

Parenthood and labour market outcomes

Isabelle Sin



Te Pūnaha Matatini
Data ■ Knowledge ■ Insight

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NEW ZEALAND
WORK RESEARCH INSTITUTE



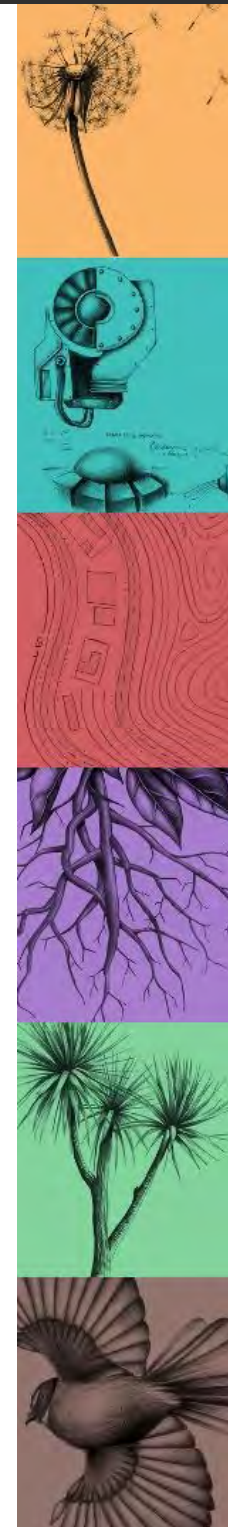
29 May 2018

This research was funded by the Ministry for Women



Motivation: Is parenthood to blame for the gender wage gap?

- Women in New Zealand earn less on average than men
- 9.4% lower median hourly pay in June quarter 2017 (SNZ)
- Difference can't be explained by:
 - Observable characteristics (age, education, skills etc)
 - Productivity (Sin, Stillman, and Fabling, 2017)
- What is the role of parenthood in this gender wage gap?



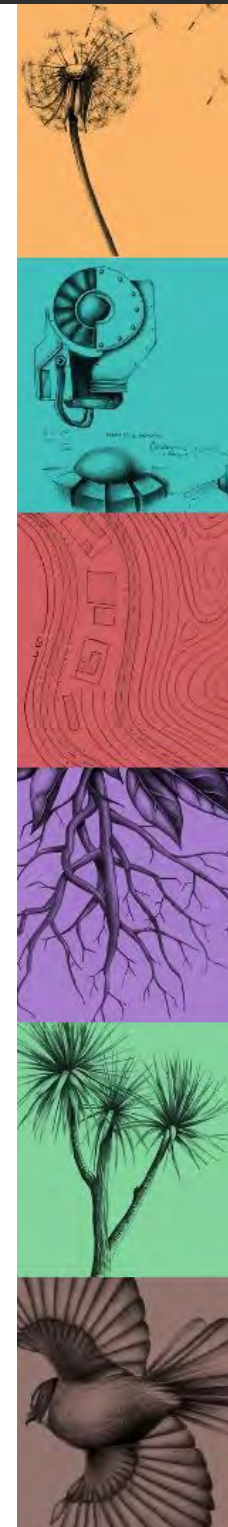
Motivation: Is parenthood to blame for the gender wage gap?

Statistics New Zealand has combined data in a way that allows us a view over time how labour market outcomes evolve when men and women become parents

Our goal: To describe the data...

- What changes when men or women have children?
- How persistent are the changes?
- For whom are they biggest?

... not (yet) to conclude why we see the patterns we see



Research questions

- How long are first-time mothers and fathers out of paid employment?
- How do their hours worked, monthly earnings, and hourly earnings change when they return to work after becoming parents?
- How do these changes differ by pre-parenthood income?
- By time out of employment?
- By age, ethnicity, and other characteristics?



Preview of findings

- Women's **employment** falls when they become parents, and those employed work fewer hours
- **Monthly wage income** of employed women falls with parenthood, especially among the high-income women who return more slowly to work
- Even high-income women who return to work quickly experience slower growth in **monthly wage income** after childbearing
- **Hourly wages** fall when women have children, more so for those out of work longer



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- **Hourly wages** fall when women have children, more so for those out of work longer
- **Men experience none of these effects**



New Zealand setting

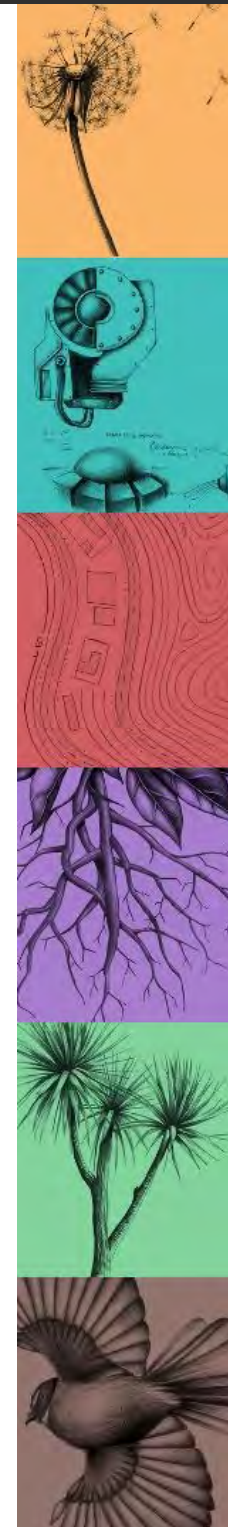
- Government-funded paid parental leave
 - since 2002
 - currently 18 weeks (~4 months)
 - can be taken by mother or other primary carer
- Free early childcare education
 - since 2007
 - 20 hours per week
 - all 3- and 4-year-olds eligible
- Working for Families tax credits
 - since 2004
 - families with dependent children aged 18 or under
 - some elements only available to working households



SNZ data confidentiality

Access to the data presented was managed by Statistics New Zealand under strict micro-data access protocols and in accordance with the security and confidentiality provisions of the Statistic Act 1975.

Our findings are not Official Statistics. The opinions, findings, recommendations, and conclusions expressed are those of the authors, not Statistics NZ, the Ministry for Women, Motu Economic and Public Policy Research, Te Pūnaha Matatini, New Zealand Work Research Institute, or AUT.



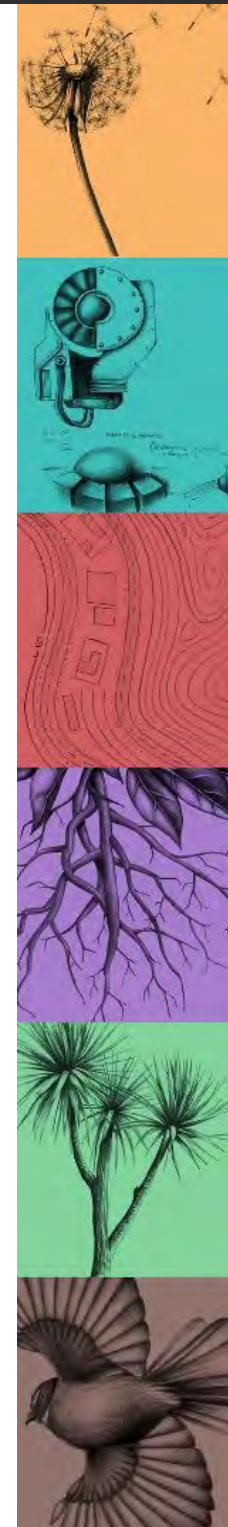
Data

Monthly wage
earnings from
tax data

Birth records

IDI

Survey data (HLFS)
on hours worked
and hourly wages



Data

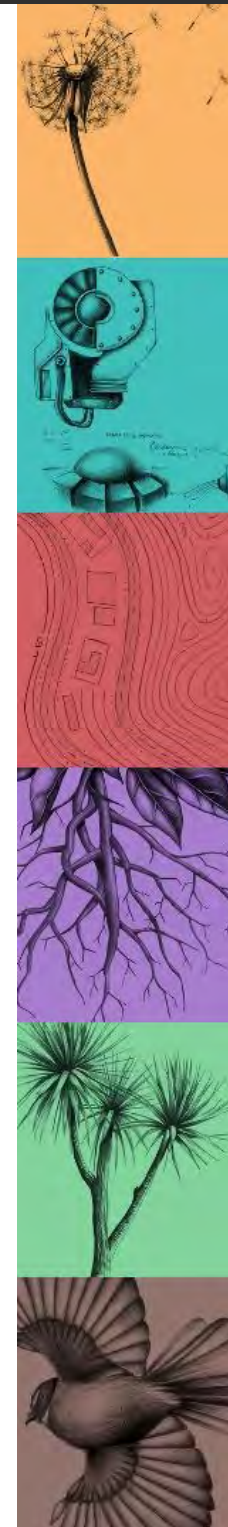
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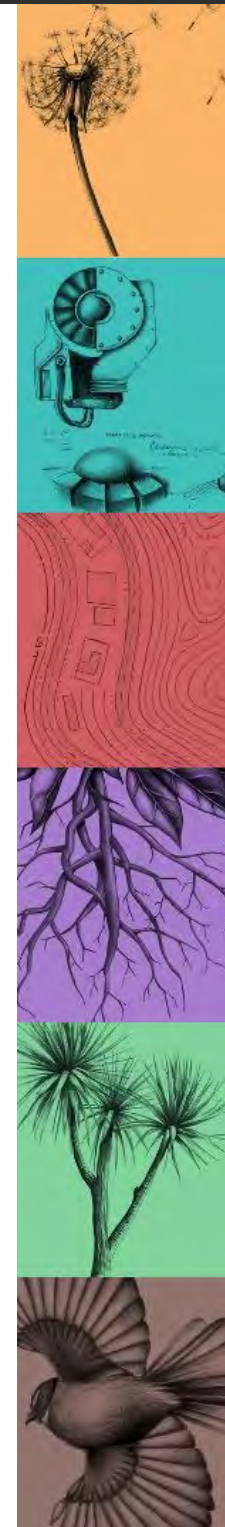
15-year series of employment and earnings for everyone

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All first-time parents

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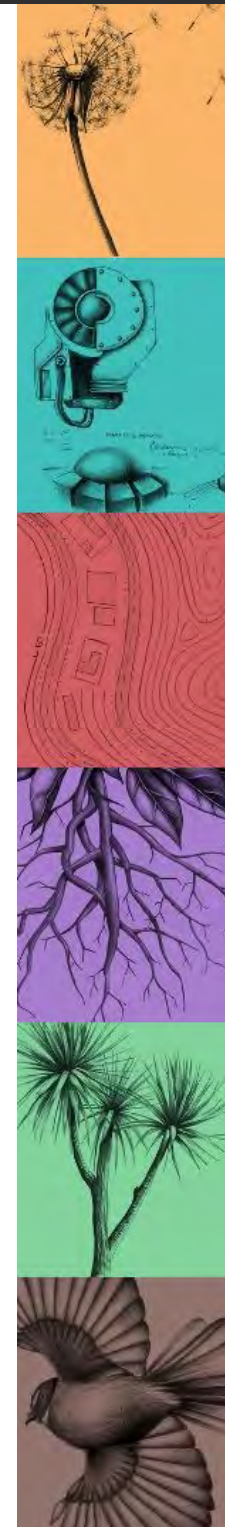
Birth records

All first-time parents

IDI

Sample of current and future parents and never-parents

Survey data (HLFS) on hours worked and hourly wages



Data: Pre-parenthood income

- Possible to construct because data on monthly wage income are available for each individual over a long time period
- Measure of skill/earning potential
- Income quartile based on monthly wage earnings within gender and single year of age in second year before parenthood
 - Use average earnings in months worked only
 - Those who worked <4 months assigned to separate group



Employment: Who works and when?

A combination of choice and necessity



Employment considerations

1. Do I look for a job?

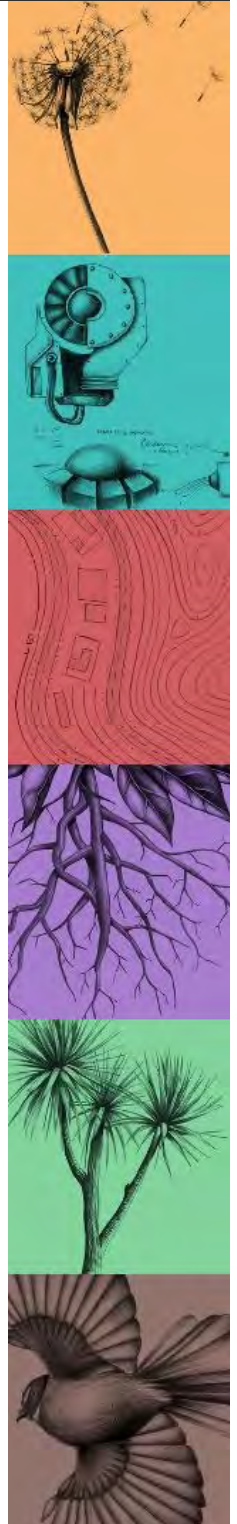
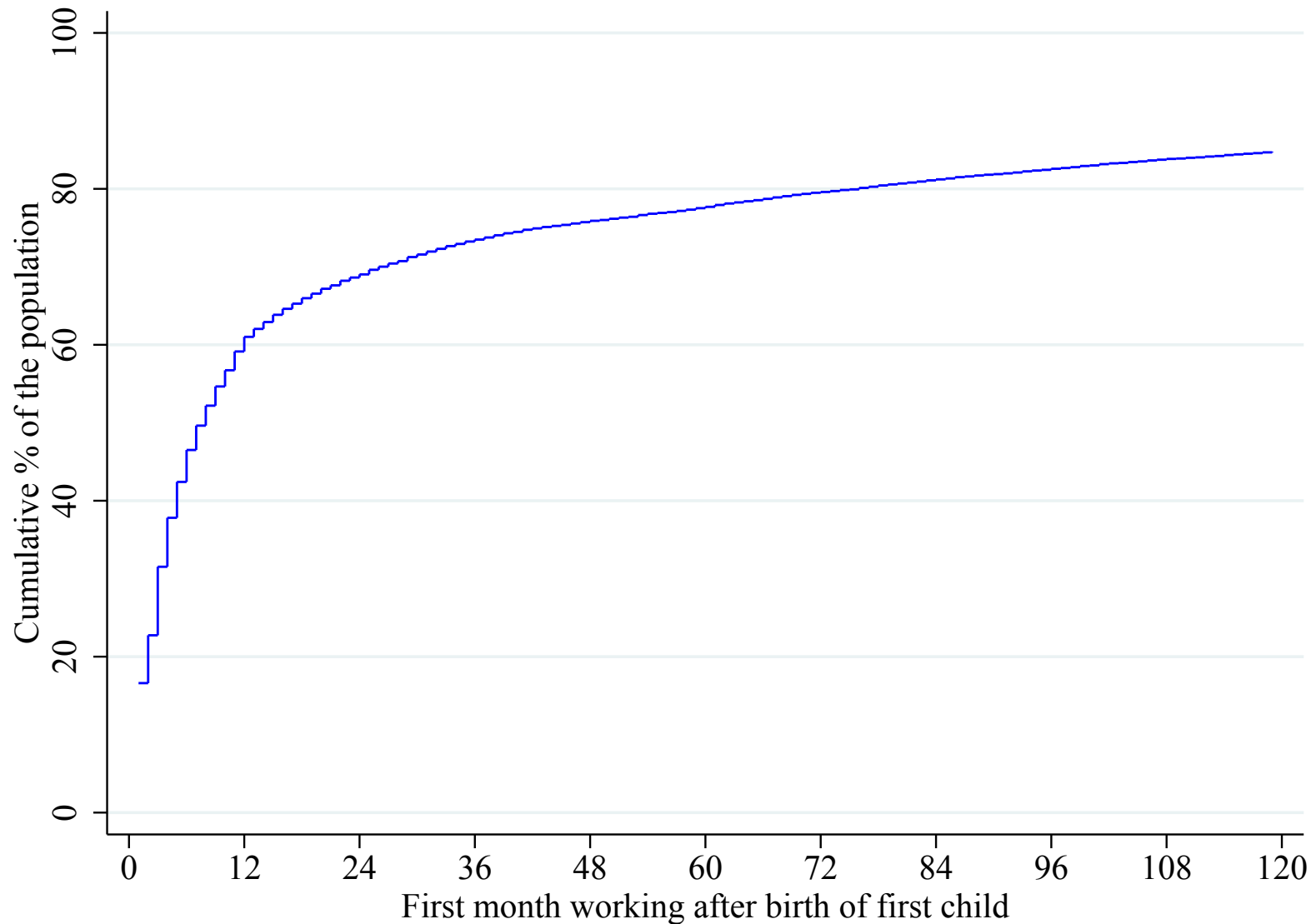
- How much time do I want to spend working and how much with my child?
- Who will look after my child?
 - My partner or relatives? If one of us stays home with the child, who should it be?
 - A paid carer? Will I make enough money for working to be worthwhile?
- Can I afford *not* to work?
- Repercussions for my skills and career

2. Can I find a job?

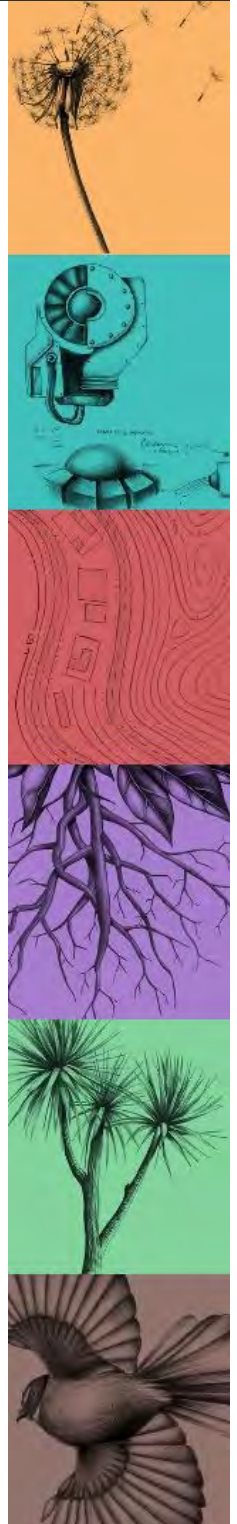
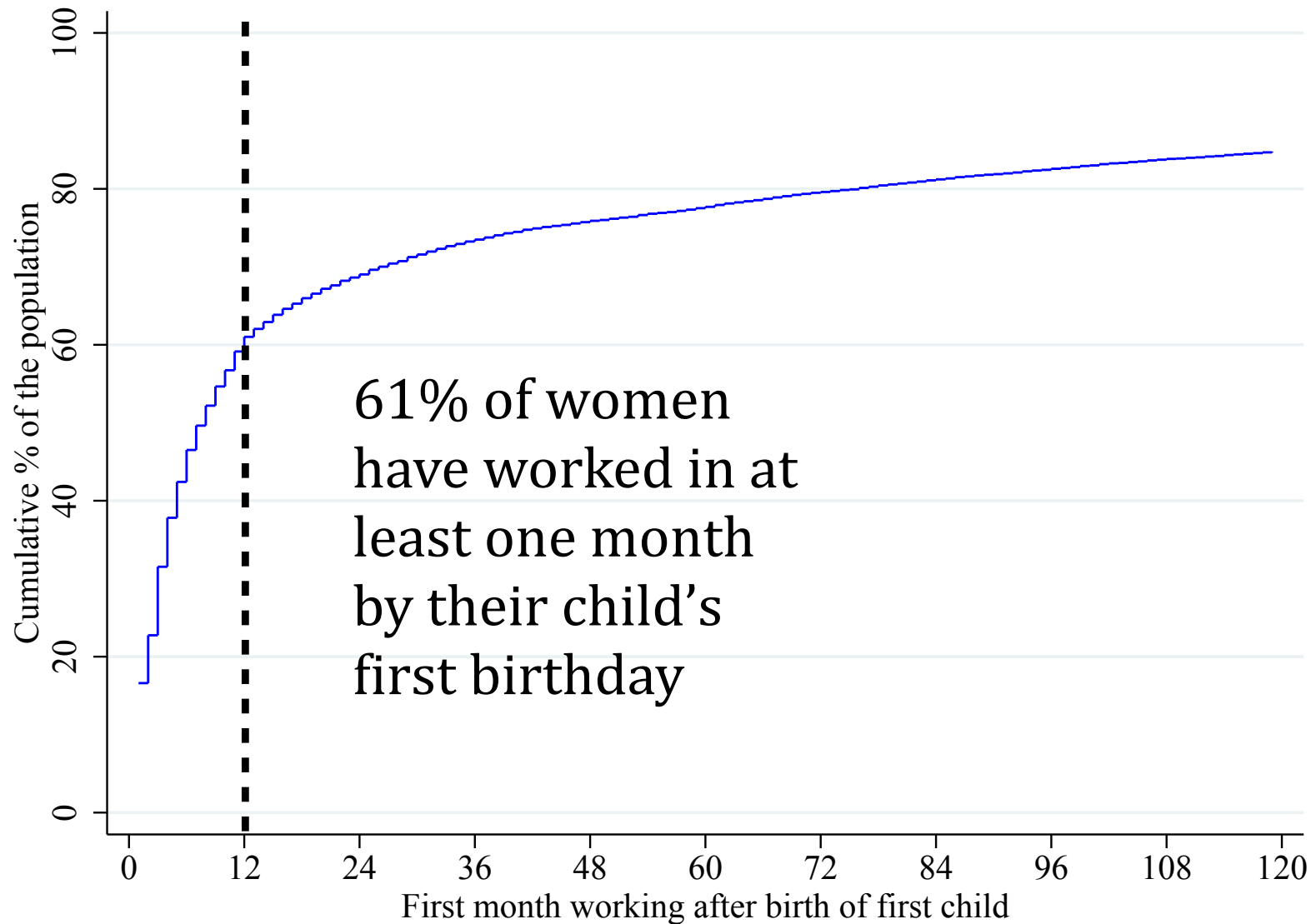
- Skills, experience, location, networks, required conditions



