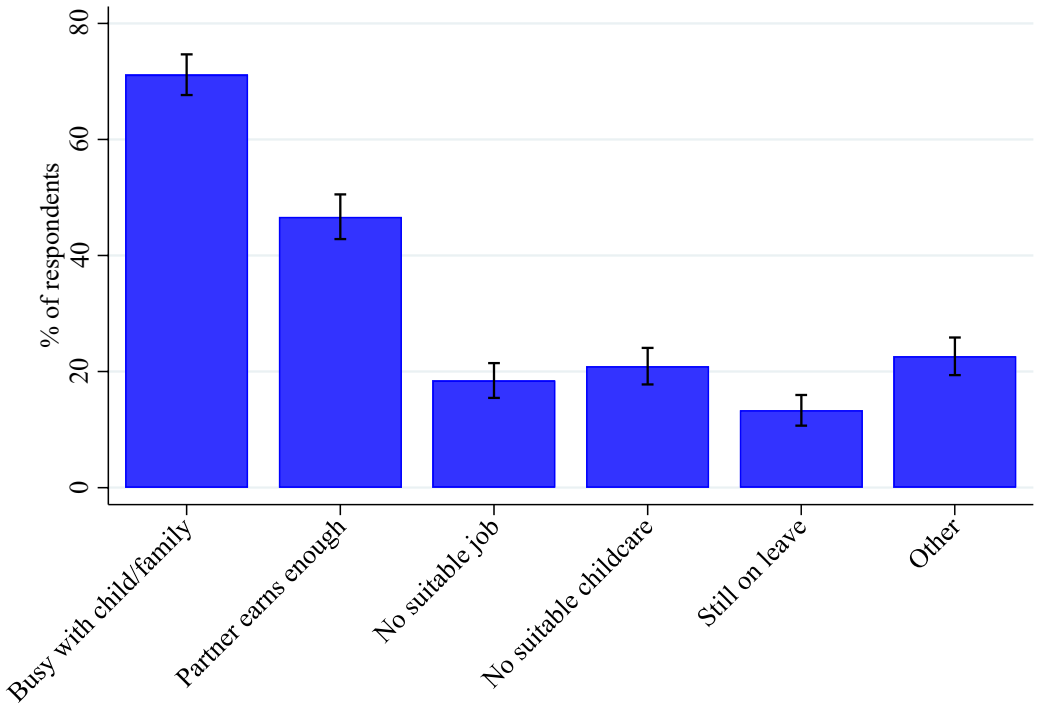
Panel A: 9 months



Panel B: 24 months



Panel C: 45 months



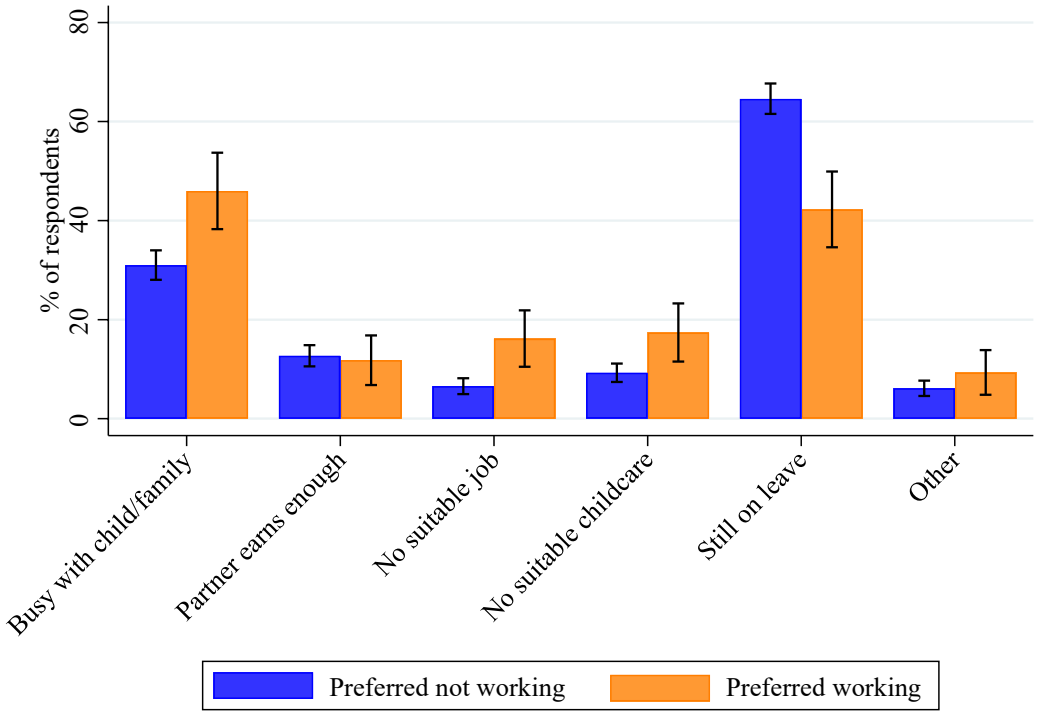
Notes: This figure displays the reasons mothers in our sample are not working at 9, 24, and 45 months (1,128, 658, and 645 mothers, respectively). Multiple reasons are permitted.

Figure 8 shows how the reasons for not working at 9 months differ by whether the mother preferred or anticipated working at that point. It shows the 15% of non-working mothers who preferred to be back at work are about 10 percentage points more likely than those who preferred to still be off work to report being busy with their family or child, and around twice as likely to report not being able to find a suitable job or childcare. Conversely, they are nearly twenty percentage points less likely to still be on leave. The 31% of non-working mothers who *anticipated* working at 9 months show a very similar pattern to those who *preferred* working.

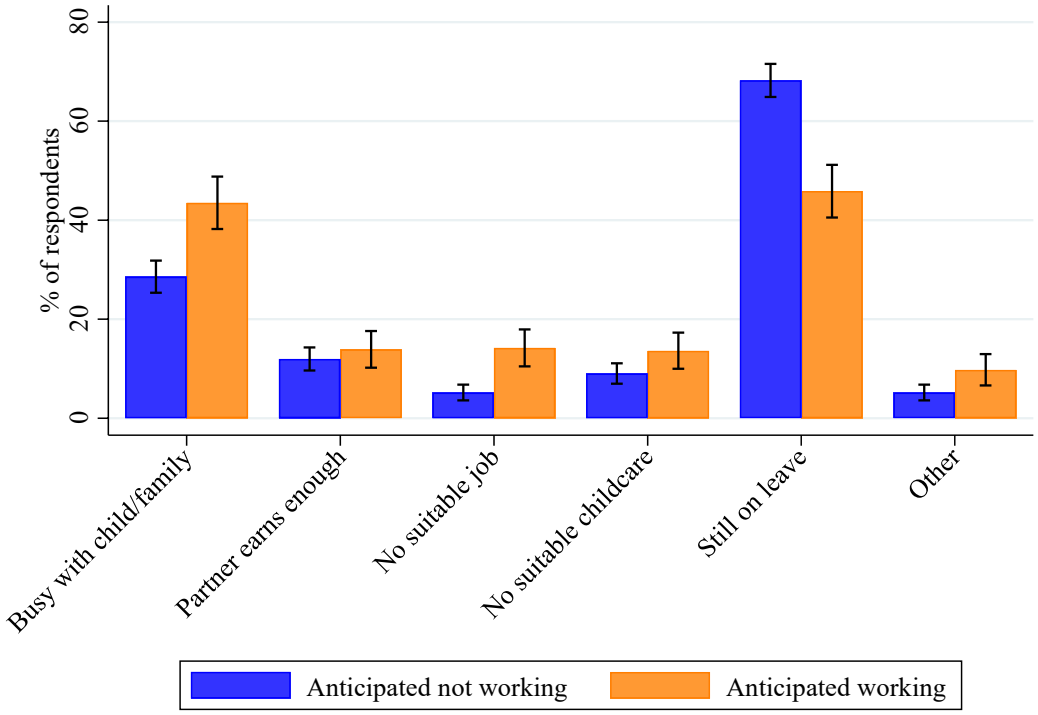
These patterns suggest mothers who prefer or anticipate returning to work quickly but end up not working at 9 months are disproportionately likely to be kept from work by constraints, whether these are a lack of time or energy to return to work, inability to find work that accommodates their parental responsibilities, or inability to find acceptable childcare at a price that makes returning to work worthwhile.

Figure 8: Reasons for not being in work at 9 months, split up by preferred or anticipated leave

Panel A: By whether the mother preferred to return to work by 9 months



Panel B: By whether the mother anticipated returning to work by 9 months



Notes: This figure replicates Panel A of Figure 7, except splits the 1,128 mothers not working at 9 months according to whether antenatally the mother preferred to have returned to work by 9 months (Panel A) or anticipated having returned to work by 9 months (Panel B). Orange bars represent mothers who preferred (14%, 162 observations) or anticipated (31%, 350 observations) being at work at 9 months.

In Table 8, we use regression analysis to explore the characteristics of mothers associated with being more likely to be not working at 9 months for each reason.[15] It shows young mothers are 8 percentage points more likely than similar mothers aged 25 to 34 to not be working, and are more likely to be away from work because they are busy with family or their child, because they can't find a suitable job, or because they have childcare issues.

[15] The sample in Table 8 is the full set of mothers, and mothers who are back at work at 9 months are coded as zero for all of the reasons variables.

Table 8: Reasons for not being in work at 9 months

Dependent variable:	Not working	Busy with fam /child	Partner earns enough	Unable to find job	Unable to find childcare	On leave
Age (omitted category: 25-34)						
Aged under 25	0.082**	0.087***	0.028	0.066***	0.064***	-0.048
	(0.039)	(0.032)	(0.021)	(0.022)	(0.023)	(0.033)
Aged 35 or over	0.027	0.023	0.013	0.005	0.002	0.001
	(0.022)	(0.015)	(0.010)	(0.007)	(0.009)	(0.020)
Pregnancy was planned	0.057**	0.025	0.023**	-0.006	0.012	0.031
	(0.023)	(0.016)	(0.010)	(0.009)	(0.010)	(0.020)
Has previous children	-0.088***	-0.042***	-0.005	0.008	0.030***	-0.046**
	(0.021)	(0.015)	(0.009)	(0.008)	(0.009)	(0.019)
Born overseas	-0.068***	-0.045***	-0.038***	-0.003	-0.013	-0.015
	(0.025)	(0.017)	(0.010)	(0.009)	(0.009)	(0.023)
Ethnicity (omitted category: European only)						
Māori only	-0.158***	-0.014	-0.008	0.011	-0.052***	-0.156***
	(0.053)	(0.040)	(0.025)	(0.026)	(0.019)	(0.039)
Pacific only	-0.116***	-0.032	-0.011	-0.014	-0.058***	-0.078**
	(0.043)	(0.029)	(0.015)	(0.017)	(0.012)	(0.037)
Asian only	-0.079**	0.005	-0.009	-0.015	-0.030**	-0.090***
	(0.036)	(0.025)	(0.014)	(0.011)	(0.012)	(0.031)
European and Māori	-0.031	-0.015	-0.009	0.015	0.017	-0.047
	(0.038)	(0.026)	(0.018)	(0.016)	(0.020)	(0.033)
Other ethnicity	-0.041	-0.036	-0.018	0.008	-0.029**	-0.022
	(0.036)	(0.023)	(0.014)	(0.015)	(0.013)	(0.032)
Educational qualifications (omitted category: degree)						
None or school	-0.037	-0.026	-0.026**	-0.004	-0.000	-0.021
	(0.029)	(0.021)	(0.013)	(0.012)	(0.012)	(0.026)
Post-school	-0.072***	-0.012	-0.016	-0.008	0.009	-0.064***
	(0.025)	(0.017)	(0.011)	(0.010)	(0.010)	(0.022)
Self-employment status (omitted category: waged only)						
Self-employed only	-0.210***	0.006	-0.006	0.003	-0.006	-0.210***
	(0.034)	(0.028)	(0.018)	(0.013)	(0.016)	(0.023)
Self-employed & employee	-0.101***	0.003	0.004	0.009	0.005	-0.104***
	(0.036)	(0.026)	(0.019)	(0.015)	(0.017)	(0.031)
Works part-time antenatally	0.096***	0.056***	0.019	-0.010	-0.006	0.042
	(0.028)	(0.020)	(0.013)	(0.011)	(0.011)	(0.025)
Antenatal personal income (ln)	-0.029	-0.054***	-0.023**	-0.015**	-0.032***	0.025
	(0.018)	(0.014)	(0.010)	(0.008)	(0.008)	(0.015)
Stress about money	-0.014	-0.017**	-0.016***	0.001	0.001	-0.001
	(0.010)	(0.007)	(0.005)	(0.004)	(0.004)	(0.009)
Occupation (omitted category: professional)						
Manager	-0.015	-0.008	-0.010	0.013	0.008	0.003