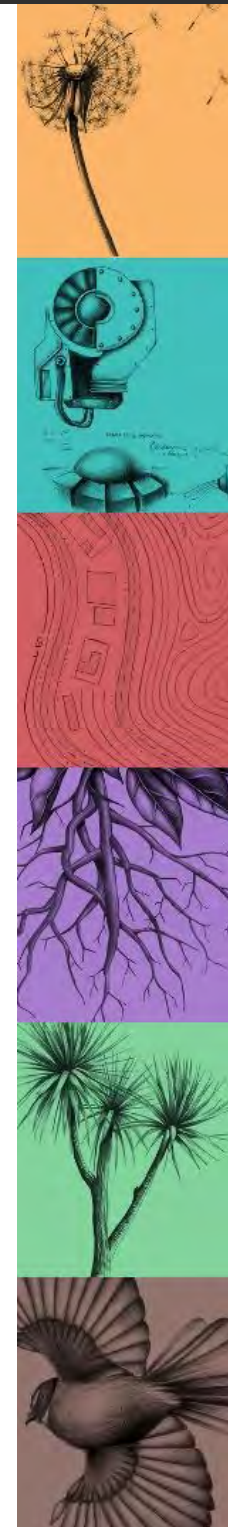
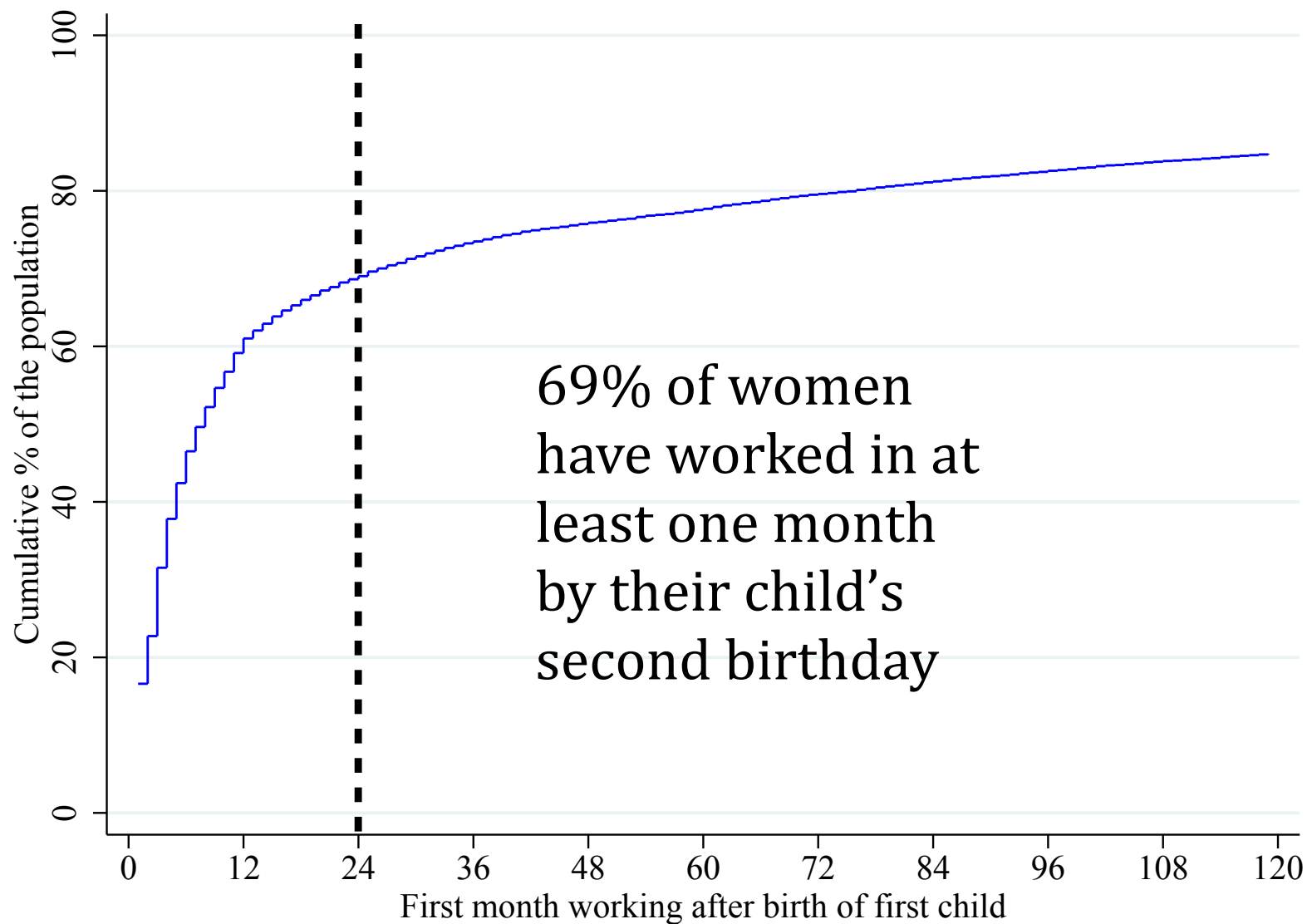
Women's return to paid employment after the birth of their first child



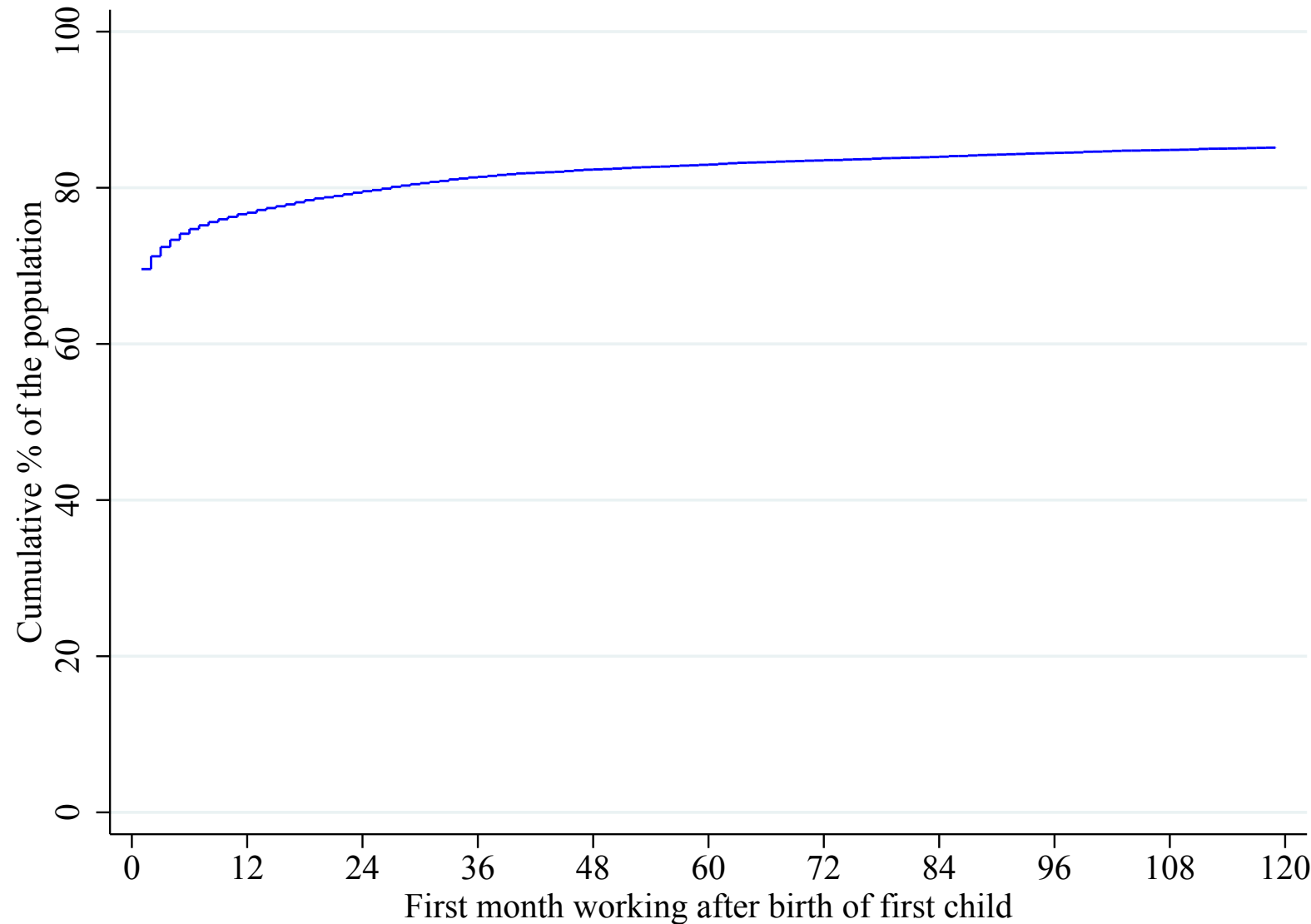
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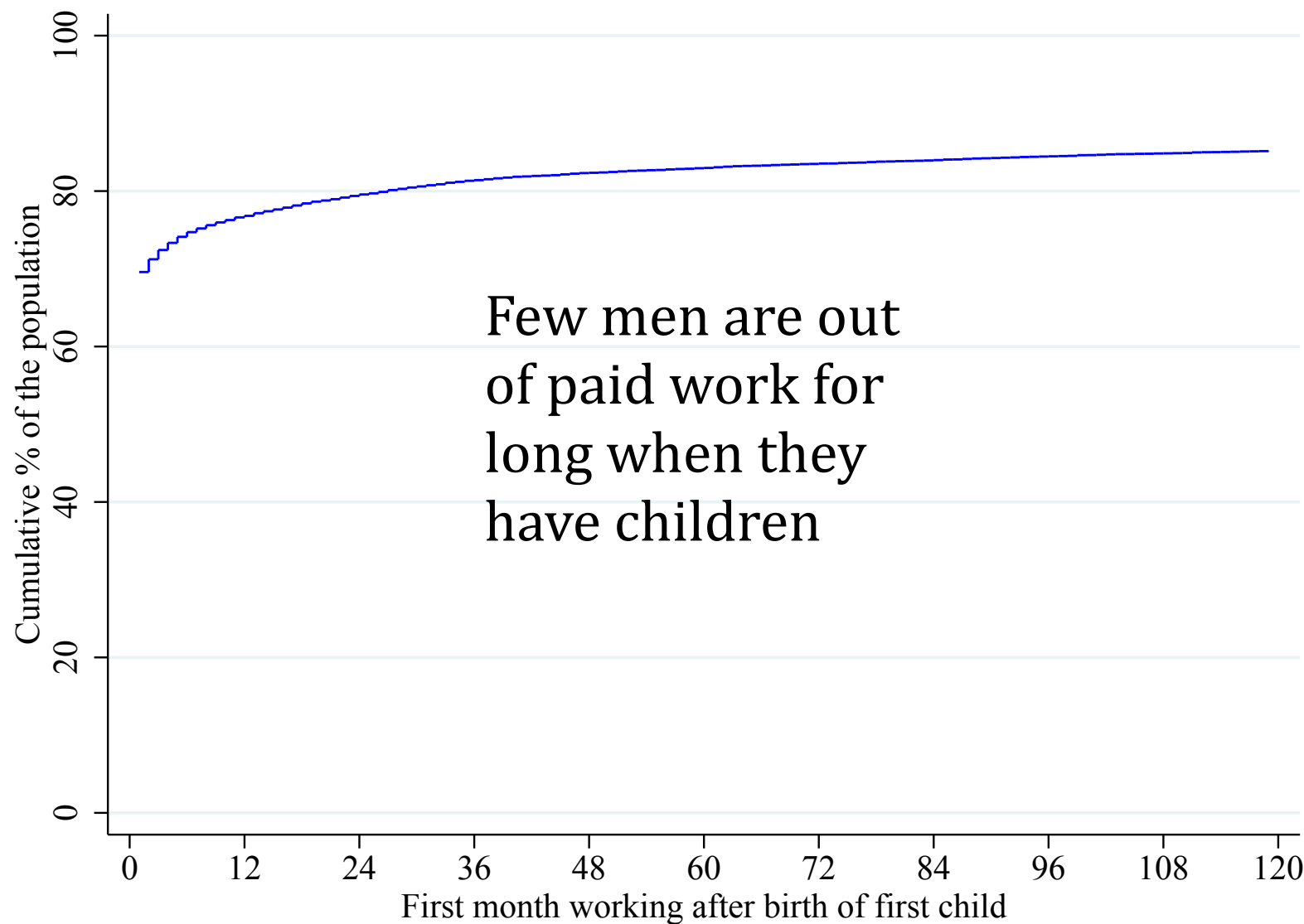
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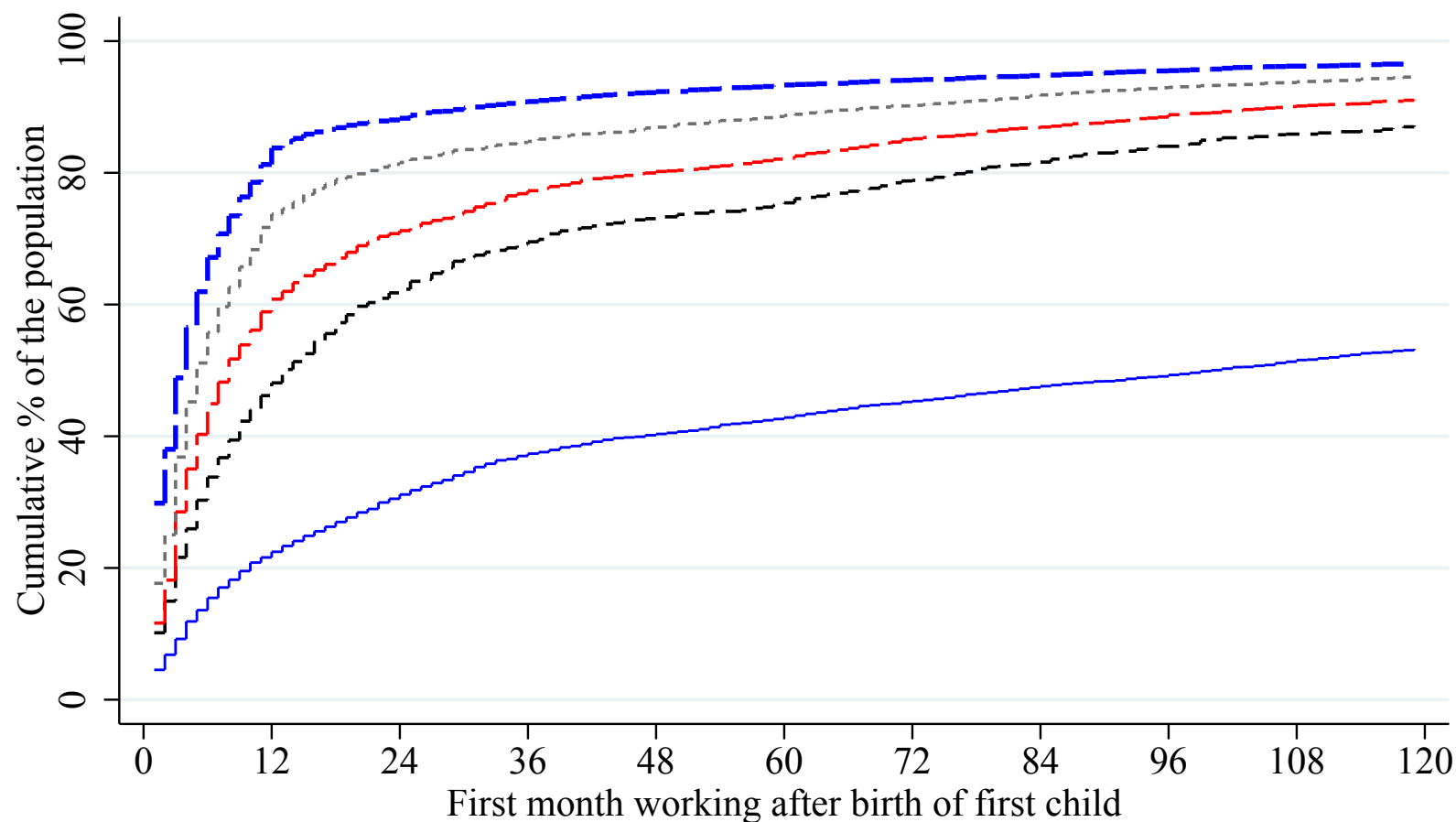
Men's return to paid employment after the birth of their first child



Men's return to paid employment after the birth of their first child

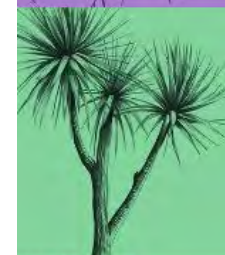
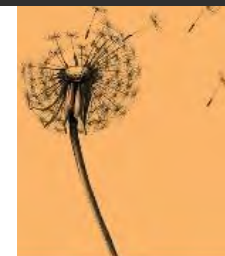