	(0.033)	(0.021)	(0.014)	(0.012)	(0.012)	(0.029)
Technician or trade worker	0.046	0.058	-0.021	0.008	0.020	-0.011
	(0.053)	(0.041)	(0.020)	(0.021)	(0.026)	(0.043)
Service worker	0.075	0.056	-0.014	-0.003	0.004	0.027
	(0.041)	(0.031)	(0.016)	(0.015)	(0.018)	(0.035)
Administrative worker	0.020	0.029	0.012	0.016	-0.001	-0.001
	(0.029)	(0.021)	(0.014)	(0.013)	(0.012)	(0.025)
Sales worker	0.157***	0.080**	0.044	0.025	0.040	0.063
	(0.043)	(0.035)	(0.025)	(0.021)	(0.025)	(0.039)
Machinery operator/driver	0.210	0.136	-0.014	-0.017	0.062	0.034
	(0.125)	(0.108)	(0.015)	(0.011)	(0.070)	(0.112)
Labourer	0.189***	0.078	0.004	0.030	0.011	0.061
	(0.060)	(0.048)	(0.027)	(0.028)	(0.028)	(0.053)
R-squared	0.06	0.05	0.03	0.02	0.04	0.04
% of successes	44%	14%	5%	3%	4%	26%
Observations	2,588	2,588	2,588	2,588	2,588	2,588

Results from regressions of reasons mothers have not returned to work by 9 months on antenatal descriptive characteristics. Standard errors in parentheses. The dependent variable in the first column is a dummy for the mother not working at 9 months. Dependent variables in subsequent columns are dummies for the mother not working at 9 months *and* the particular factor being a reason for this. (Mothers who are back at work at 9 months are coded as zero for all of the reasons variables). The sample is mothers who were antenatally employed and intended to take leave when their child was born. The full list of reasons is "busy with family/looking after child", "partner earns enough", "no jobs available/no jobs that interest me/no job with enough flexibility/currently searching for a job", "no suitable childcare/not worthwhile given childcare costs", and "still on leave". We do not present results for "studying/will lose government benefits/other". ** p<0.05, *** p<0.01

Mothers with previous children are 9 percentage points more likely than similar first-time mothers to have returned to work at 9 months. The selection of such mothers in our sample likely plays a role. They less commonly report being busy with their family or child as a reason for not working and are less likely to still be on leave, but are more likely to report childcare issues as a reason for not working. The higher cost of paying for childcare for multiple children likely contributes.

We find striking differences by ethnicity. Compared with similar European mothers, Māori mothers are 15.8 percentage points less likely to not be working, and Pacific and Asian mothers are 8-12 percentage points less likely. This big difference for Māori mothers is associated with a 15.6 percentage point lower probability of still being on leave; Pacific and Asian mothers are also less likely than similar European mothers to still be on leave. Māori, Pacific, and Asian mothers are all less likely to report being off work due to childcare issues.

Compared with employees, solely self-employed mothers are 21 percentage points more likely to be back at work, mainly because they are less likely to still be on leave. This is likely due to the difficulty of keeping their businesses going

while they take parental leave. Mothers who are both self-employed and employees are intermediate between the two.

Mothers with higher income are insignificantly more likely to have returned to work, but are less likely to report being off work because they are busy with their family or child, because their partner earns enough, or due to childcare or job-finding issues.

Differences by occupation in the reasons for being away from work are mostly not statistically significant.

The relationship between return to work and wellbeing

Mothers with particular plans for when they will return to work may deviate from their plans because they are unable to follow them or because they decide they would prefer not to follow them. Deviating from the plan may therefore be positive or negative. In this section we explore how two measures of wellbeing, stress about work/life balance and stress about money relate to a mother's work status and whether it differs from what she had planned. This sheds light on whether mothers tend to deviate from their plans because they want to or because they have to.

Table 9 presents the results of regressions of these wellbeing measures on work status, deviation from work plans, and personal characteristics. Note the controls included are as in Table 3; they include, among other variables, whether the mother worked part-time antenatally and her antenatal stress about money. Unsurprisingly, at both 9 months and 24 months, mothers' stress about work-life is higher for those who are working full time than for those not working, and is particularly high among those who are self-employed.

Among mothers working at 9 or 24 months, we find no significant difference in stress about work-life balance between those who anticipated working and those who did not. This suggests shocks that unexpectedly cause a mother to return to work may not in themselves worsen her stress over work/life balance, but also that stress about work-life balance is not particularly amenable to reduction through planning.

Among mothers who are *not* working at 9 or 24 months, we find mothers who had planned to be working are more stressed about work/life balance, with the difference borderline statistically significant. This could indicate these mothers had intended to work, but discovered that working and caring for a child are less compatible than they expected.

Table 9: Wellbeing, return to work, and deviations from anticipated leave

Dependent variable (mean 0 sd 1, higher is worse)	Stress about work/life balance (9 months)	Stress about work/life balance (24 months)	Stress about money (9 months)	Stress about money (24 months)
Work and expectation status (omitted: working, anticipated working)				
Not working, anticipated not working	-0.419***	-0.898***	0.050	-0.113
	(0.056)	(0.178)	(0.051)	(0.159)
Not working, anticipated working	-0.292***	-0.570***	0.190***	-0.036
	(0.077)	(0.057)	(0.065)	(0.049)
Working, anticipated not working	-0.002	-0.270	0.031	0.103
	(0.066)	(0.249)	(0.060)	(0.193)
Works part-time currently	-0.090	-0.364***	-0.012	-0.046
	(0.057)	(0.051)	(0.054)	(0.048)
Self-employed only currently	0.190***	0.115	-0.085	-0.006
	(0.073)	(0.071)	(0.071)	(0.070)
Self-employed and earns wages currently	0.198***	0.168**	-0.026	0.019
	(0.070)	(0.071)	(0.067)	(0.067)
R-squared	0.12	0.12	0.21	0.20
Number of observations	2,245	2,348	2,445	2,484
F-statistic (H_0: not_not=not_yes)	2.85	3.32	5.13	0.24
p-value (H_0: not_not=not_yes)	0.09	0.07	0.02	0.63
Full set of controls	Yes	Yes	Yes	Yes

Standard errors in parentheses. Results from OLS regressions of standardised self-reported variables covering "stress about work-life balance," "stress about money," and "material hardship" at 9, 24, and 54 months. The controls are calculated using mothers' employment status at 9/24/54 months, and their antenatally reported length of anticipated leave. The sample consists of mothers who were antenatally employed and who say they intend to take leave from employment when their baby is born, and whose responses to these questions are nonmissing. ** p<0.05, *** p<0.01

Perhaps contrary to expectations, stress about money is not universally higher for those not working. Those who anticipated not working but ended up in work at 9 or 24 months are not clearly less stressed about money than those not working. This is consistent with these individuals facing adverse financial circumstances that induced them to return to work, contrary to their plans.

At 9 months, mothers who are not employed despite anticipating being employed experience the most stress about money. This makes sense; these mothers have lower income than they had anticipated and planned for.

Overall, these results are consistent with some shocks that cause mothers to change their plans being negative. In particular, a mother not being able to work when she expected to be working is associated with lower wellbeing. Mothers who return to work earlier than expected seem often to do so because of a

negative financial shock, but their return to work lessens the impact of the shock on their stress about money.

Discussion

The leave mothers want

On average, mothers who were working antenatally and intended to take parental leave preferred 69 weeks of leave; 20% of such mothers preferred over a year, and 45% more preferred exactly a year. However, preferred leave is highly idiosyncratic, with very little of the variation between mothers explained by their observable characteristics.

Despite this, mothers with different characteristics prefer distinctly different lengths of leave. Conditional on other characteristics of the mother, preferred leave tends to be several months shorter for non-European mothers, mothers with previous children, those born overseas, and mothers who antenatally are self-employed or work part time. Income is also a predictor of preferred leave, with low-income mothers preferring more leave.

The expected constraints on mothers' leave

On average, the leave mothers anticipate antenatally is substantially shorter than their preferred leave, at 36 weeks compared with 69 weeks, and few mothers anticipate taking over a year of leave despite around 20% wishing to do so. This suggests a substantial proportion of mothers anticipate being constrained in the leave they can take, particularly if they prefer over a year. Below a year of preferred leave, the strong relationship between preferred leave and average anticipated leave shows mothers expect a moderate, though not complete, ability to take their preferred length of leave. This seems equally true regardless of whether they have previous children, whether they are self-employed, and their personal income.

The 54% of mothers who report anticipated leave shorter than their preferred leave are asked the reasons for this difference. Overwhelmingly, the most common reason is financial constraints. This is a factor for 85% of those with anticipated less than their preferred leave, or 46% of all mothers in our sample. Surprisingly, it is not significantly less common for mothers with higher income.

The reasons mothers do and don't return to work

Consistent with the reasons mothers anticipate less leave than they prefer, money is the most common reason mothers return to work by 9 months, reported by over 70% of working mothers. This percentage is even higher among those who preferred not to return by this date. The next most common reason mothers give for returning to work is because they enjoy work, miss their

colleagues, or want to get out of the house, at about 55%. Having used up PPL and career concerns (which includes that their employer wants them back at work) are each reported by around 35%.

Some characteristics of mothers (such as having a planned pregnancy or high income) tend to be associated with preference-related reasons for returning, whereas others (such as having previous children or being non-European) tend to be associated with constraint-related reasons. Notably, these differences are present when controlling for maternal characteristics including antenatal income.

When we examine the converse, why mothers have *not* returned to work, we find at 9 months the majority of mothers who are not working are on leave, though 30% of those not working seem to have separated from their employers and have not tried to find another job because they are too busy with their child or family. Not being able to find a suitable job or suitable, affordable childcare are each a factor for about 10% of those not working.

The reasons mothers who are not working have not returned to work change over time, with being busy with family or the child becoming the most important reason, at around 70%, by 45 months. Nearly half those not working at 45 months can do so because their partner earns enough to support them. Inability to find a suitable job or suitable, affordable childcare each increase to around 20%. Work flexibility, generally considered important for enabling mothers with young children to return to work, is one aspect of a job being suitable. Although we cannot observe directly when work flexibility is an important factor in enabling mothers to return to work, it may well play a role for many of the 75% of mothers who are back at work by 45 months.

Adherence to plans for parental leave

The average leave mothers take is 53 weeks, which is less than average preferred leave but greater than average anticipated leave. Some mothers remain out of work for several years, but these are not necessarily the mothers who would have preferred to do so. Many seem to have lost or had to leave their jobs and were unable to secure childcare that allowed them to return to work or were unable to find a job that accommodated their parental responsibilities.

For mothers who anticipate no more than a year of leave, who are the vast majority, average leave taken increases rapidly with anticipated leave. This is consistent with mothers on average having a reasonable idea how much leave they will take, but for those who planned to take close to a year of leave being more likely to face a change in circumstances that means they are out of work for substantially longer than anticipated. Such shocks could be desirable or undesirable. First-time mothers and high-income mothers appear particularly prone to these shocks, though not necessarily for the same reasons, whereas mothers with below median income appear less prone to shocks that extend leave, but more prone to shocks that cause them to return early to work.

The finding that a substantial minority of mothers end up out of work for much longer than expected is consistent with the results of Kuziemko et al. (2018), who argue that first-time mothers antenatally underestimate the employment costs of motherhood. However, our results do not confirm some additional findings of their paper; for example, we do not find that this effect is larger among more educated mothers.

Comparing leave taken with preferred leave sheds light on the extent to which mothers end up being constrained in the leave they take. Mothers who prefer under a year of leave are not hugely constrained on average. Among them, mothers with previous children and low-income mothers don't expect to be more constrained than first-time mothers and high-income mothers, but end up being more constrained.