Mothers' return to paid work by pre-parenthood income

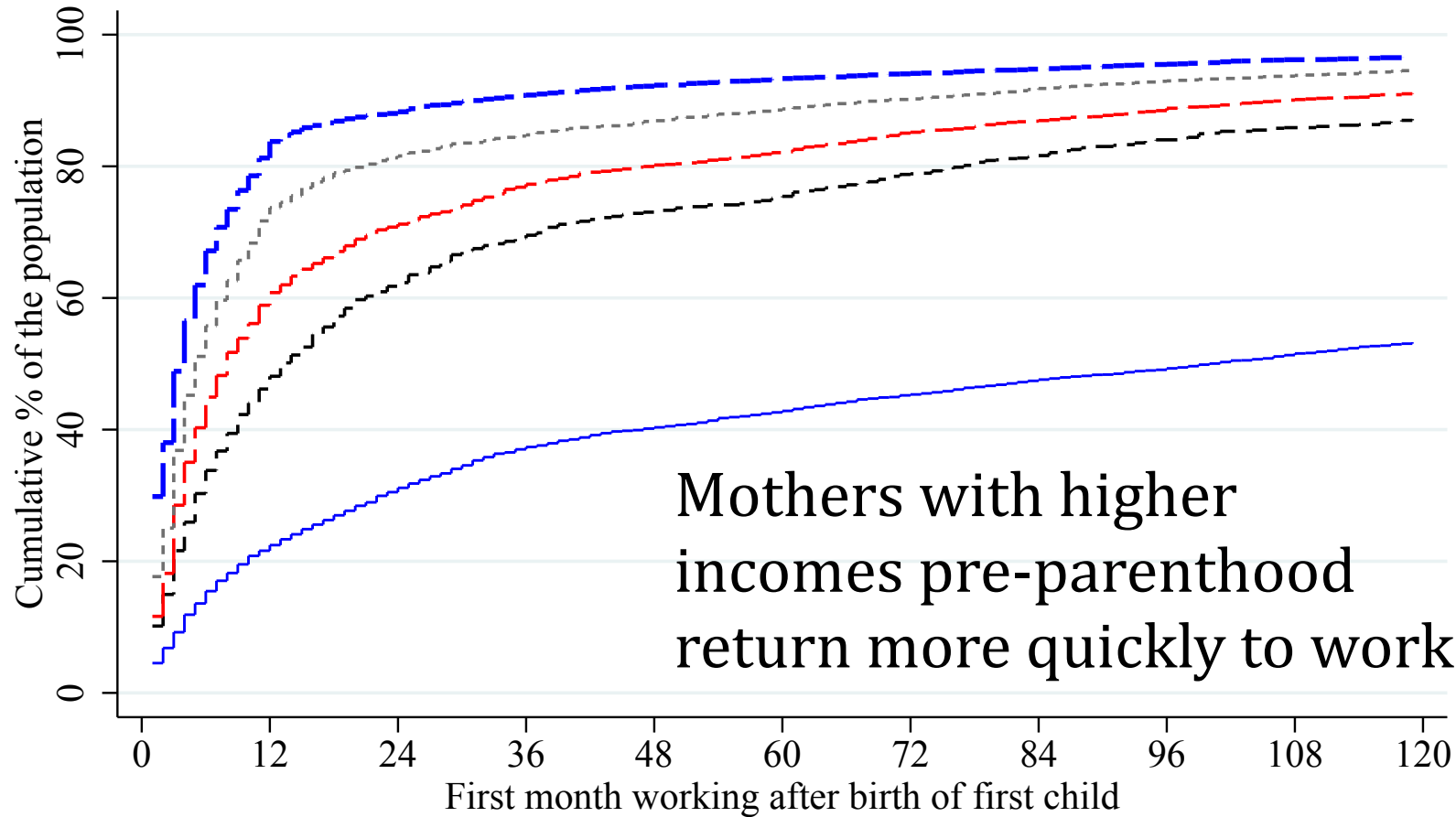


Monthly income quartile for age and gender in 2003

- Worked <4 months
- - - 1st quartile
- - - 2nd quartile
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Mothers' return to paid work by pre-parenthood income



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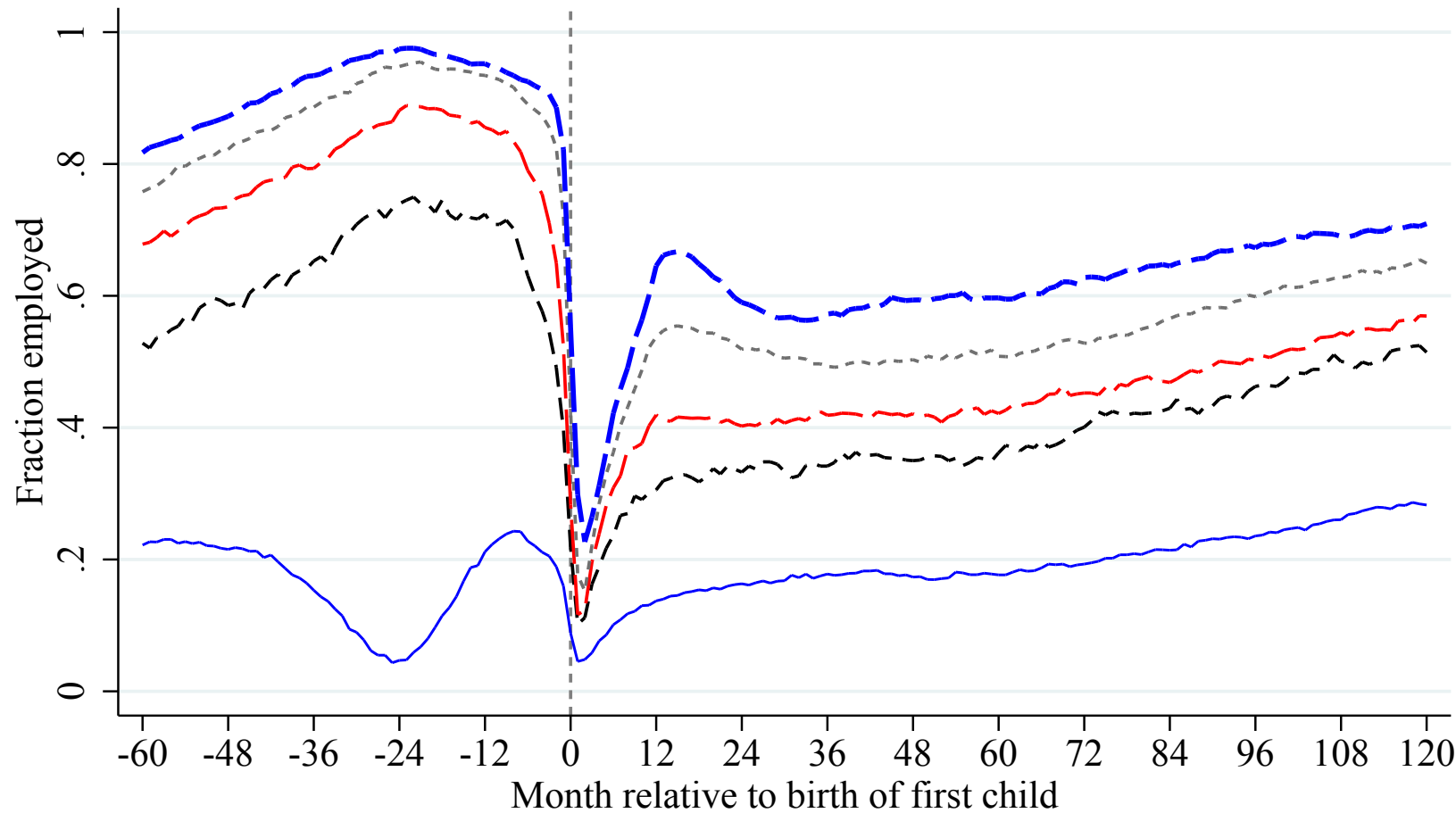
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Do women who return to work quickly stay there?



Mothers' employment rates by pre-parenthood income

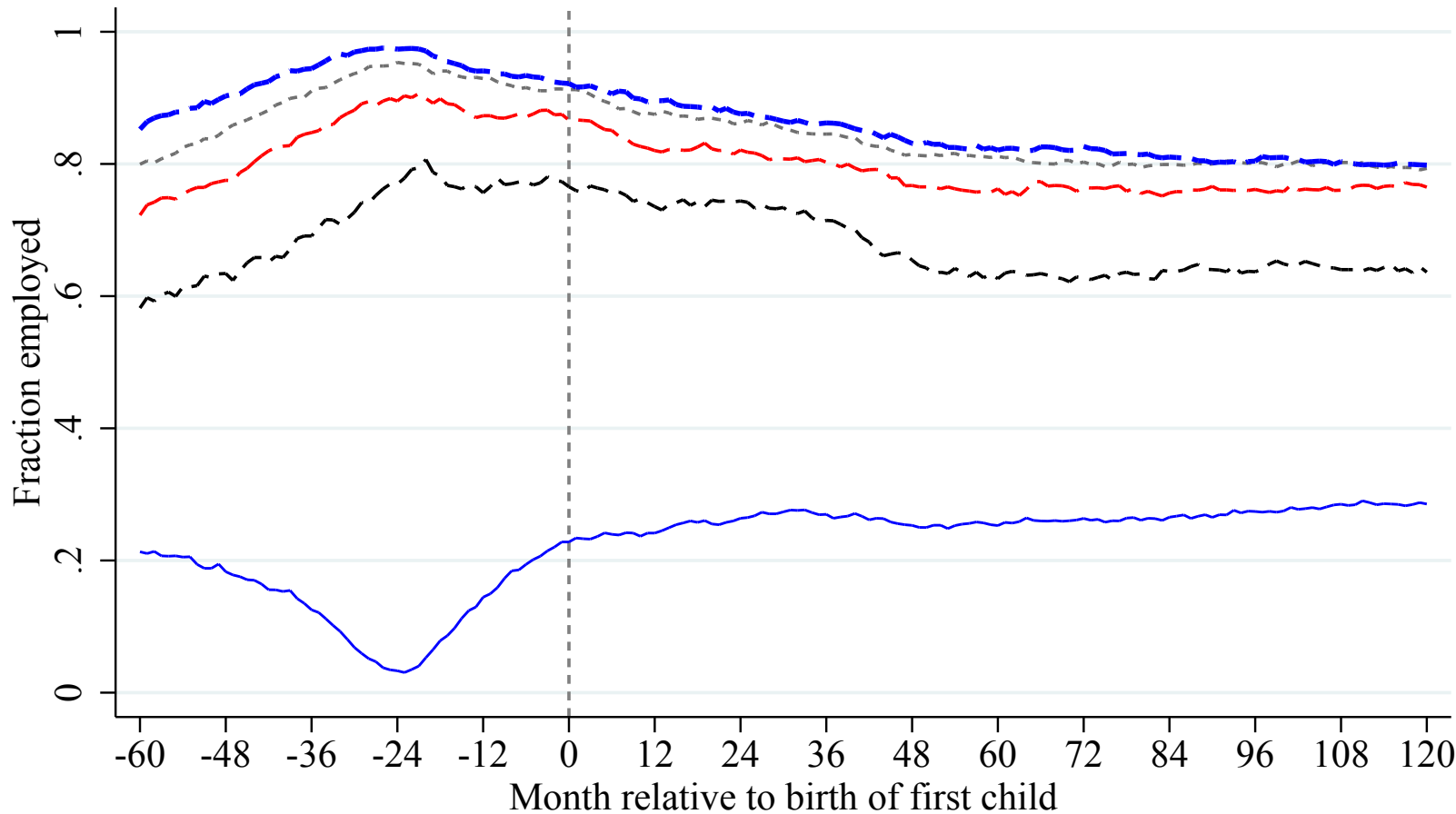


Monthly income quartile for age and gender in 2003

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Fathers' employment rates by pre-parenthood income



Monthly income quartile for age and gender in 2003

- Worked <4 months
- - - 1st quartile
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Employment rates of mothers by ethnicity

	2nd year before birth	2nd year after birth
Māori	56%	31%
Pasifika	58%	36%
European	79%	48%
Māori/European	71%	42%
Asian	56%	38%
Other	62%	39%



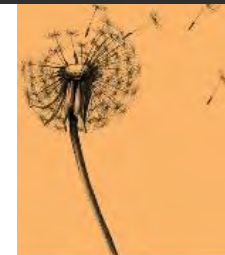
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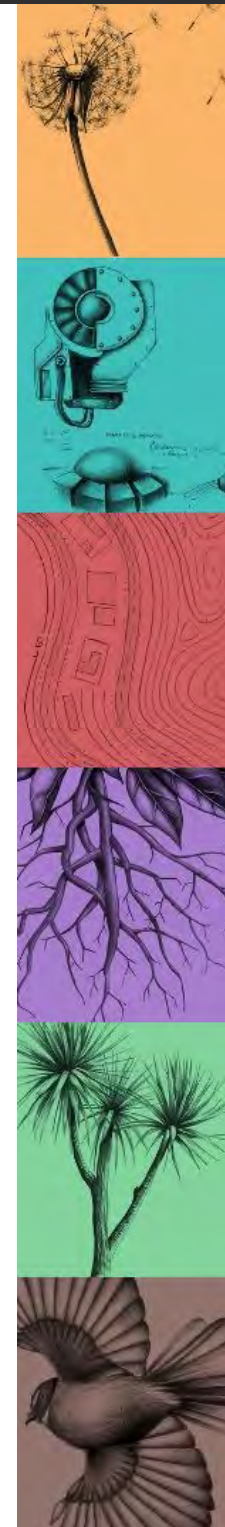
	2nd year before birth		2nd year after birth	
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largest %pt
decrease

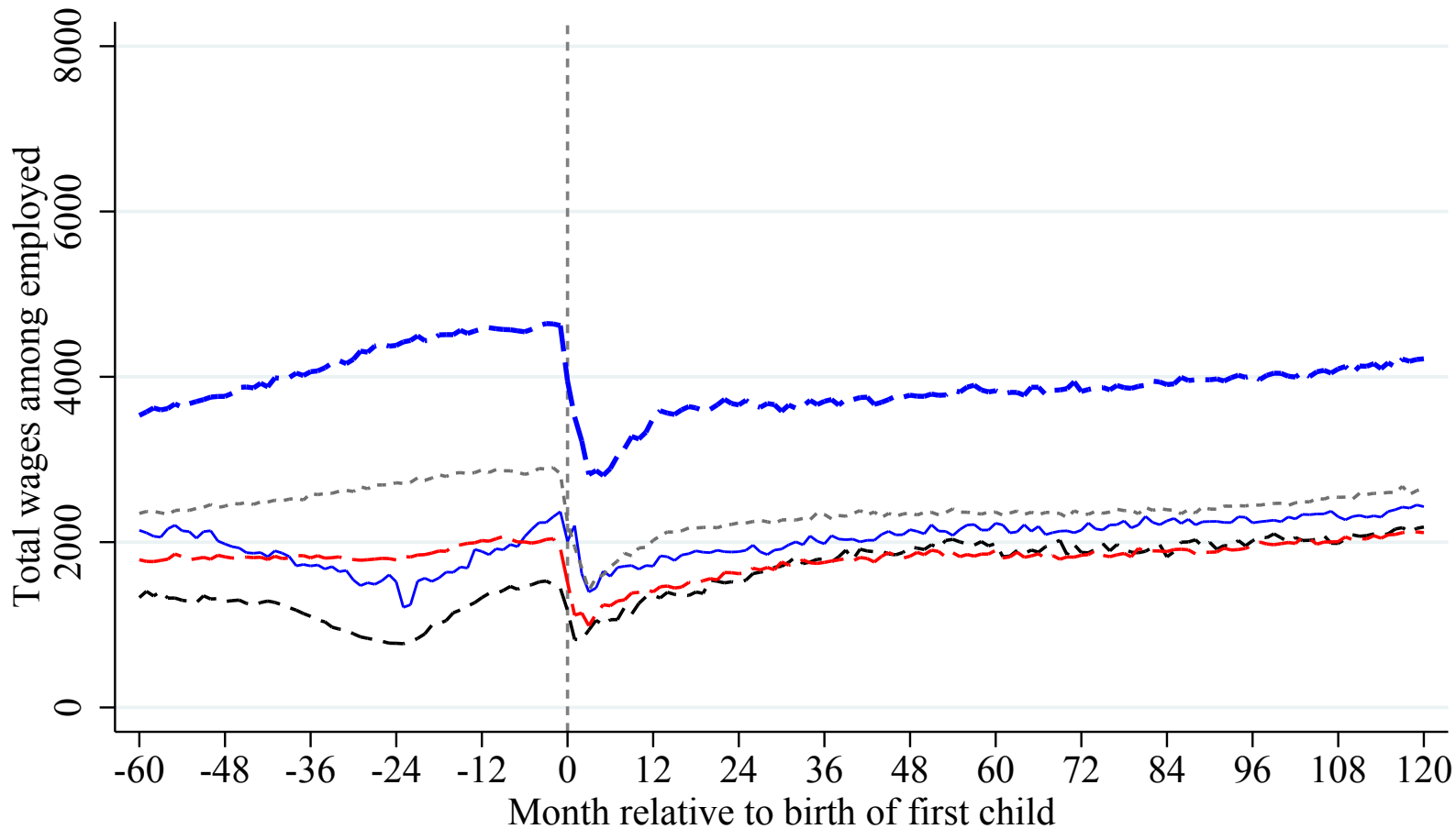


Monthly wage income

- Combines hourly wages, hours worked per week, stability of work
- Matters for ability to support family and lifetime earnings

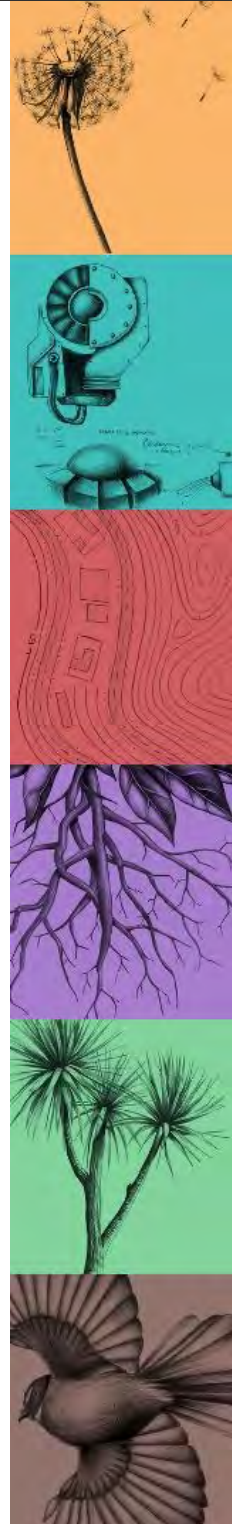


Monthly earnings of employed women by pre-parenthood income

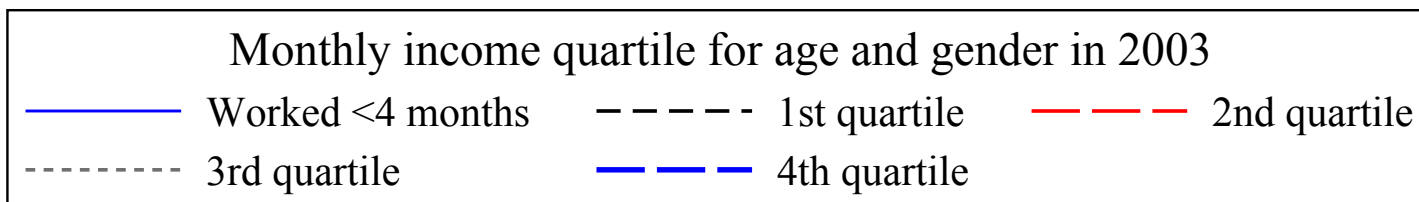
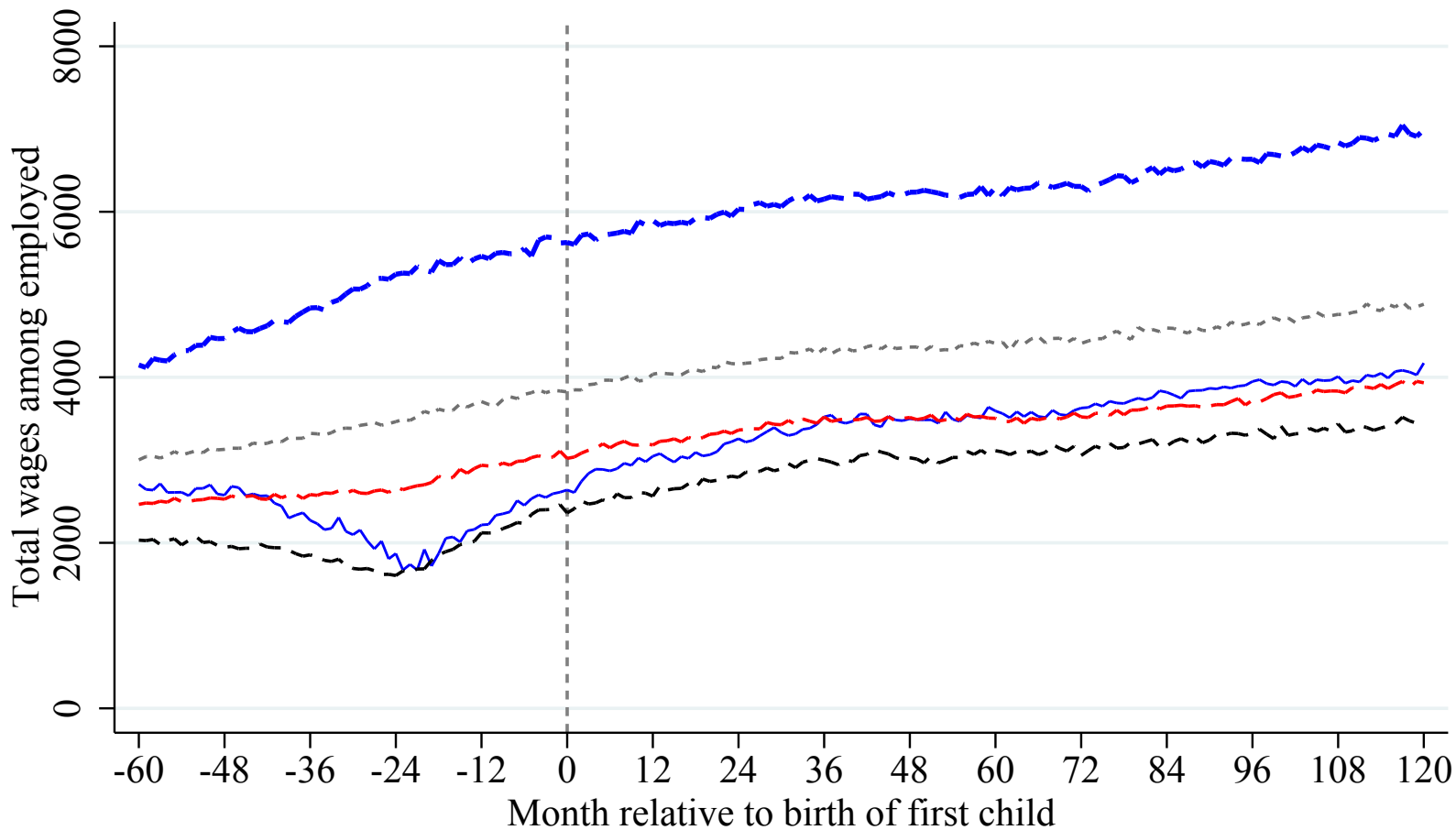


Monthly income quartile for age and gender in 2003

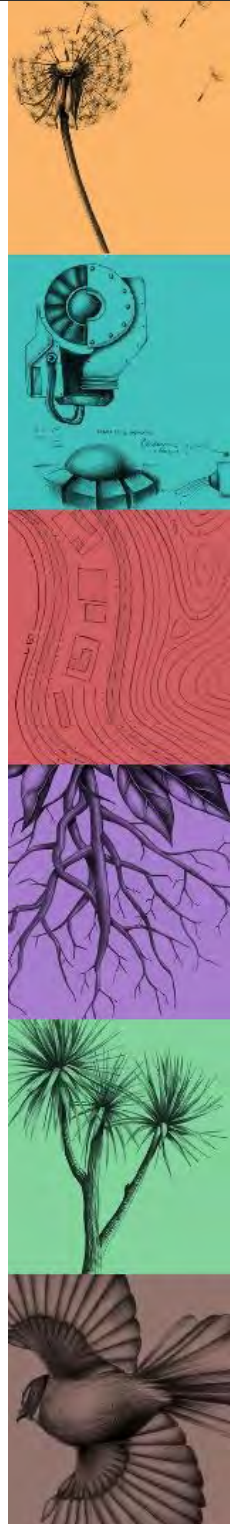
- Worked <4 months
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Monthly earnings of employed men by pre- parenthood income



Does how long women are out of employment matter for their earnings when they return?