Only 20% of those who were working at 9 months did not anticipate this. They report similar reasons for returning to work to those who anticipated returning by this date, but are only just over half as likely to say they ran out of PPL. This suggests most reasons for returning to work are somewhat unpredictable, both constraints and preference-related reasons, but women who are going to run out of PPL are disproportionately likely to know of this antenatally. Among mothers who returned to work by 9 months, having anticipated this is not significantly correlated with stress about work/life balance or stress about money at 9 months, conditional on other maternal characteristics. Our results suggest working while being mother to a young child is associated with considerable stress about work/life balance that is not amenable to reduction through planning.

Mothers who are not working at 9 months but had anticipated working are disproportionately likely to be constrained in their return to work, either by being busy looking after their child or family, or with challenges finding a suitable job or childcare. Such mothers report being more stressed about work/life balance and about money than similar mothers who had accurately anticipated not working, consistent with having to manage on unexpectedly low income while facing unanticipated constraints that keep them out of work.

Self-employed, low-income, and first-time mothers

Our findings provide information about self-employed mothers that are important given the prevalence of self-employment among mothers. We show mothers who are self-employed before having their children have very different preferences, expectations, and work outcomes to mothers who are employees. They prefer substantially less leave than employees, 43 weeks on average for those solely self-employed as opposed to 71 weeks for employees, and also take a lot less, 34 weeks compared with 56 weeks. Although they expect to be similarly constrained in the leave they take, their realised leave increases less quickly with their anticipated leave than that of employees, consistent with these mothers facing more unpredictable work demands or other constraints.

However, it may be their jobs are flexible enough that they can return to work early.

Self-employed mothers seem on average to enjoy work more than employees do, but like employees are largely driven back to work after having children by constraints. However, their constraints are more likely to revolve around work responsibilities and less likely to revolve around money. Once they are back in work, they face higher stress than employee mothers about balancing work and life.

These findings paint a picture of a population that tends to enjoy its work, but struggles to take time away from it even when this would be beneficial, with potentially negative consequences for wellbeing.

Low-income mothers prefer more leave than high-income mothers, possibly because they find their jobs less rewarding or stimulating. However, they anticipate taking similar leave to high-income mothers and end up taking substantially less (at least for those who complete their leave within 9 months). They do not expect to be more constrained in their leave-taking than high-income women and are no more likely to report anticipating less leave than they prefer due to financial constraints. In contrast to expectations, they end up being more constrained, seeming particularly vulnerable to shocks that cause them to return early to work. Overall, these results suggest the outcomes of low-income mothers are driven by financial constraints that are not fully anticipated.

First-time mothers have less experience being parents, so may find it more difficult to work while raising a child. Indeed, we see they prefer several months more leave than mothers with previous children. They also anticipate and end up taking more leave on average than mothers with previous children. In fact, they end up being less constrained in their leave, as measured by the shortfall in realised leave when compared with preferred leave, and are less likely to report returning to work for constraint-related reasons. This may be because they have not run down their savings in previous periods of parental leave. However, their lack of experience may have a cost. First-time mothers who plan to take a longer period of leave seem more vulnerable to shocks that lead them to remain out of work much longer than they'd planned.

Stress and wellbeing

Our results show that mothers who return to work experience higher stress about work-life balance than mothers who remain on leave, regardless of whether they anticipated being back at work so soon. Working part-time is associated with lower stress, and self-employment with higher. The former result highlights the value of flexibility that allows mothers to return to work part time.

Stress about money is not strongly associated with postnatal work status, potentially because mothers who need the income from work tend to be those

who have returned to work. However, those who anticipated working at 9 months but are not are more stressed about money.

Policy implications

This research provides information about preferred leave that will inform PPL policy. It sheds light on the complex set of preferences and constraints that determine how mothers combine work with parenthood, and highlights the challenges of the environment many new mothers face.

When the GUiNZ children were born in 2009-10, the maximum eligibility for government-funded PPL was 14 weeks, with additional unpaid job-protected leave that brought the total to a year. PPL was thus substantially lower than the 69 weeks of leave that mothers prefer on average as well as being lower than the 36 weeks they anticipate. This means a high proportion of women intend to take a period of unpaid leave, and many would plan to take more leave if they could.

This discrepancy between PPL and planned leave results in a period after mothers' PPL has ended but before they're ready to return to work in which they are at risk of financial instability. Indeed, low-income mothers plan a similar length of leave to high-income mothers, but are more likely to have to return to work earlier than anticipated, often for financial reasons. Even among higher-earning mothers and those who return to work as expected, financial considerations are a major factor in return to work.

More recent cohorts of parents will have been affected by benefit reforms and changes to policy settings that have occurred since this cohort of mothers had their children. For instance, the length of PPL has been incrementally increased since 2010 and reached 26 weeks in July 2020, and income thresholds and the value of benefits have been adjusted.

More sweeping changes to the benefit environment occurred in 2013 and 2018. The 2013 changes marked a shift to an investment approach with an increased focus on getting people off benefits and into work.[16,17] As of 15 July 2013, multiple benefit packages were replaced with three new benefit sub-categories: jobseeker support, sole parent support, and supported living payments. Work-readiness requirements and certain obligations were added for beneficiaries who were parents, intended to ensure children in benefit-dependent homes received the best possible start in life. In 2018, along with an increase in PPL to 18 weeks, the Parental Tax Credit (PTC) was replaced with the Best Start Tax Credit (BSTC).[18] The BSTC, which commences at the completion of PPL entitlements,

[16] https://www.msd.govt.nz/about-msd-and-our-work/publications-resources/corporate/annual-report/2012-2013/more-people-into-work-and-out-of-welfare-dependency.html

[17] https://www.legislation.govt.nz/act/public/2013/0013/latest/DLM4542304.html

[18] https://www.legislation.govt.nz/act/public/2017/0045/latest/DLM7480807.html

gives $60 per week to all families for the first year of their newborn's life and additional income-dependent support for the two subsequent years. At the same time, the "Keep in Touch Days" (KTD), hours parents can work while on parental leave without losing their PPL entitlement, rose from 40 hours to 52.

These benefit changes, particularly the lengthening of PPL, may have reduced the financial instability faced by more recent cohorts of parents and decreased the gap between preferred and actual leave. However, PPL remains substantially shorter than the length of leave most mothers say they would prefer, so our qualitative results are likely to hold for more recent cohorts.