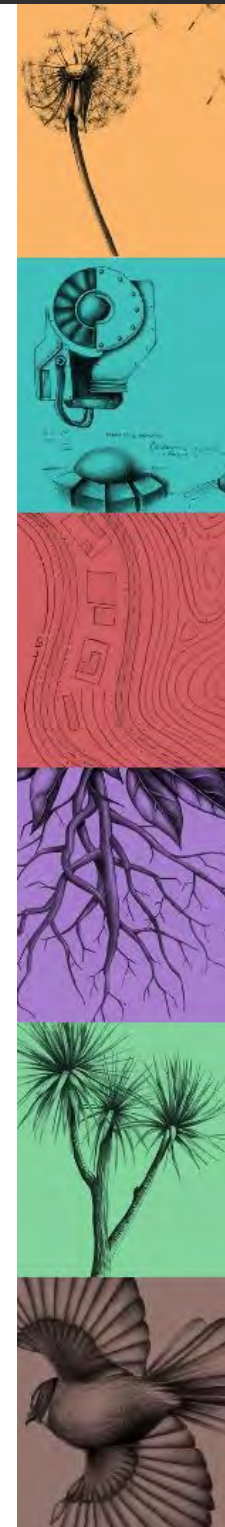
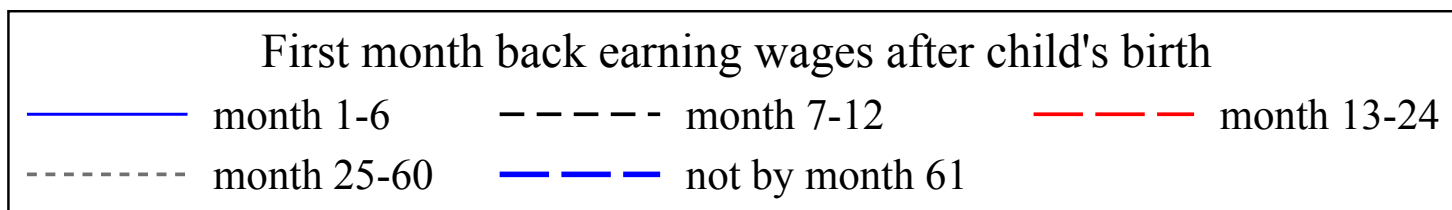
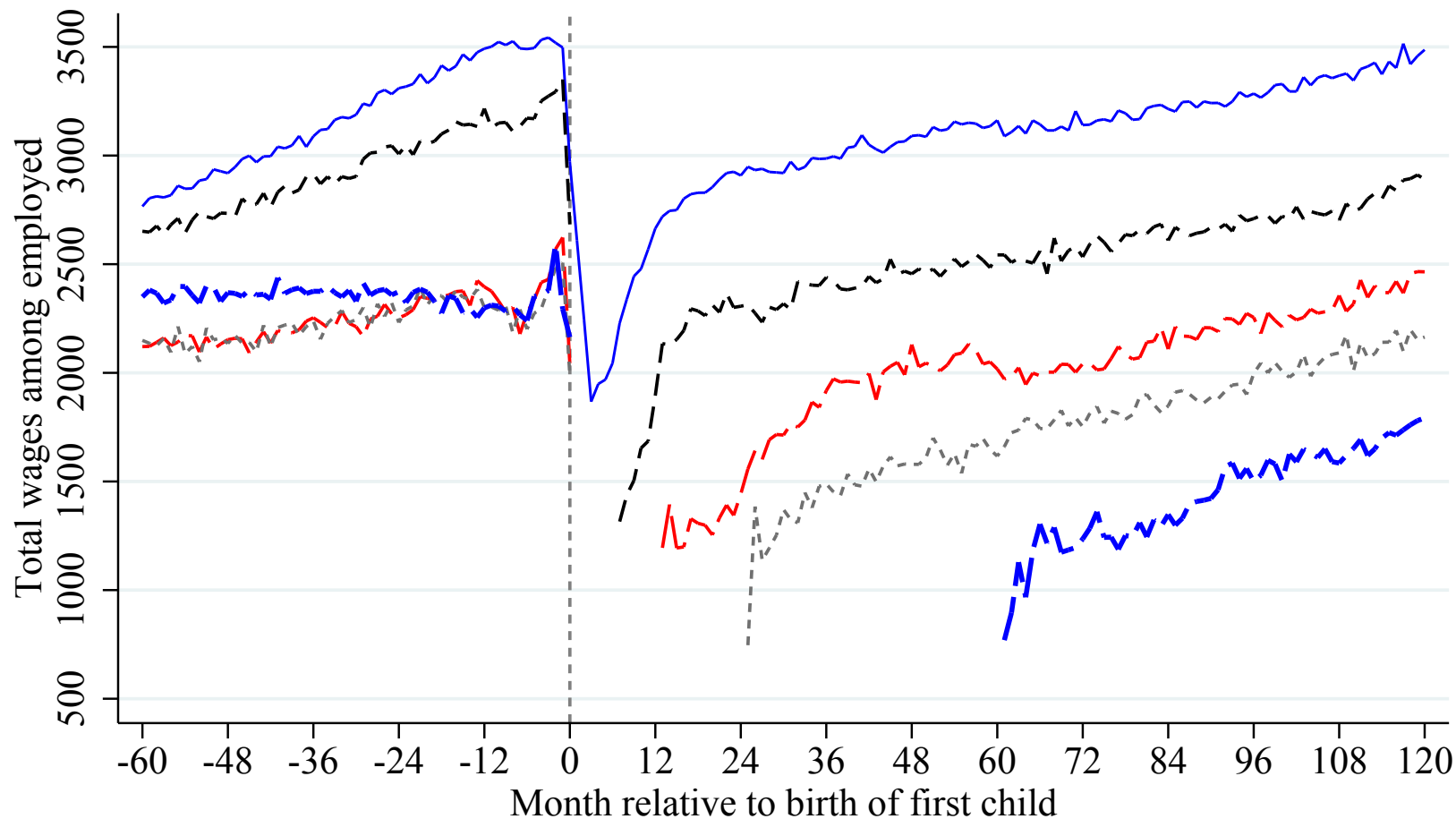


Why might time out of employment matter?

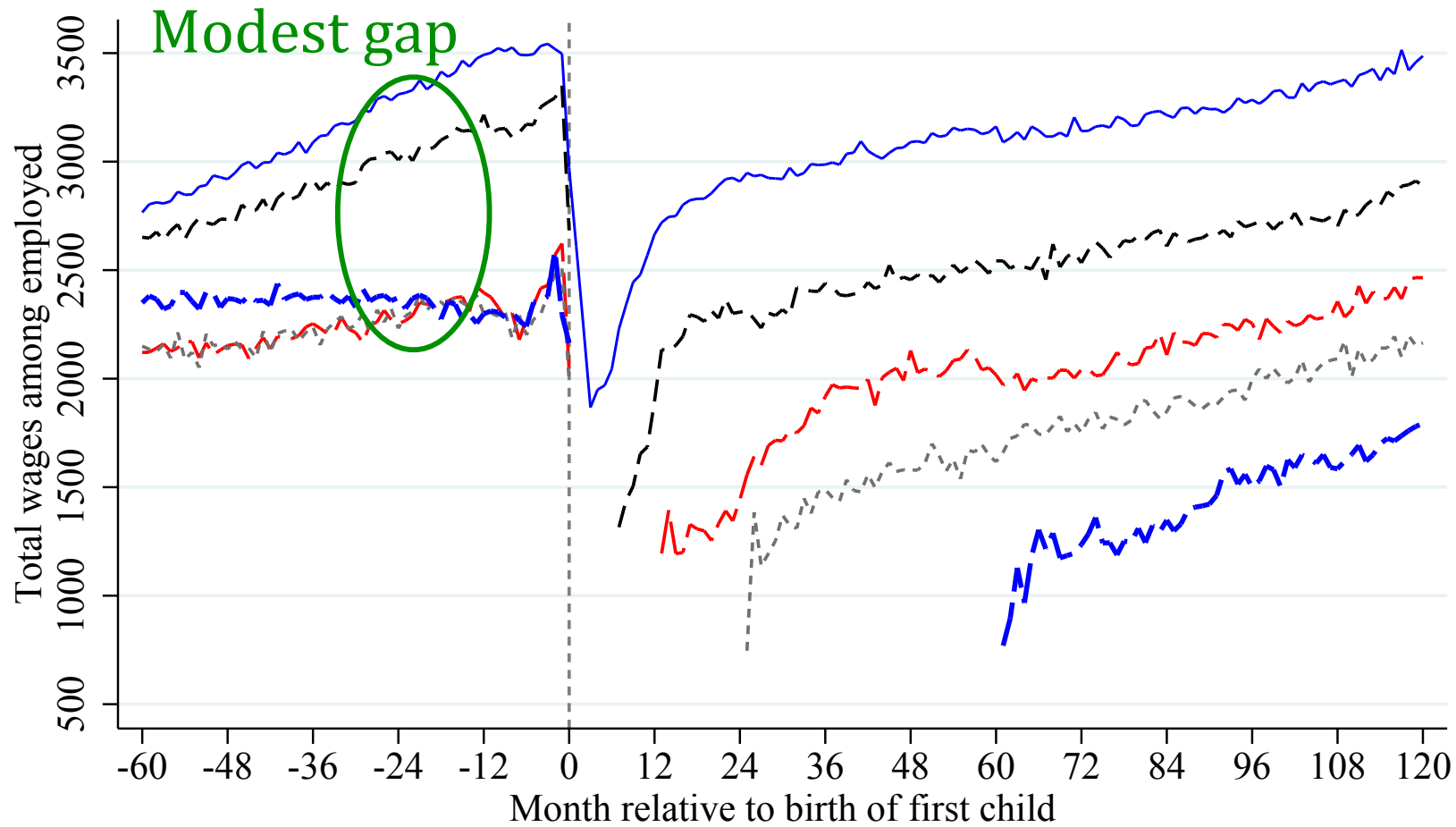
- Loss/obsolescence of employment-relevant skills
- Missing out on experience and on-the-job training
- Employer prejudice about long break from work
- Indicator of lower investment in skills, ambition, or career-orientation



Monthly earnings of employed women by time out of employment



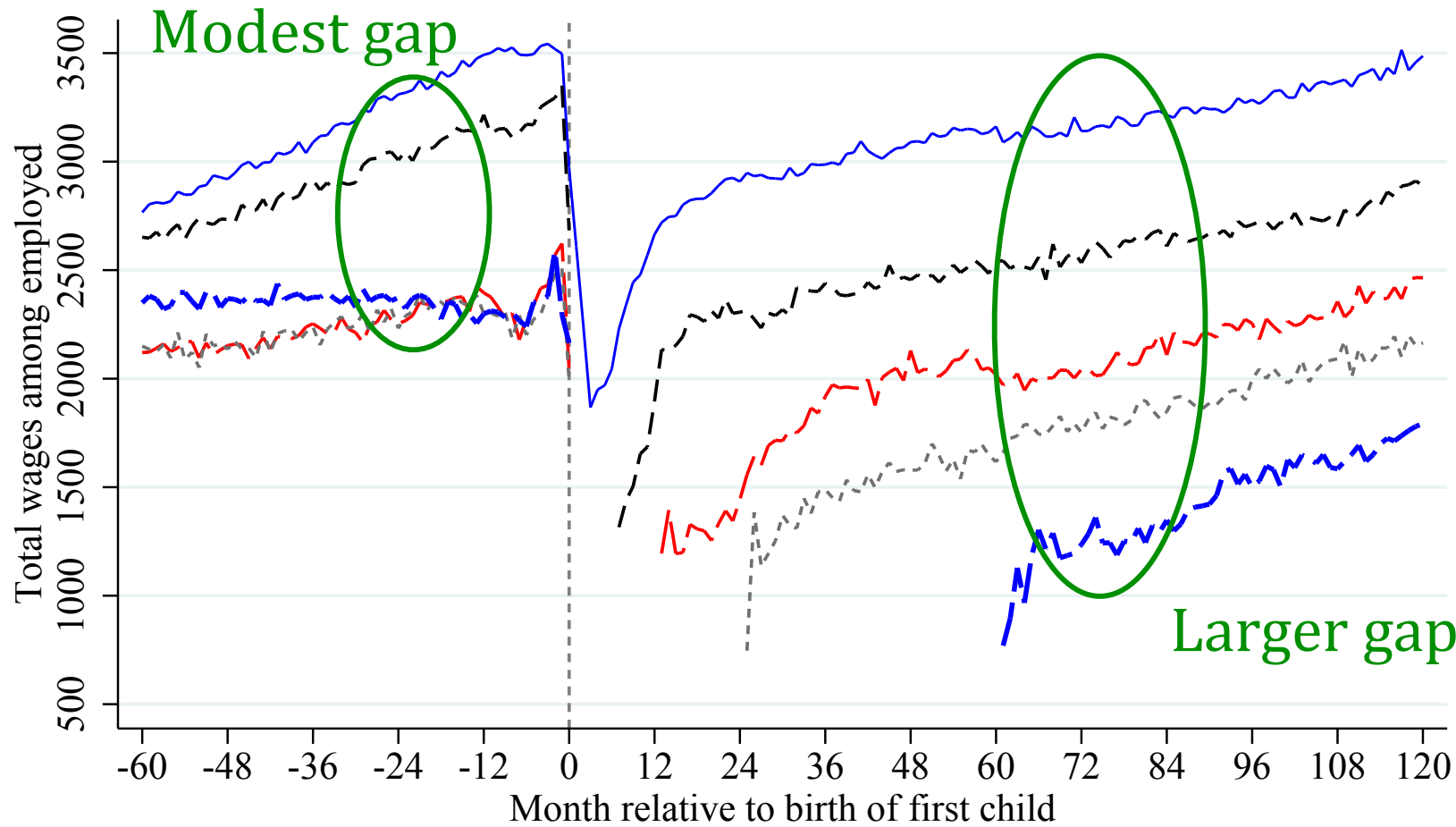
Monthly earnings of employed women by time out of employment



First month back earning wages after child's birth		
— (solid blue)	month 1-6	--- (dashed black)
--- (dashed black)	month 7-12	- - - (dashed red)
- - - (dashed red)	month 13-24	- - - - (dashed grey)
- - - - (dashed grey)	month 25-60	- - - - (dashed blue)
- - - - (dashed blue)	not by month 61	



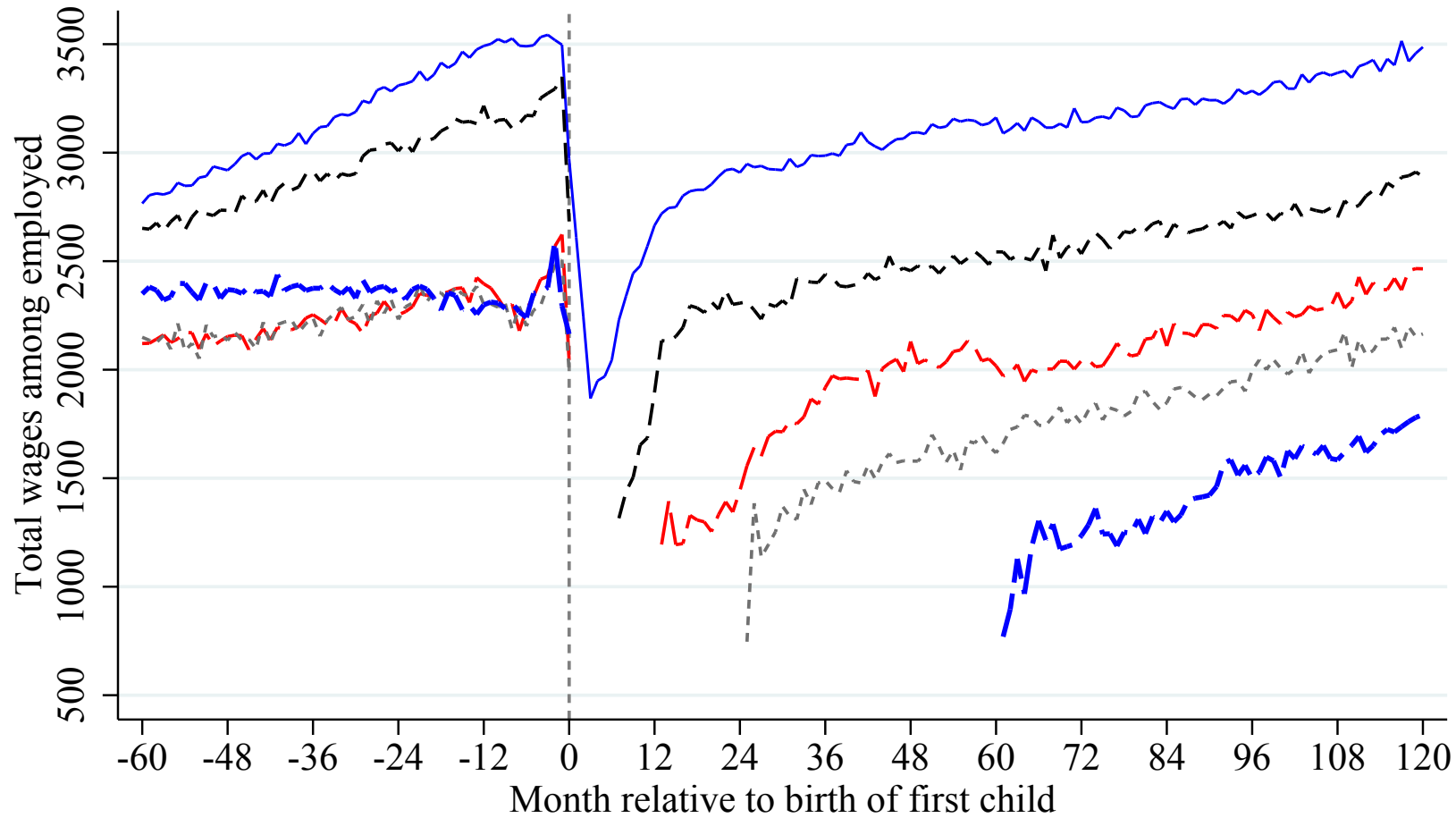
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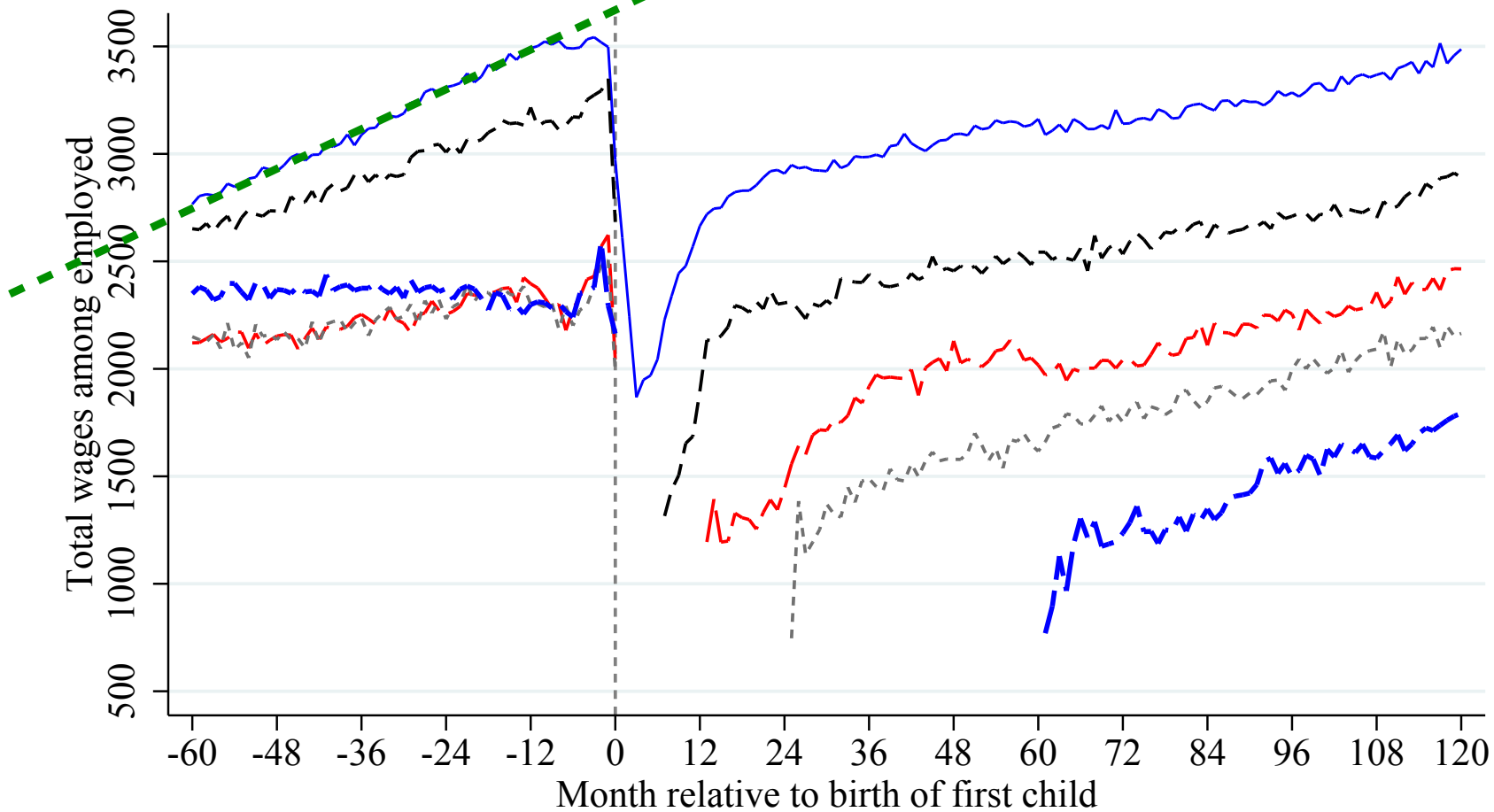


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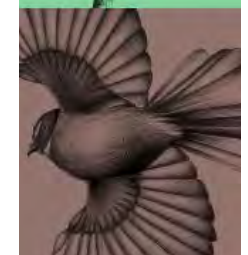
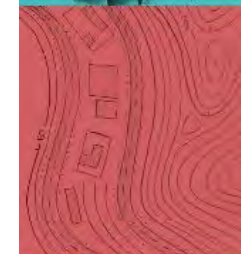
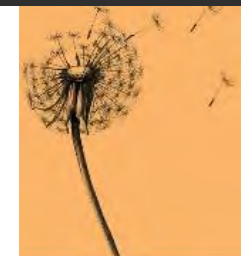


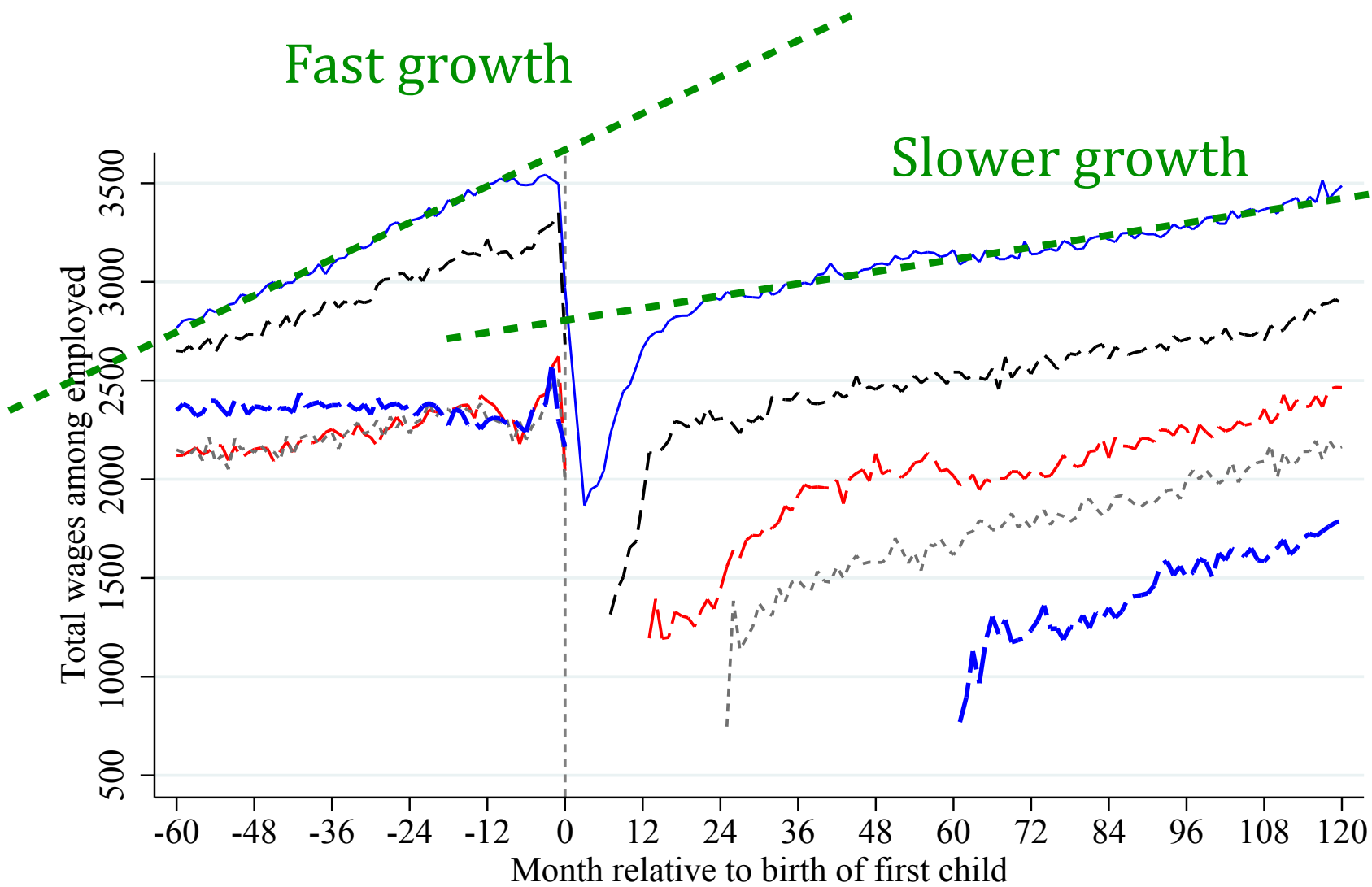
Fast growth



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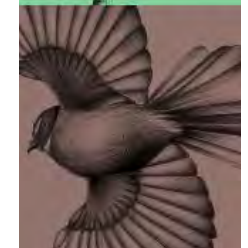
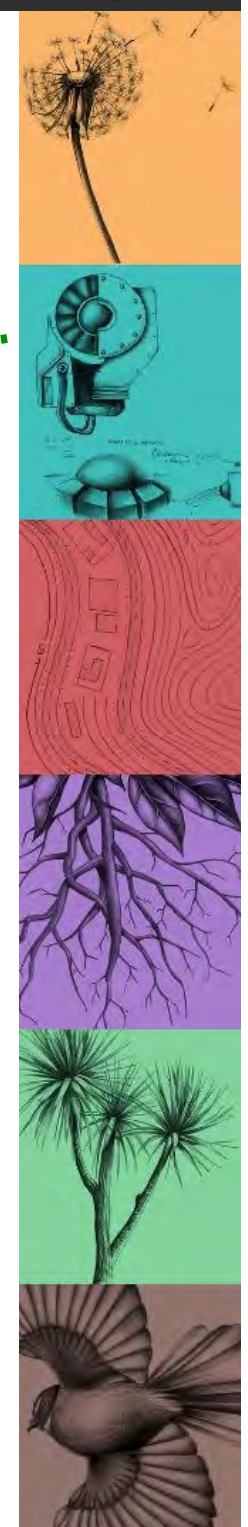
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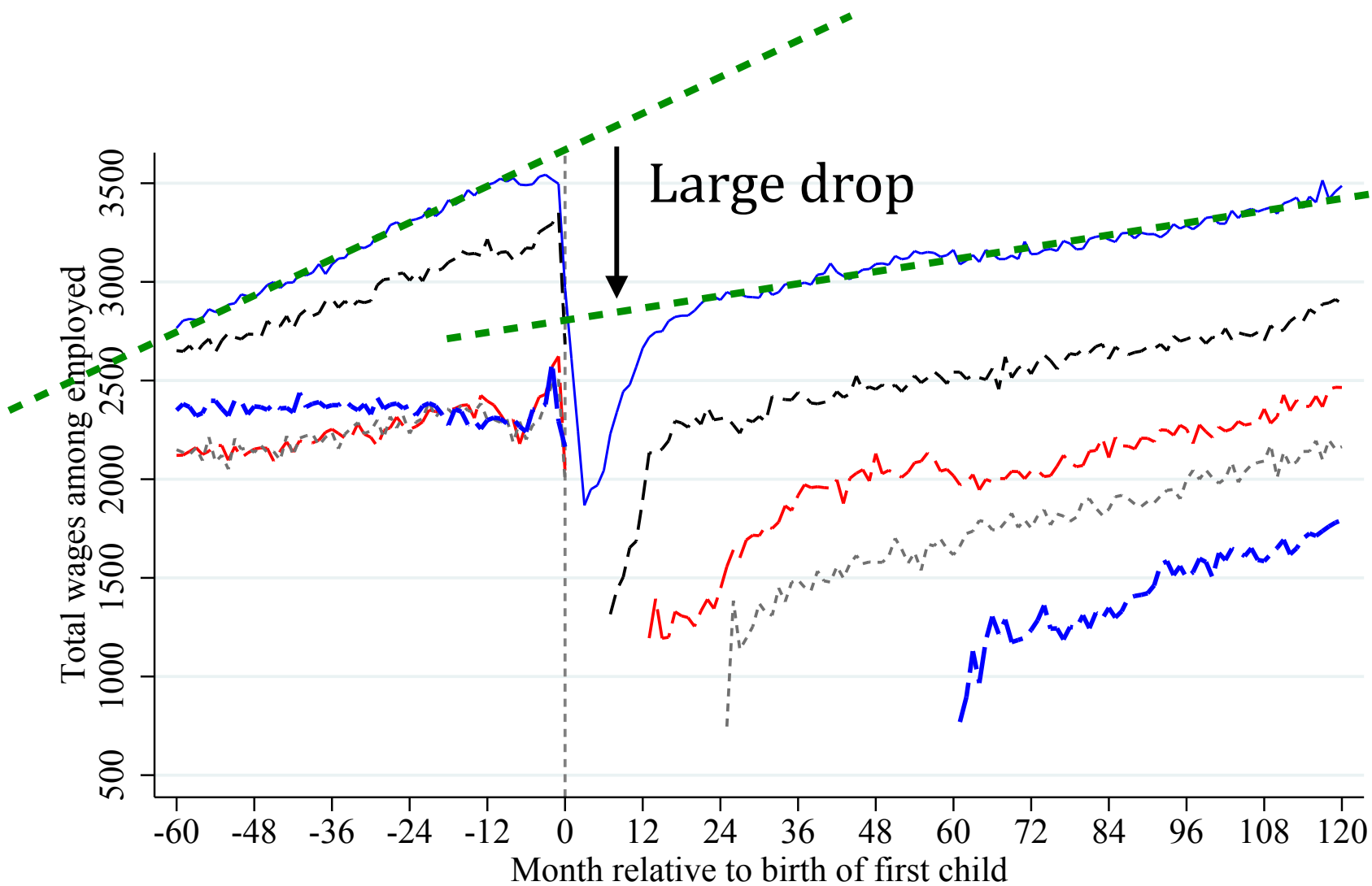




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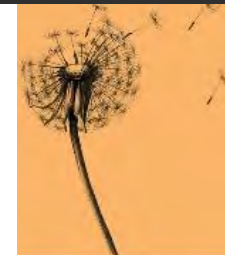
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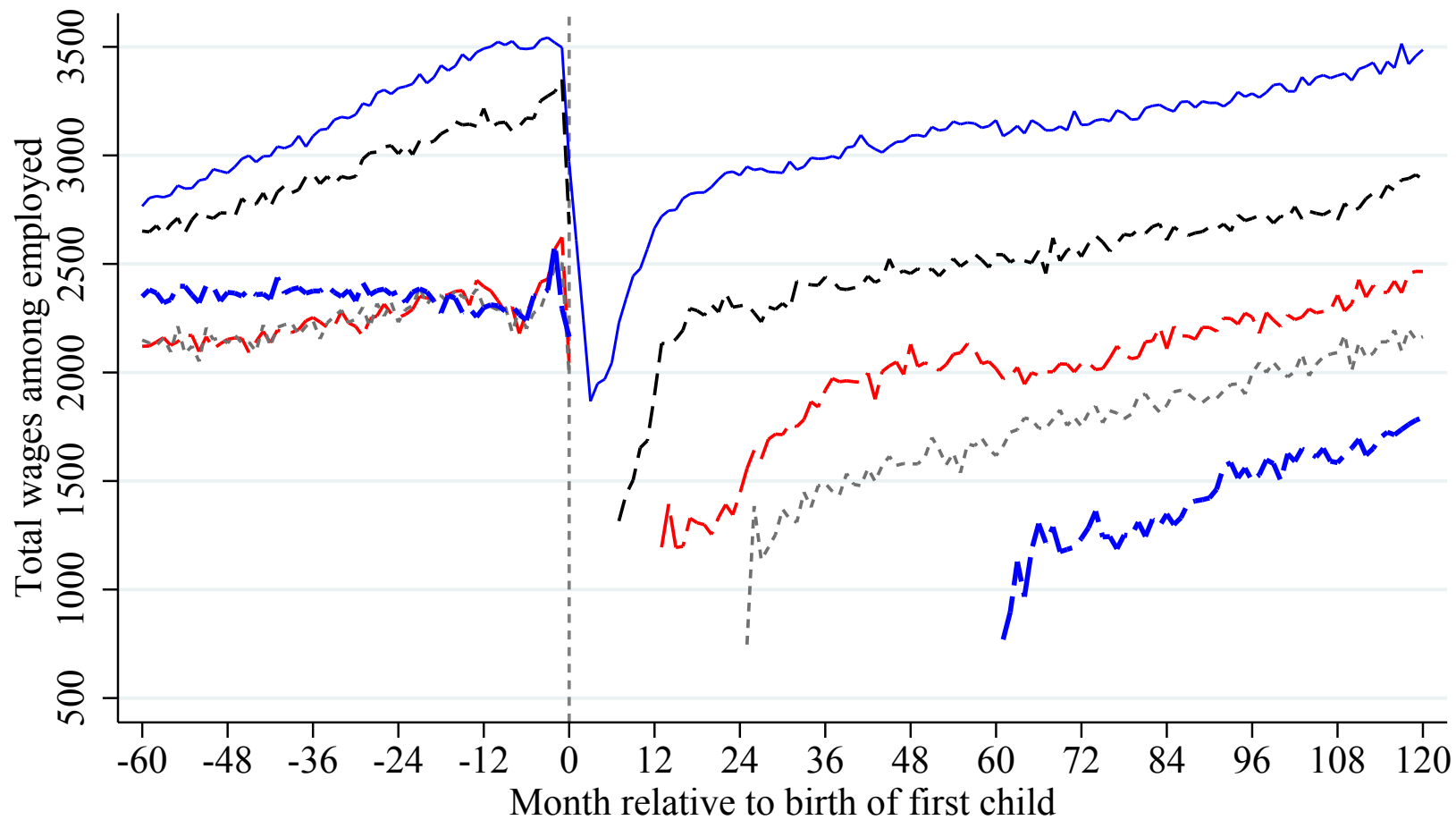