At the other end of the spectrum to the mothers driven back to work early by shocks, some mothers face a change in circumstances that results in them remaining out of work for much longer than they'd intended. From a policy perspective, it's important to remember that many of the women who remain out of work for several years after having a child are not those who desired or intended this. Instead they might face unexpected issues such as lack of access to suitable, affordable childcare or the inability to secure work that accommodates their parental responsibilities. These can result in depreciation of their human capital, which makes it harder to later return to the workforce.

We find that mothers on average are moderately successful at planning and taking the leave they desire up to a year, but beyond that length they have little ability to realise their desired leave. One contributing factor could be the 52 weeks of job-protected leave: this policy setting may enhance the agency of mothers to take their desired length of leave up to this point. Any future changes in this leave entitlement could have a significant impact on the ability of mothers to take the parental leave they prefer.

Limitations and future directions

In addition to the strengths of the GUiNZ study, such as detailed information on mothers' intentions and the reasons for decisions they made, the study has some limitations that are important for this research.

First, the meaning of "preferred" leave is ambiguous, and different mothers may interpret the preferred leave question differently. This means differences in preferred leave between mothers should be interpreted with care.

Second, we are unable to perfectly observe actual leave for the 44% of mothers who have not returned to work by the 9-month interview. Our imputed measure of actual leave contains error that may affect our findings.

Third, the families surveyed are drawn from only one region of the country and represent families having children in one year only, meaning results for the survey sample may not fully generalise to families living in other regions of the country or who had children in other years. For example, childcare availability

and the range of occupations and industries in which mothers work may systematically differ in the study area relative to the rest of the country. Furthermore, mothers in the study cohort were eligible for a maximum of 14 weeks of government-funded PPL; the maximum length of PPL has subsequently increased, and various other policies related to support for parents have changed. These changes are likely to have affected the plans of mothers in more recent cohorts.

Fourth, the modest sample size, particularly once we restrict to mothers who were working antenatally, means statistical power is limited, which prevents inferences about some relationships.

Unrelated to the data, a final limitation of this study is that the methodology is not based around analysing a natural experiment. This means the findings are primarily correlational and the causal inferences that can be made are limited.

This research shows self-employed mothers combine work and parenthood quite differently to mothers who are employees, and likely face a different set of challenges trying to keep their business going while raising a young child. Further details on how they interact with existing policies such as paid parental leave and how potential policies might support them is left for future research.

This research shows a non-trivial proportion of mothers remain out of work for some time after their child is born because they can’t find suitable childcare at a price that makes return to work worthwhile. This is particularly common for young, European, and low-income mothers, and catches some of them by surprise. However, this research leaves unclear the persistence of such problems and the question of whether a mother who remains out of work due to childcare issues experiences any long-term disadvantage in the labour market when she is finally able to return to work. These questions could be explored in future research.

References

Aidis, Ruta, and Cecile Wetzels, 2007, "Self-Employment and Parenthood: Exploring the Impact of Partners, Children, and Gender," IZA Discussion Paper No. 2813.

Angelov, Nikolay, Per Johansson, and Erica Lindahl. 2016. "Parenthood and the Gender Gap in Pay." *Journal of Labor Economics*, Vol. 34 No. 3, pp.545-579

Bird, Amy L., Polly E. Atatoa Carr, Elaine Reese, and Susan M. B. Morton, 2016, "Policy translation for early childhood education and care: The Growing Up in New Zealand approach," *International Journal of Child Care and Education* Policy, Vol. 10 No. 5.

Caballero, Gustavo A, 2017, "Responsibility or Autonomy: Children and the probability of self-employment in the USA," *Small Business Economics*, Vol. 49, pp. 93-512.

Forbes, Katherine, 2009, "Paid parental leave under (new) Labour," *Social Policy Journal of New Zealand*, issue 34, pp. 12-24.

Joona, Pernilla Andersson, 2017, "Are mothers of young children more likely to be selfemployed? The case of Sweden," Review of Economics of the Household, vol 15, pp. 307-33.

Kleven, Henrik and Camille Landais and Jakob Egholt Søgaard. 2019. "Children and Gender Inequality: Evidence from Denmark." *American Economic Journal: Applied Economics.* Vol. 11 No.4, pp.181-209

Kuziemko, Ilyana, Jessica Pan, Jenny Shen, and Ebonya Washington, 2018, "The Mommy Effect: Do women anticipate the employment effects of motherhood?" *NBER Working Paper 24740.*

Matysiak, Anna, and Monika Mynarska, 2013, "Women's self-employment in Poland: A strategy for combining work and childcare?" Global Development Network Working Paper No. 70.

Meissel, Kane, Elizabeth Peterson, Steven Thomas, and Siobhan Murray, 2019, "Intentions and decisions about early childhood education: Understanding the determinants and dynamics of households' early intentions and decisions about ECE and childcare from birth to age two." *Report produced for the Ministry of Social Development.*

Morton, Susan M. B., Atatoa Carr, Polly E, Grant, C. C., Lee, A. C., Bandara, D. K., Mohal, J., Wall, C. R., 2012, "Growing Up in New Zealand: A longitudinal study of New Zealand children and their families*. Report 2: Now we are born," Auckland.*

Morton, Susan M. B., Polly E. Atatoa Carr, Cameron C. Grant, Elizabeth M. Robinson, Dinusha K. Bandara, Amy Bird, Vivienne C. Ivory, Te Kani R.

Kingi, Renee Liang, Emma J. Marks, Lana M. Perese, Elizabeth R. Peterson, Jan E. Pryor, Elaine Reese, Johanna M. Schmidt, Karen E. Waldie, and Clare Wall. 2013. "Cohort Profile: Growing Up in New Zealand." *International Journal of Epidemiology*, 42:1, pp.65-75.

Morton, Susan M.B, Jacqueline Ramke, Jennifer Kinloch, Cameron C. Grant, Polly Atatoa Carr, Heidi Leeson, Arier Chi Lun Lee, Elizabeth Robinson. 2014. "Growing Up in New Zealand Cohort Alignment With All New Zealand Births." *Australia and New Zealand Journal of Public Health*, 39:1, pp.82-87.

Olivetti, Claudia, and Barbara Petrongolo, 2016, "The Evolution of Gender Gaps in Industrialized Countries," Annual Review of Economics, Vol. 8, pp 405-34.