First month back earning wages after child's birth

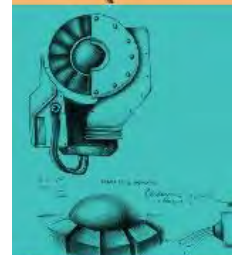
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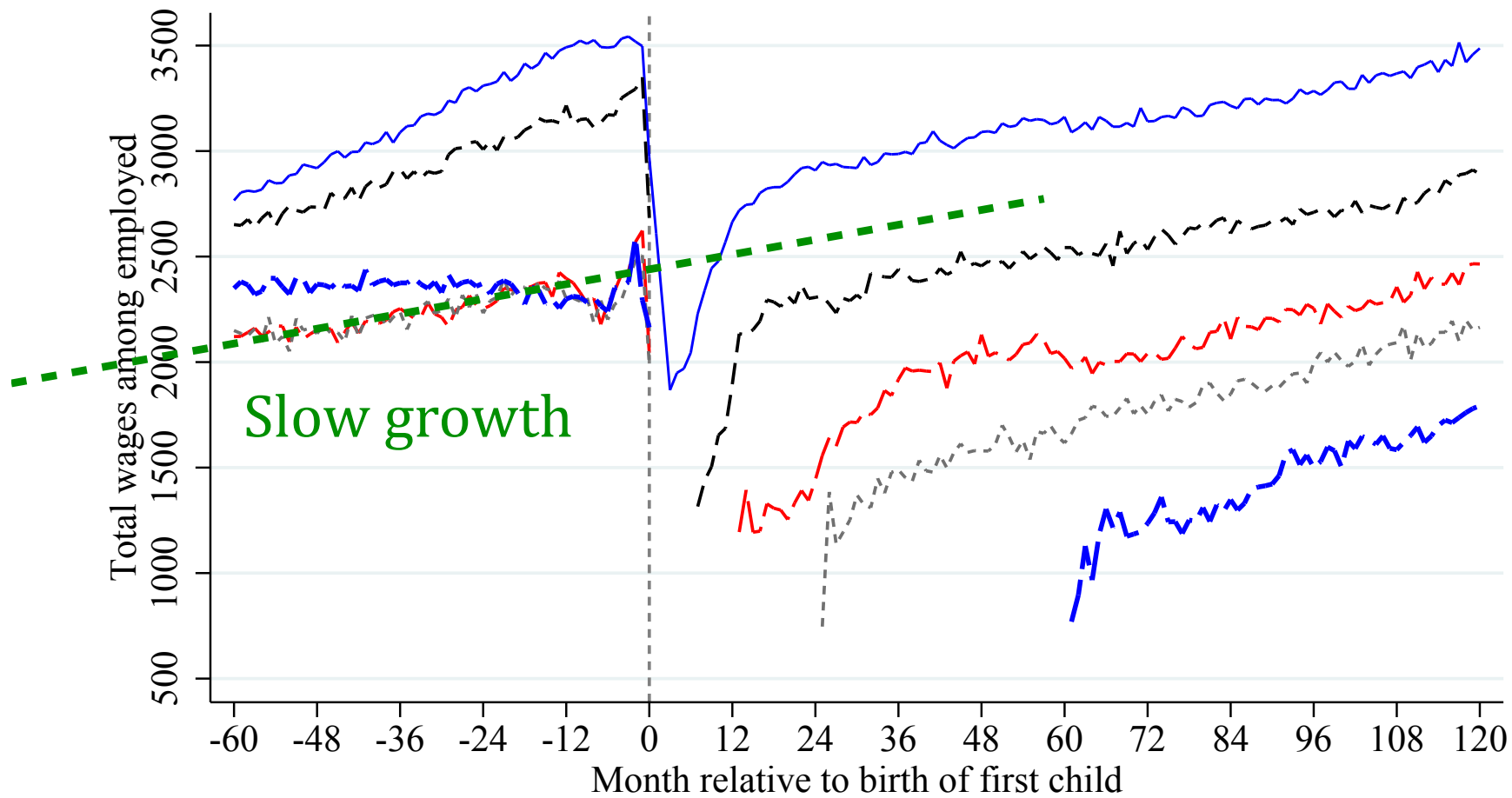




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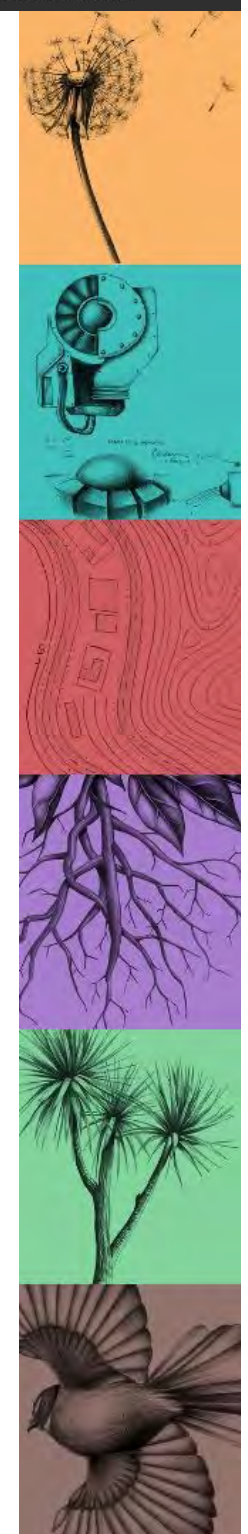
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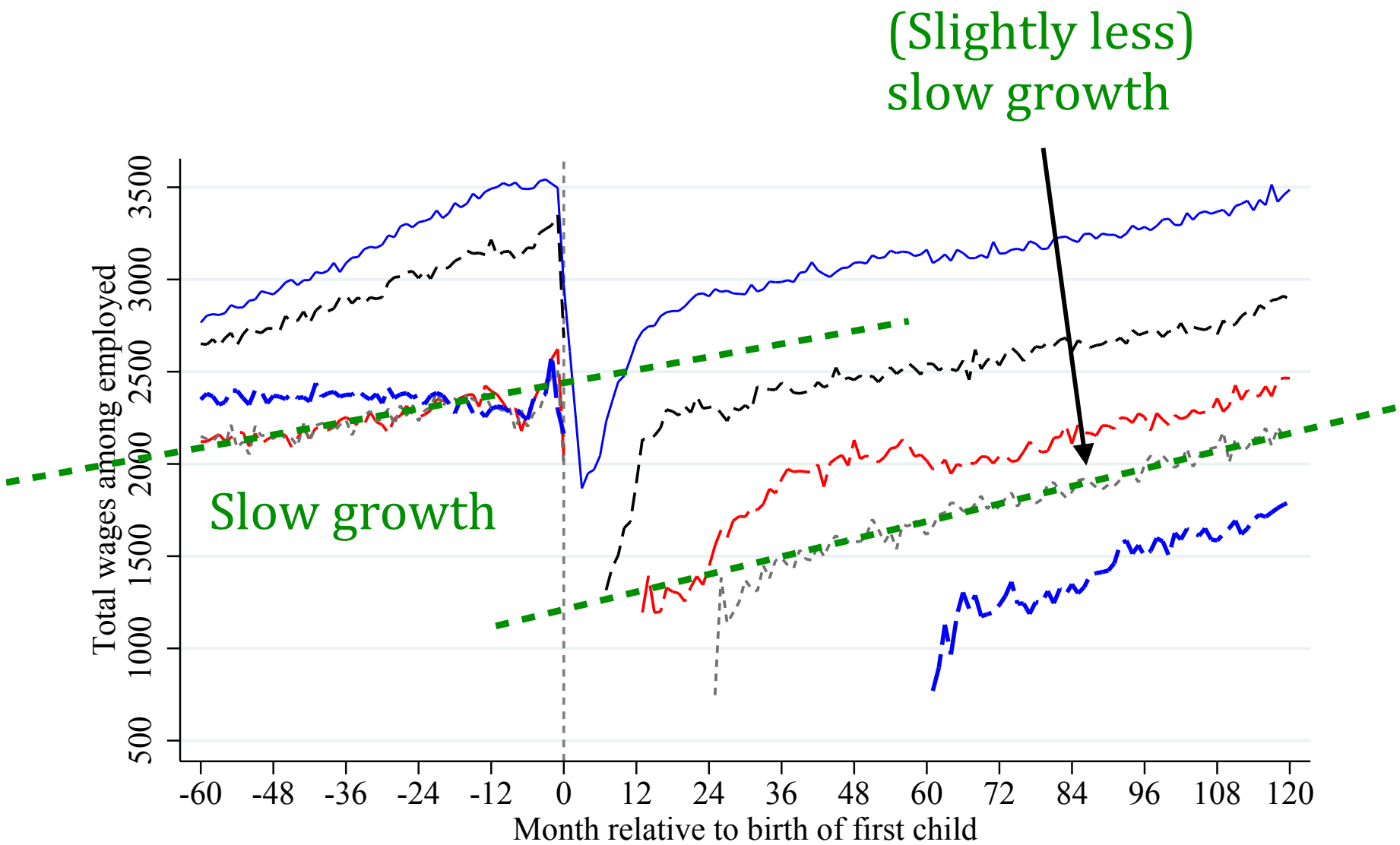




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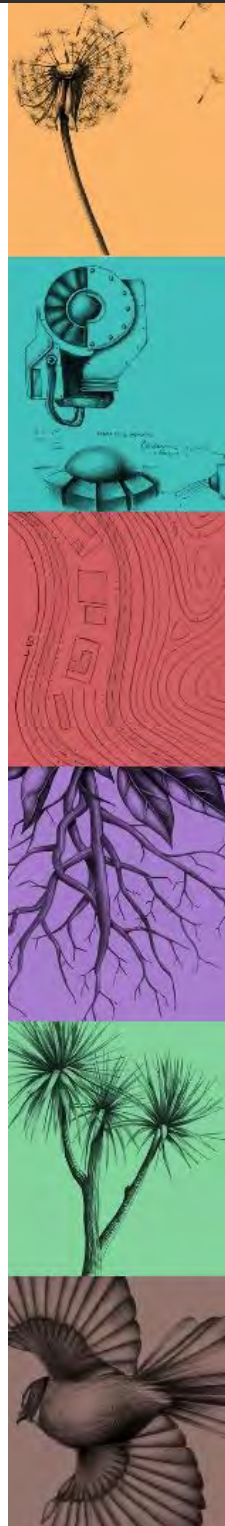
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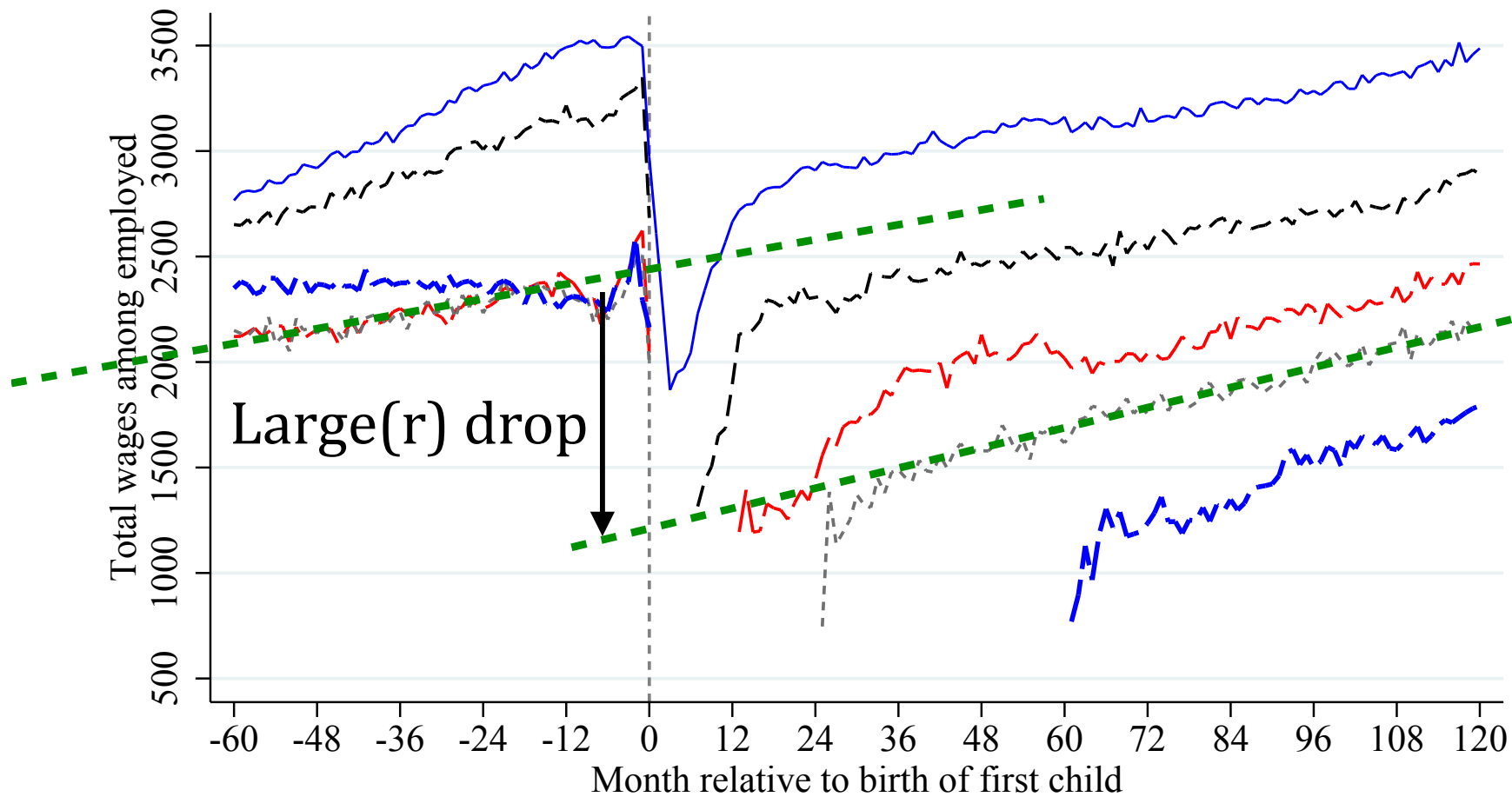




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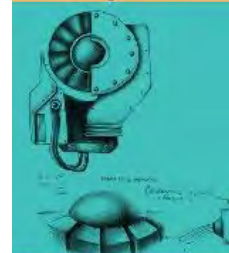
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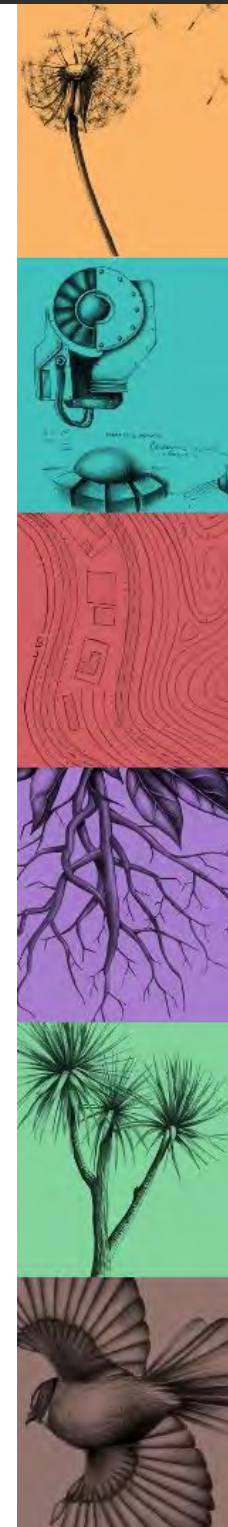
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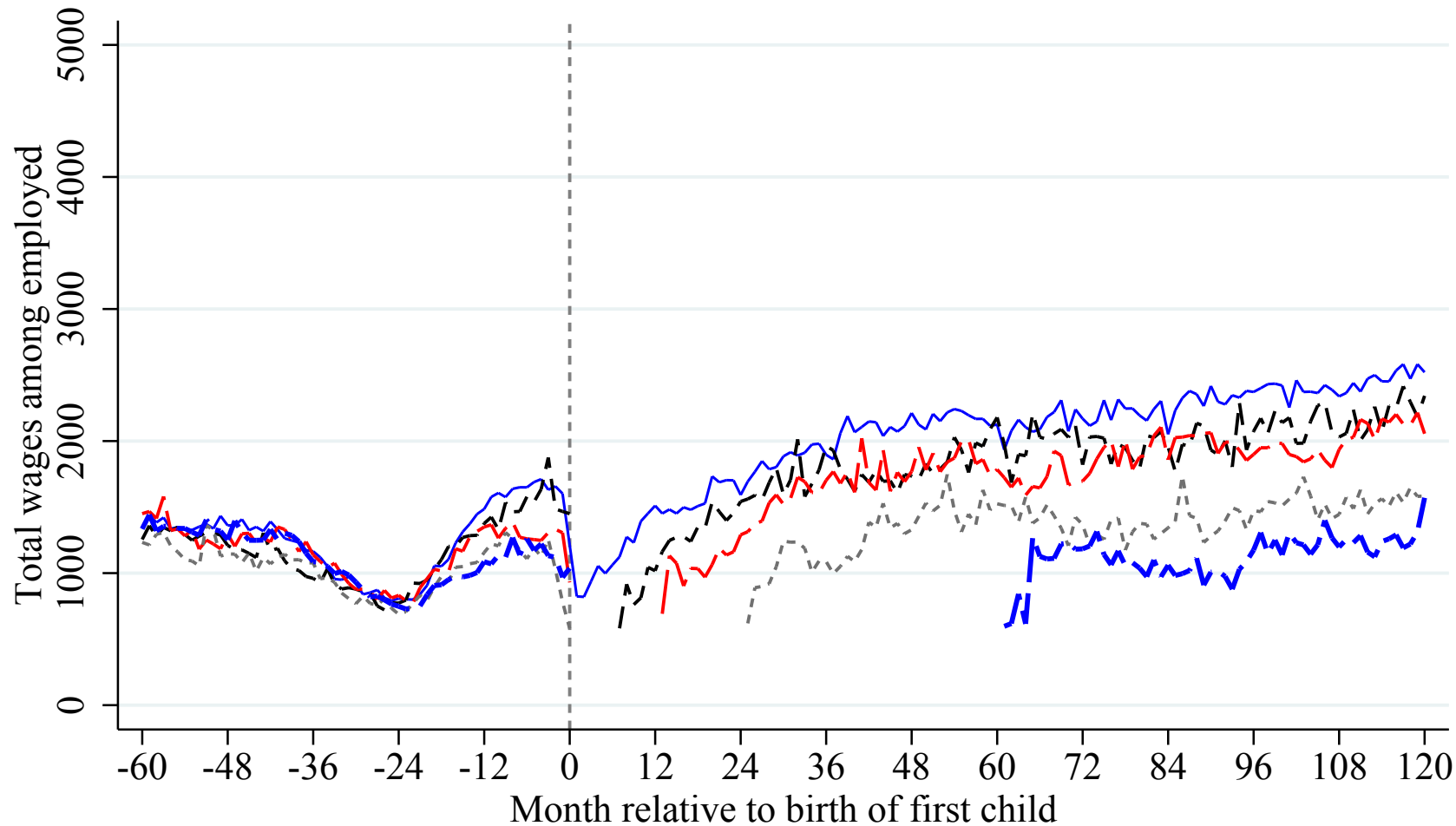







Women who return to work quickly earn more as parents, but they also earned more before becoming parents

What if we compare women with similar pre-parenthood earnings but who stayed out of work for different lengths of time?



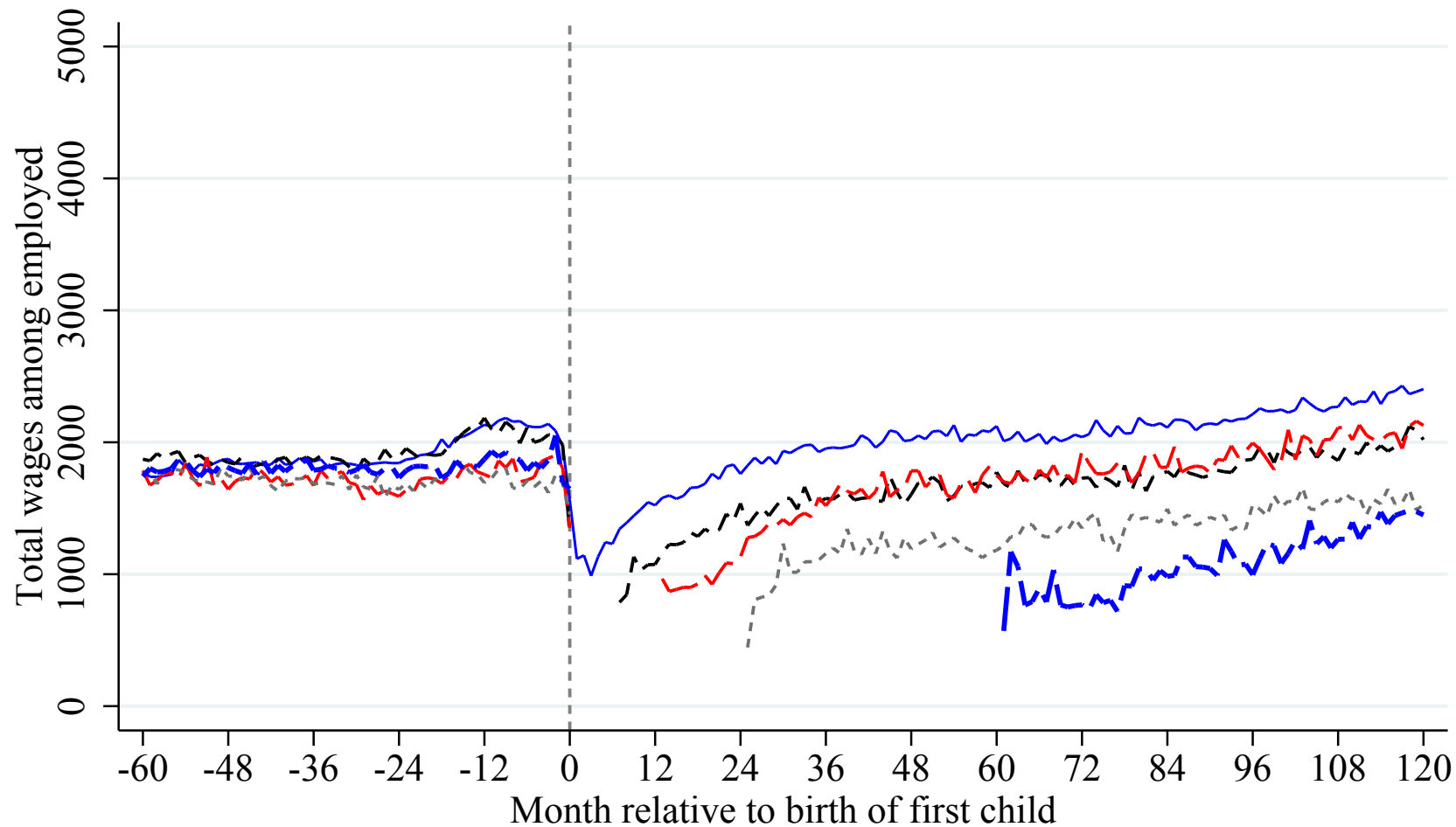
Monthly earnings of employed women by time out of employment: lowest income quartile



First month back earning wages after child's birth					
	month 1-6		month 7-12		month 13-24
	month 25-60		not by month 61		



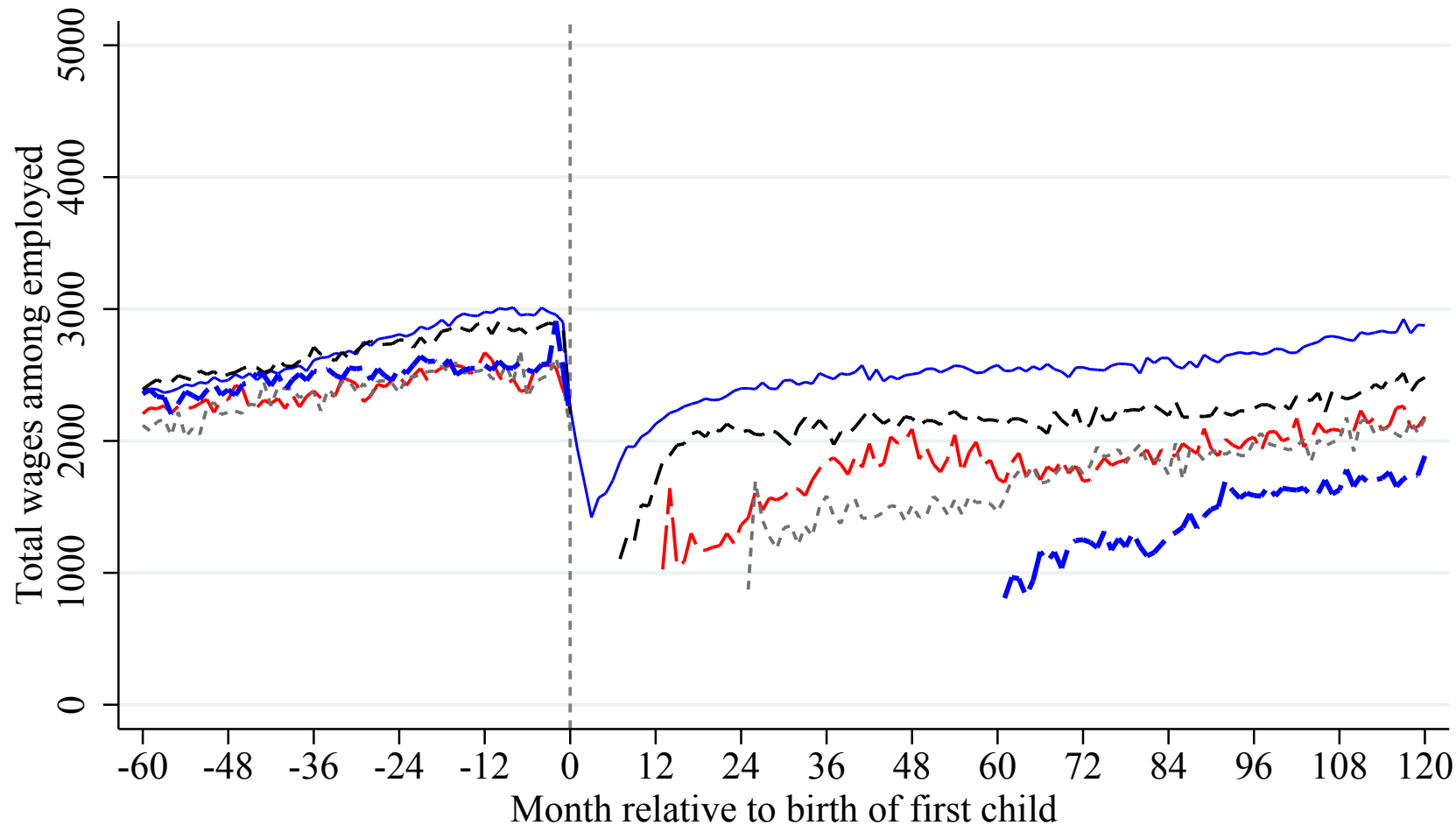
Monthly earnings of employed women by time out of employment: second income quartile



First month back earning wages after child's birth		
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- - - -	month 7-12	- - - - not by month 61
.	month 25-60	



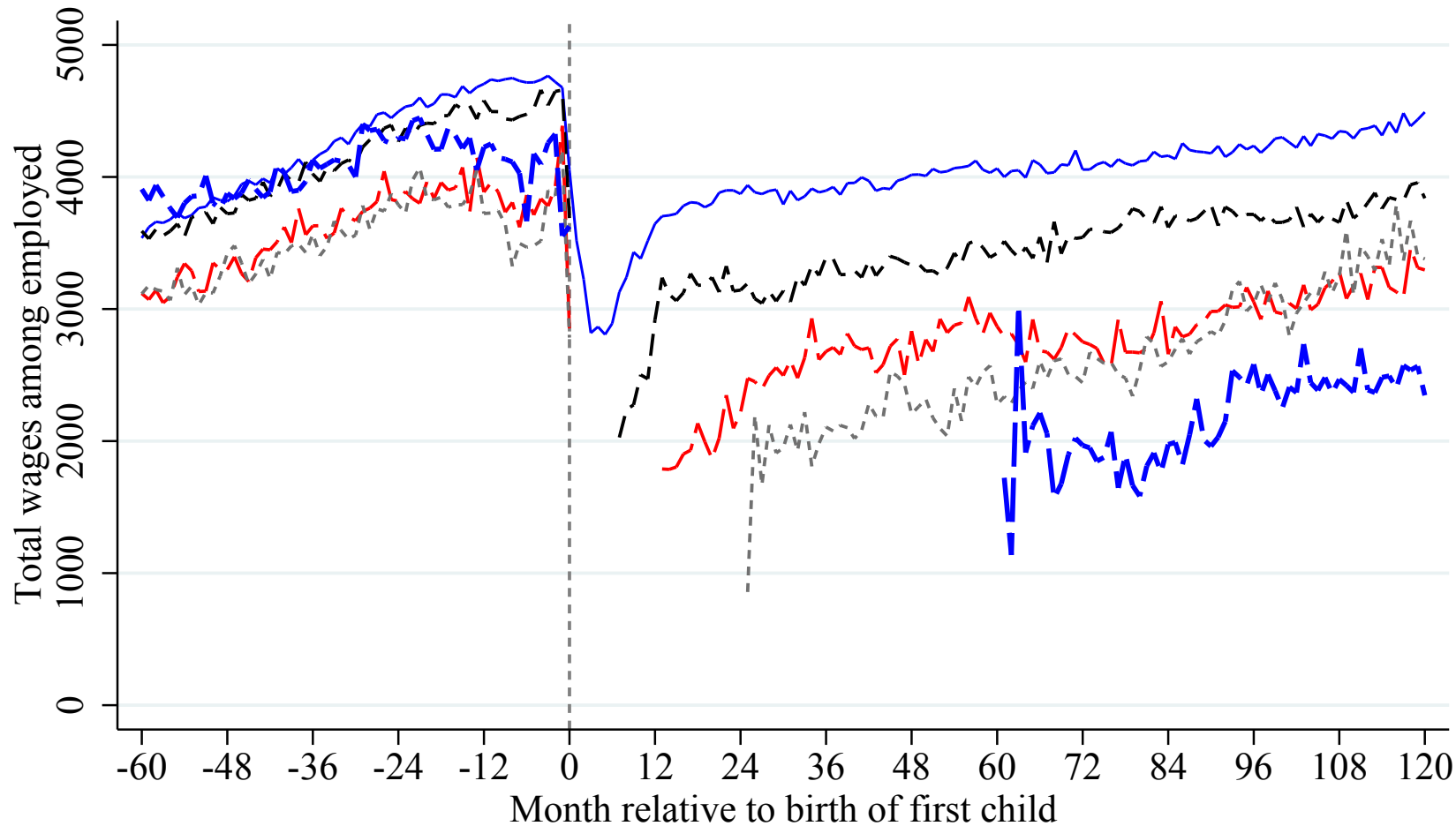
Monthly earnings of employed women by time out of employment: third income quartile



First month back earning wages after child's birth					
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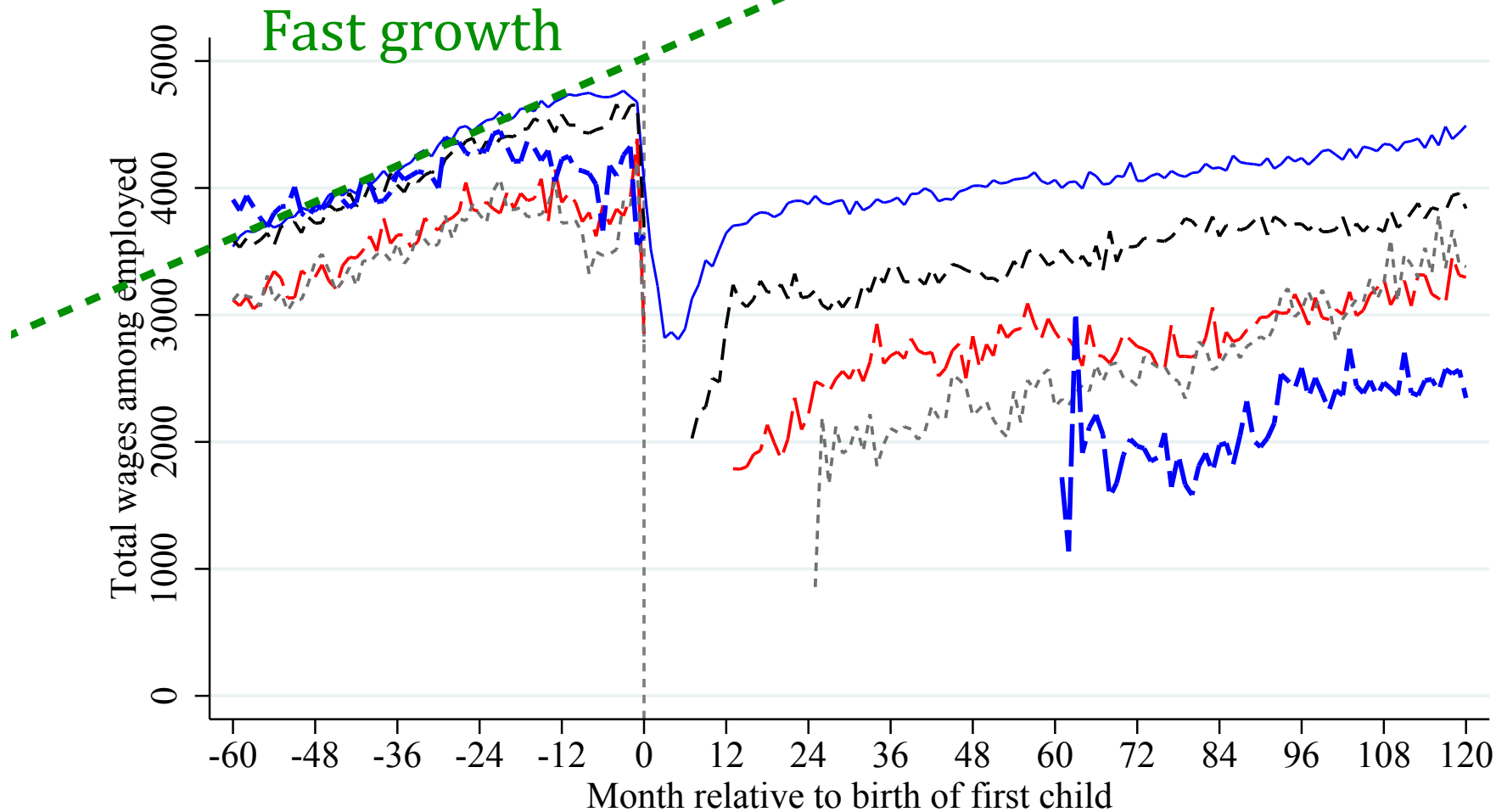
Monthly earnings of employed women by time out of employment: highest income quartile



First month back earning wages after child's birth		
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month 1-6	month 7-12	month 13-24
..... (dotted grey)	— — — (thick blue)	
month 25-60	not by month 61	



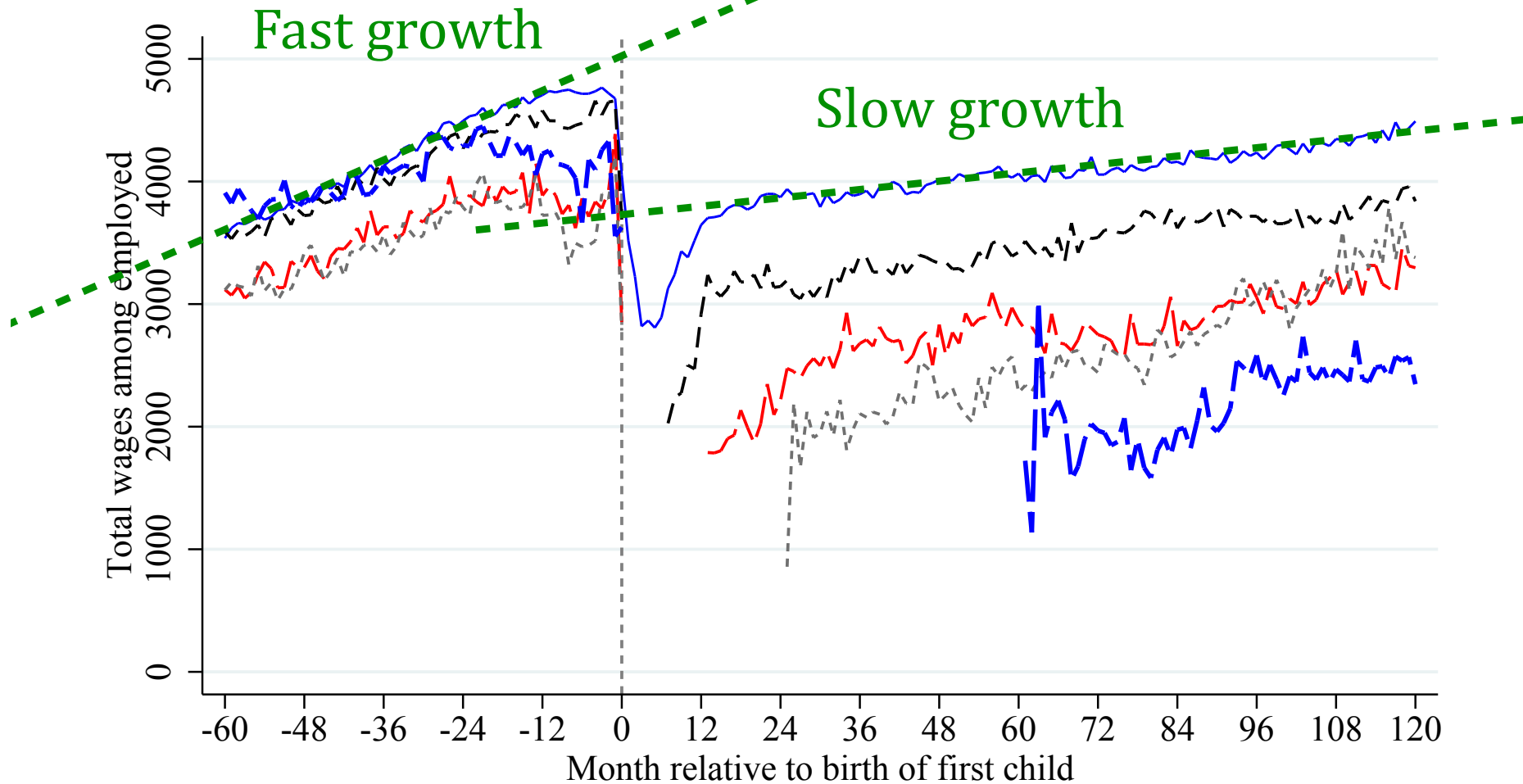
Monthly earnings of employed women by time out of employment: highest income quartile



First month back earning wages after child's birth		
— (solid blue)	--- (dashed black)	- - - (dashed red)
month 1-6	month 7-12	month 13-24
..... (dotted grey)	— (thick blue)	
month 25-60	not by month 61	



Monthly earnings of employed women by time out of employment: highest income quartile



First month back earning wages after child's birth		
— (solid blue)	- - - - (dashed black)	- - - - (dashed red)
month 1-6	month 7-12	month 13-24
- - - - (dotted grey)	- - - - (thick dashed blue)	
month 25-60	not by month 61	



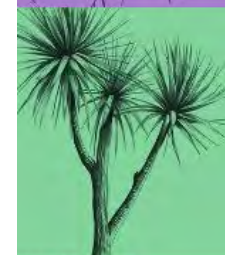
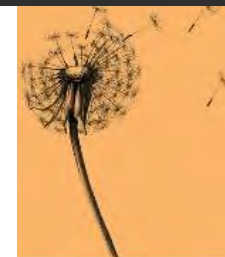
Time out of work and monthly earnings

- Time out of employment matters for income for all women...
- ... but more so for high-income women
- Maybe because they have more specialised skills that depreciate (go stale) when they're not working?
- Or because they don't work long hours after return to work?
- High-income women who return quickly to work experience (lower income and) slower income growth after parenthood
 - Implications for lifetime earnings
 - Helps explain why gender wage gap is larger among high-income earners



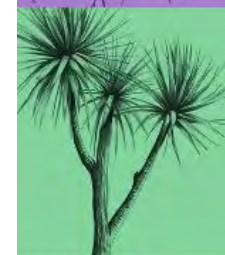
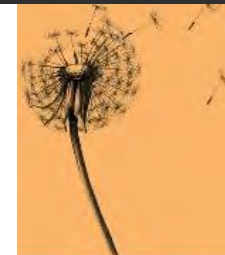
Monthly earnings of employed mothers by ethnicity

	2nd year before birth	2nd year after birth
Māori	\$2,000	\$2,100
Pasifika	\$2,300	\$2,400
European	\$3,300	\$2,600
Māori/European	\$2,700	\$2,600
Asian	\$3,100	\$3,300
Other	\$2,800	\$2,600



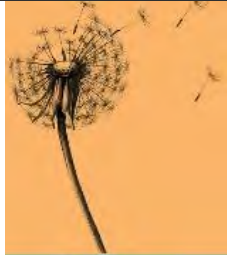
Monthly earnings of employed mothers by ethnicity

	2nd year before birth		2nd year after birth
Māori	\$2,000	increase	\$2,100
Pasifika	\$2,300	increase	\$2,400
European	\$3,300	decrease	\$2,600
Māori/European	\$2,700	decrease	\$2,600
Asian	\$3,100	increase	\$3,300
Other	\$2,800	decrease	\$2,600



Monthly income of employed women

- Falls less for women with lower income before parenthood
- Some possible explanations
 - They worked part-time before parenthood
 - Their hourly wages can't fall below minimum wage
 - They have fewer specialised skills to lose
 - They need to work long hours even when parents to support their families



Hours worked

Paid work in the labour market or unpaid work in the home?