Pacheco, Gail, Chao Li, and Bill Cochrane, 2017, "Empirical evidence of the gender pay gap in New Zealand," *Report commissioned by the Ministry for Women.*

Peterson, E. R., Andrejic, N., Corkin, M. T., Waldie, K. E., Reese, E., & Morton, S. M. B., 2018, "I hardly see my baby: challenges and highlights of being a New Zealand working mother of an infant," *Kotuitui*, *13*(1), 4–28.

Sin, Isabelle, Kabir Dasgupta, and Gail Pacheco, 2018, "Parenthood and labour market outcomes," Report commissioned by the Ministry for Women.

Sin, Isabelle, Steven Stillman, and Richard Fabling, 2017, "What drives the gender wage gap? Examining the roles of sorting, productivity differences, and discrimination," Motu Working Paper 17-15.

Statistics New Zealand, 2018, "Childcare a challenge for 1 in 6 working parents," https://www.stats.govt.nz/news/childcare-a-challenge-for-1-in-6-working-parents, accessed 10 July 2019.

Appendix A: Data

Leave measures

Our measures of anticipated and preferred leave come from the antenatal survey, which asks employed mothers who say they intend to take leave the following questions:

> "How long do you anticipate your total leave will be, both paid and unpaid?"
>
> "How much total leave from employment would you prefer to take?"

Both variables are reported in weeks and extend to a maximum of 261 weeks (5 years).

We construct actual leave from several source variables. In the 9-month survey, the 74% mothers who have completed their leave report the length of their leave in weeks. Mothers who did not take leave are coded as having taken 0 weeks. However, the 26% of mothers who are still on leave at 9 months are not asked in subsequent survey waves how long their leave ended up being. In some specifications, we right-censor these mothers' actual leave at 9 months; in others, we impute their actual length of leave using information from later survey waves.

We construct our imputed leave variable as follows. For a mother still on leave at 9 months, her imputed actual leave is set as the midpoint between the first survey wave where we observe her working and the previous survey wave. So, for example, a mother who is still on leave at 9 months, not employed at 24 months, and employed at 45 months will have an imputed actual leave of 34.5 months = 150 weeks. Mothers who are still on leave at 9 months and not employed in any of the 24-month, 45-month, or 54-month survey waves are assigned an imputed actual leave of 60 months (5 years).

This calculation is based on return to work, not strictly leave. For example, it classifies a mother who ends her formal leave from an employer by resigning from her job but does not begin employment elsewhere as still on leave. We believe this definition is the most consistent with mothers' interpretations of the "preferred leave" and "anticipated leave" questions. In the antenatal survey mothers give very similar responses when asked how much leave they anticipate taking and how old they expect their child to be when they return to work, suggesting they interpret "leave" as simply "time not working".[19] Alternatively classifying mothers as still on leave only if they explicitly report being on leave does not materially affect our results.

[19] Mothers are not asked what age they prefer their child to be when they return to work; if they were we could focus entirely on child's age at return to work.

Other variables

Reasons mothers anticipate less leave than they prefer

In the antenatal survey, mothers whose length of anticipated leave is less than their length of preferred leave are asked to give reasons for this, with multiple responses permitted. We analyse the full set of options presented.

Reasons mothers return to work

In the 9-month survey, mothers who are working are asked the reasons they returned to work when they did. For analysis, we aggregate the possible reasons as follows:

- "Used up paid parental leave" and "paid parental leave ended" are combined into "used up PPL", a policy-driven constraint;
- "Employer wanted me back" and "it would hurt my career not to return" are combined into "career concerns", which might be interpreted as constraints or preference-related;
- "Childcare arranged" and "father looking after baby" are combined into "arranged childcare", which captures the lifting of a constraint;
- "Enjoy work", "missed my coworkers", and "wanted to get out of the house" are combined into "enjoy working", clearly a preference-related reason; and
- "Seasonal job", "self-employed, and "other" are combined into "job characteristics/other".

Reasons mothers do not return to work

In each of the 9-month, 24-month, and 45-month surveys, mothers who are neither in work, on parental leave, nor currently seeking work are asked their reasons for this, with multiple responses permitted. We aggregate the possible responses into the following categories:

- "Busy with family" and "looking after child" are combined into "busy with child/family";
- "Partner earns enough" is retained as a category;
- "No jobs available", "can't find a job that interests me", and "can't find a job with enough flexibility" are combined into "couldn't find suitable job";
- "No suitable childcare" and "not worthwhile given childcare costs" are combined into "couldn't find suitable childcare";
- "Studying", "will lose government benefits", and "other" are combined as "other".

Mothers who are not working and are currently searching for a job are not asked their reasons for not working; we include them in "couldn't find suitable job".

Mothers who are on parental leave are similarly not asked their reasons for not working. We create a separate category for them, "still on leave".

Mothers' antenatal employment

Mothers are asked during the antenatal survey whether they earned income during the past 12 months from wages and from self-employment. We classify mothers who earned income exclusively from self-employment as purely self-employed, those who earn wages or salaries only as employees only, and those who earn income from both as partially self-employed. For some analysis we group the latter with purely self-employed mothers.

Mothers are also asked antenatally how many hours they work a week; we classify mothers who work strictly less than 30 hours a week as "part-time."

Wellbeing measures

We use several measures to explore mothers' wellbeing in the years after having their child.

At the 9-month and 24-month surveys, mothers are asked to rate on a 1-4 point scale how stressful they find balancing work and family life. Similarly, mothers are asked in the same surveys to what extent "money problems" are a source of stress for them and their family. We standardise both variables to have mean 0 and standard deviation 1, with higher values indicating more stress.

In the 9-month survey mothers are also asked a battery of questions about the material hardship they experience. For example, mothers are asked whether they have put up with feeling cold to save heating costs, bought cheaper food so they could pay for other things, and so on. We sum affirmative responses to these questions to generate a "hardship index," which we standardise to have mean 0 and standard deviation 1. Higher scores indicate more material hardship.

Regressions of one type of leave on another

Our regressions of one type of leave on another shed light on the extent to which mothers are constrained in their leave, and their ability to follow their leave plans.

In a regression of anticipated leave on preferred leave, a coefficient close to 1 and a high R-squared would suggest mothers expect to be largely unconstrained in the leave they take. A smaller coefficient would suggest mothers expect various constraints to limit their leave.

In a regression of imputed actual leave on preferred leave, a coefficient close to 1 and a high R-squared would suggest the leave mothers actually take is similar to the leave they prefer antenatally, meaning their preferences for leave did not change and constraints did not prevent them taking their desired leave.

In a regression of imputed actual leave on anticipated leave, a coefficient close to 1 and a high R-squared would indicate mothers are successful in following through their planned leave, and don’t change their preferences or experience shocks to their circumstances that force a change in plans.

Appendix B: Tables

Appendix Table 1: Lengths of leave

Leave type and statistic	Full sample	First-time mothers	Mothers with previous children
Preferred leave (mean)	68.5	74.2	62.7
Preferred leave (sd)	(66.0)	(69.2)	(62.1)
Anticipated leave (mean)	35.7	37.8	33.5
Anticipated leave (sd)	(27.6)	(28.3)	(26.7)
Imputed actual leave (mean)	53.2	58.5	47.7
Imputed actual leave (sd)	(61.7)	(66.3)	(56.0)

This table displays the means and standard deviations of different types of leave for mothers in our sample.

Appendix Table 2: Lengths of leave for subpopulations

Leave type and statistic	Full sample	Below median income	Receives benefit	Not partnered antenatally or at 9 months	Lives in one of the 30% most deprived areas
Preferred leave (mean)	68.5	61.9	66.3	71.9	63.7
Preferred leave (sd)	(66.0)	(64.9)	(66.6)	(73.0)	(62.4)
Anticipated leave (mean)	35.7	34.4	36.6	31.3	33.1
Anticipated leave (sd)	(27.6)	(33.1)	(37.4)	(16.5)	(25.2)
Imputed actual leave (mean)	53.2	52.1	48.3	57.1	48.0
Imputed actual leave (sd)	(61.7)	(68.9)	(63.4)	(73.5)	(58.7)
Observations	2,588	618	332	114	692

This table displays the means and standard deviations of different types of leave for different subgroups of mothers. "Below median income" is the sample of mothers with below median personal income in the antenatal survey, "Receives benefit" means having received any kind of government benefit payment in the 12 months before the antenatal survey, and deprivation is based on the Area Deprivation Score.

Appendix Table 3: Mothers' benefit receipt by labour force status

% receiving benefits by labour force status	9 months	24 months	54 months
Employed and working	32.1	31.1	23.7
Starting work in the next 4 weeks	38.6	48.6	64.7
Searching for a job	62.5	64.4	50.0
On parental leave	33.9	28.4	33.3
On other type of leave	50.0	Included in "not employed and not seeking work"	

Not employed and not seeking work	48.3	50.7	45.5

This table replicates the structure of Table 2, except it displays the percentage of mothers in each labour force category who report that their household receives welfare benefits during the relevant survey wave. The benefit types covered are (at 9 and 24 months) family tax credits, unemployment benefits, sickness benefits, domestic purposes benefits, and invalids' benefits, and (at 54 months) family tax credits, jobseeker benefits, accommodation supplements, sole parent benefits, and supported living benefits.

Appendix Table 4: Predicting comparisons between leave types

Dependent variable:	Anticipated < preferred	Imputed < preferred	Imputed < anticipated
Age (omitted category: 25-34)			
Aged under 25	-0.016	0.055	0.083**
	(0.039)	(0.035)	(0.040)
Aged 35 or over	0.012	0.051**	0.051**
	(0.022)	(0.021)	(0.023)
Pregnancy was planned	-0.022	-0.008	-0.014
	(0.023)	(0.022)	(0.024)
Has previous children	-0.029	0.012	0.033
	(0.022)	(0.020)	(0.022)
Born overseas	-0.027	-0.034	-0.014
	(0.026)	(0.024)	(0.026)
Ethnicity (omitted category: European only)			
Māori only	0.075	0.046	0.081
	(0.056)	(0.048)	(0.056)
Pacific only	-0.022	-0.019	-0.013
	(0.045)	(0.041)	(0.046)
Asian only	-0.089**	-0.014	0.013
	(0.037)	(0.035)	(0.037)
European and Māori	0.013	-0.004	0.003
	(0.037)	(0.035)	(0.039)
Other ethnicity	-0.021	-0.000	-0.013
	(0.037)	(0.034)	(0.037)
Educational qualifications (omitted category: degree)			
None or school	-0.000	0.003	0.012
	(0.030)	(0.028)	(0.030)
Post-school	0.010	0.074***	0.064**
	(0.025)	(0.023)	(0.026)
Self-employment status (omitted category: waged only)			
Self-employed only	-0.091**	0.003	0.029
	(0.036)	(0.035)	(0.037)
Self-employed and earns wages	0.064	0.064	0.088**
	(0.036)	(0.033)	(0.037)

Works part-time antenatally (<=30 hrs)	-0.123***	-0.110***	-0.056
	(0.029)	(0.027)	(0.029)
Antenatal personal income (ln)	0.006	-0.015	-0.052***
	(0.019)	(0.018)	(0.019)
Stress about money	0.069***	0.024***	-0.007
	(0.010)	(0.009)	(0.010)
Occupation (omitted category: professional)			
Manager	-0.033	-0.076**	-0.024
	(0.033)	(0.031)	(0.034)
Technician or trade worker	-0.023	-0.007	0.018
	(0.054)	(0.047)	(0.054)
Service worker	0.000	-0.069	-0.024
	(0.042)	(0.040)	(0.042)
Administrative worker	-0.001	-0.009	0.001
	(0.030)	(0.027)	(0.030)
Sales worker	-0.107**	-0.080	-0.035
	(0.044)	(0.042)	(0.045)
Machinery operator or driver	-0.042	-0.089	-0.033
	(0.122)	(0.124)	(0.127)
Labourer	-0.153**	-0.160***	-0.070
	(0.060)	(0.061)	(0.061)
R-squared	0.05	0.03	0.02
% of successes	54%	70%	50%
Observations	2,588	2,588	2,588

Results from regressions of relationships between preferred, anticipated, and actual leave on antenatal characteristics. Standard errors in parentheses. The sample is mothers who were antenatally employed and intended to take leave when their child was born. Table includes dummies for 'missing qualifications', 'missing marital status', and 'missing income'. Dependent variables are: (1) a dummy for 'anticipated leave < preferred leave', (2) a dummy for 'imputed actual leave <' preferred leave', and (3) a dummy for 'imputed actual leave < anticipated leave'. ** p<0.05, *** p<0.01