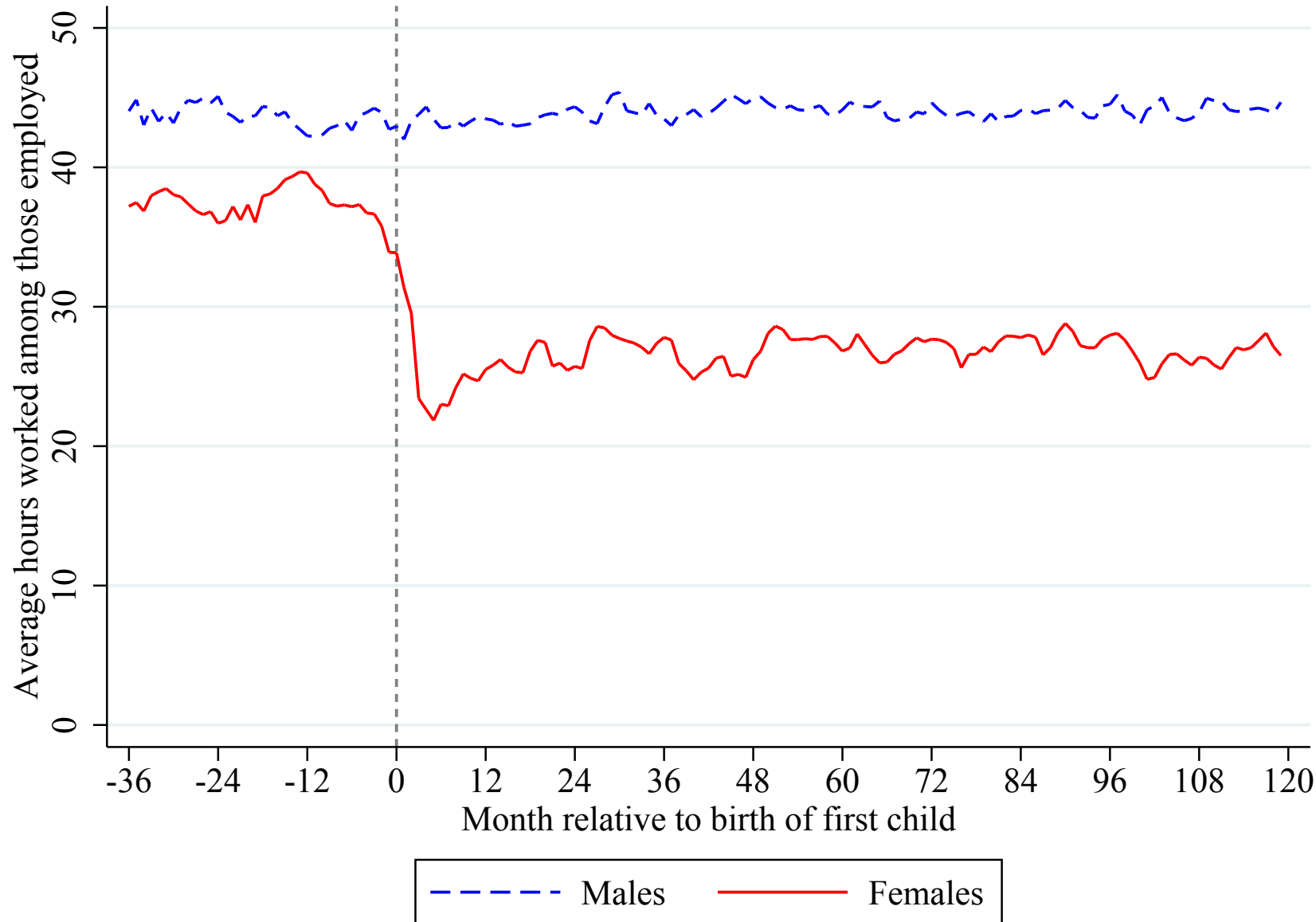


Implications of reducing hours worked

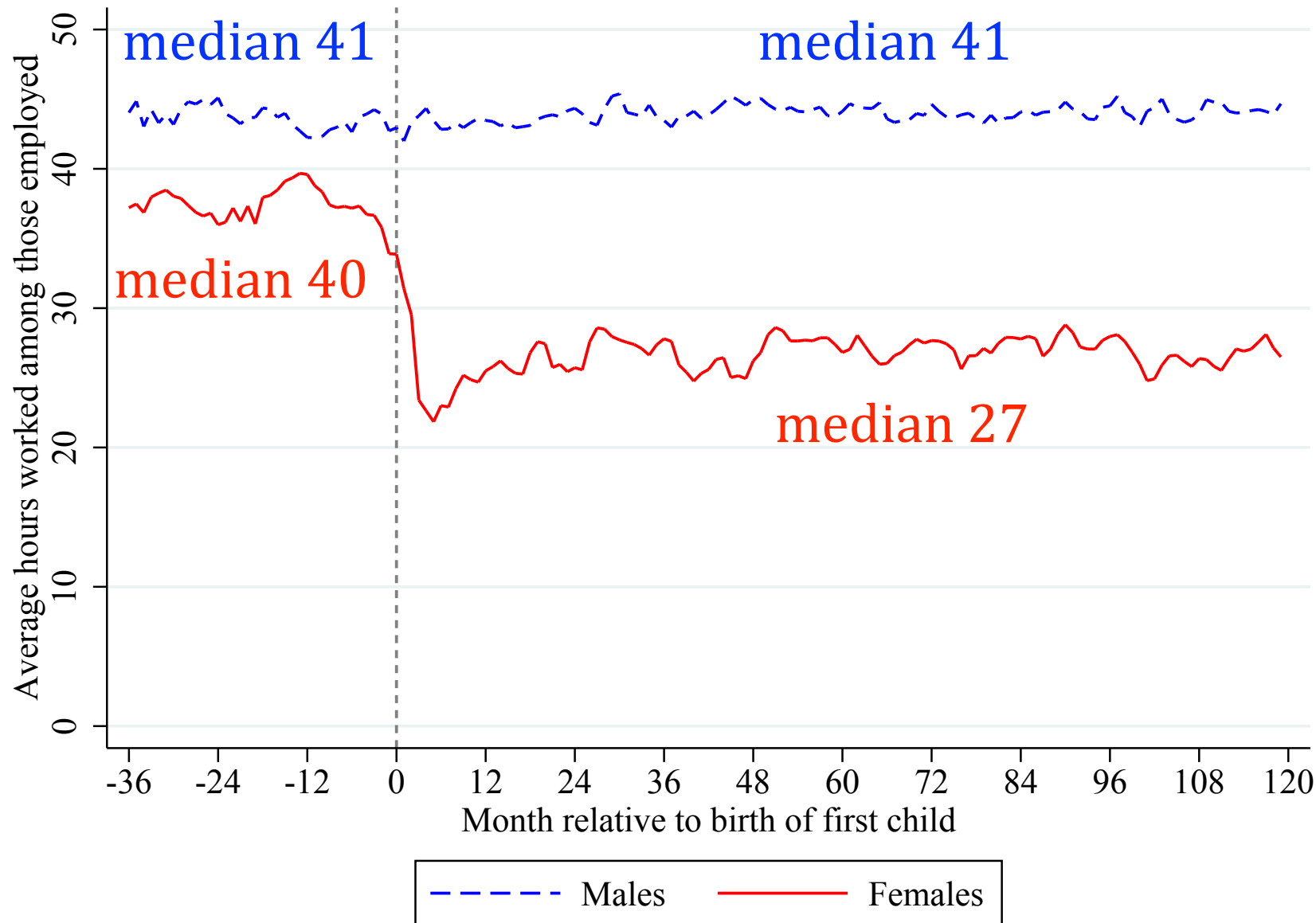
- More time with kids!
- Lower weekly/monthly wage earnings
- Slower accumulation of skills on the job?
- Limited job options
- Less opportunity for career advancement?
- Signal less commitment to labour market



Average hours worked among those employed



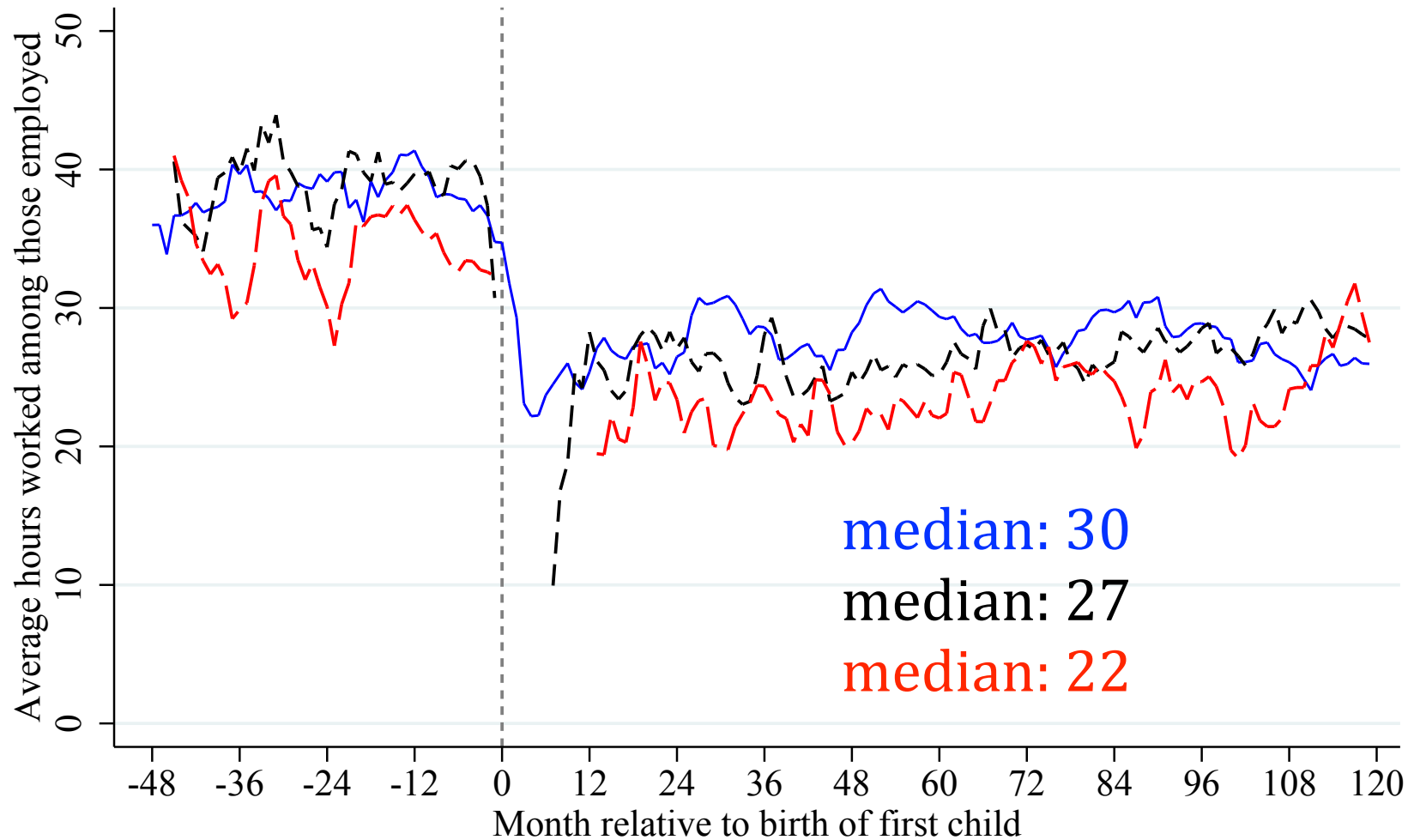
Average hours worked among those employed



Do women who are out of work for longer work fewer hours when they return?



Employed women's hours worked by time out of employment

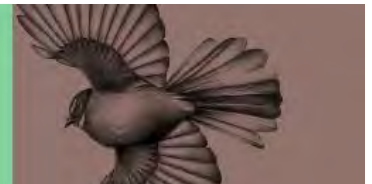


Return to work in month:
 ——— 1-6 - - - - 7-12 - - - - 13+



Hourly wages

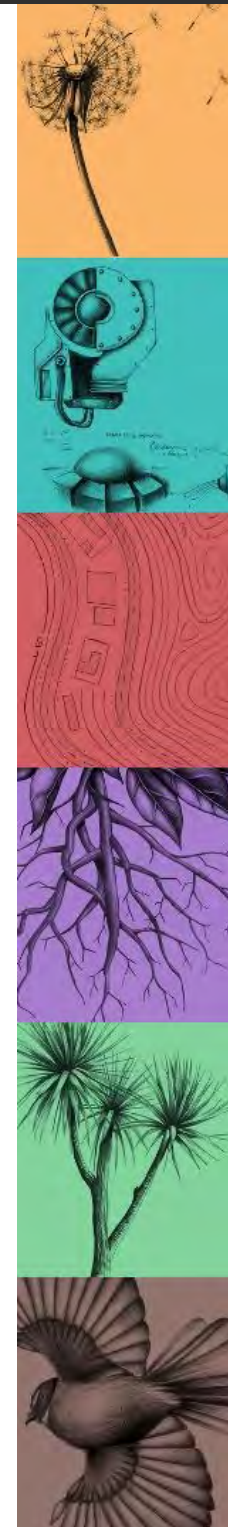
The reward for an hour's labour



Question 1: How much of the observed gender gap in hourly wages in the population results from differences between men and women who are parents?

How much from differences between those who are *not* parents?

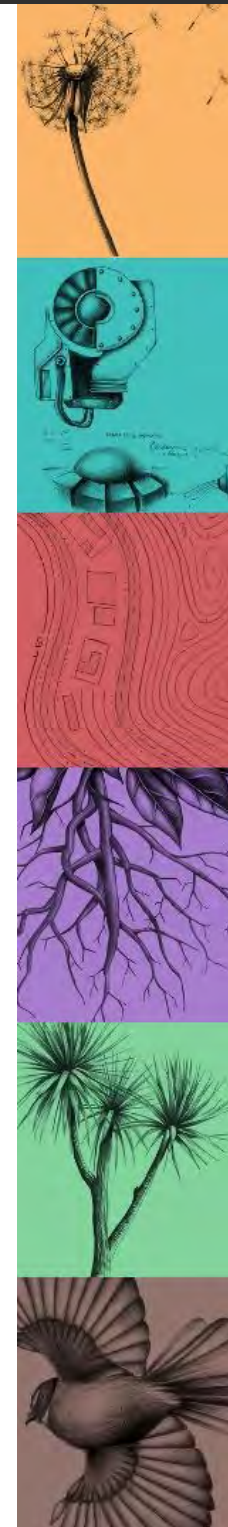
(Not the predicted effect of parenthood on an individual's hourly wages)



Regressions of hourly wages on gender and parenthood

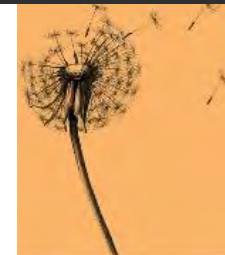
Regress log hourly wages on:

- gender
- whether a parent... differently for men and women
- other characteristics (age quadratic, education...)
- year



Regressions of log hourly earnings

	(1)	(2)
Female	-0.070*** (0.004)	-0.059*** (0.004)
Age	0.076*** (0.002)	0.071*** (0.002)
Age squared (/100)	-0.092*** (0.003)	-0.085*** (0.003)
Parent		0.103*** (0.008)
Female x Parent		-0.074*** (0.011)
Year FE	Yes	Yes
Education FE	Yes	Yes
<i>Observations</i>	43,854	43,854
<i>R-squared</i>	0.225	0.228



Regressions of log hourly earnings

	(1)	(2)
Female	-0.070*** (0.004)	-0.059*** (0.004)
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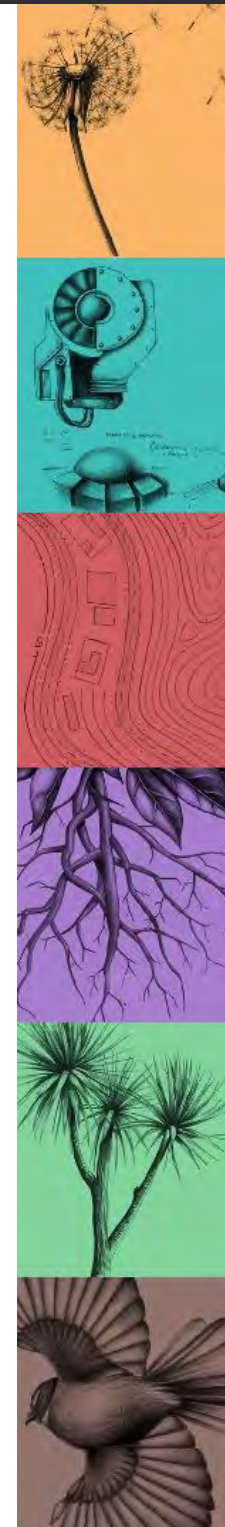
In our sample, women earn 6.8% less than men of same age and education



Regressions of log hourly earnings

	(1)	(2)
Female		-0.059*** (0.004)
Age		0.071*** (0.002)
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Women without
children earn 5.7%
less than men
without children



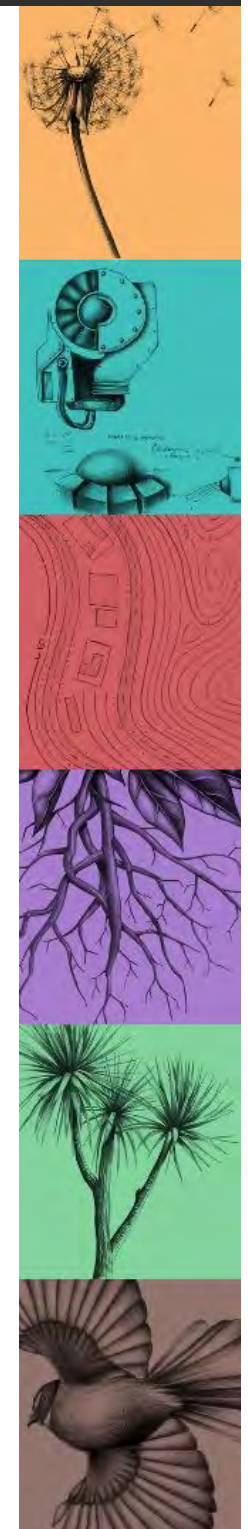
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Women without children earn 5.7% less than men without children

Mothers earn 12.5% less than fathers

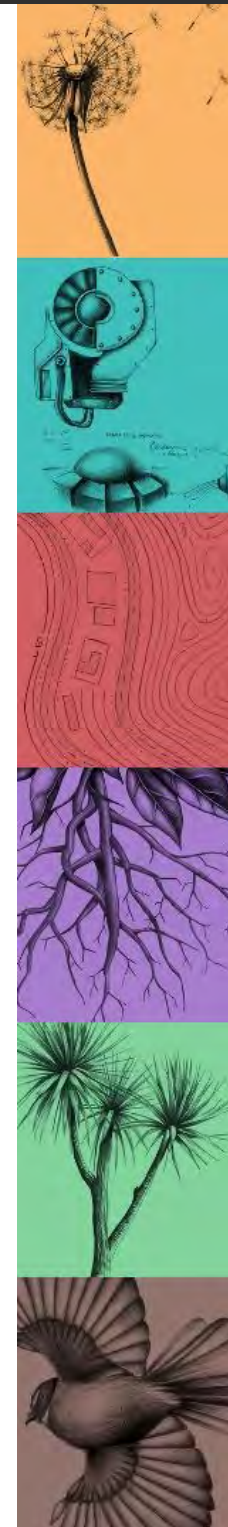
+



Question 2: Does having children cause a woman's hourly wages to decrease?

How much?

Comparison between what a mother earns and what she would have earned if she had not had children



Why might mothers earn lower hourly wages?

- Human capital (skills and knowledge) depreciate during parental leave and are gained more slowly by mothers working part-time
- Mothers who return to work are distracted, don't work in high-powered jobs requiring very long hours, or have different priorities, and so are less productive
- Mothers receive benefits such as flexible hours and to compensate accept lower wages
- Employers are biased or discriminate against mothers, or take advantage of mothers' low bargaining power



Two main challenges

Comparing hourly wages of employed men and women of the same age and education with/without children won't tell us the effect of parenthood on wages because:

- Women who have children may differ systematically from those who don't, e.g. more family-oriented
- Women who work (more) after having children may differ systematically from those who don't, e.g. more ambitious, enjoy their careers more



Our solution

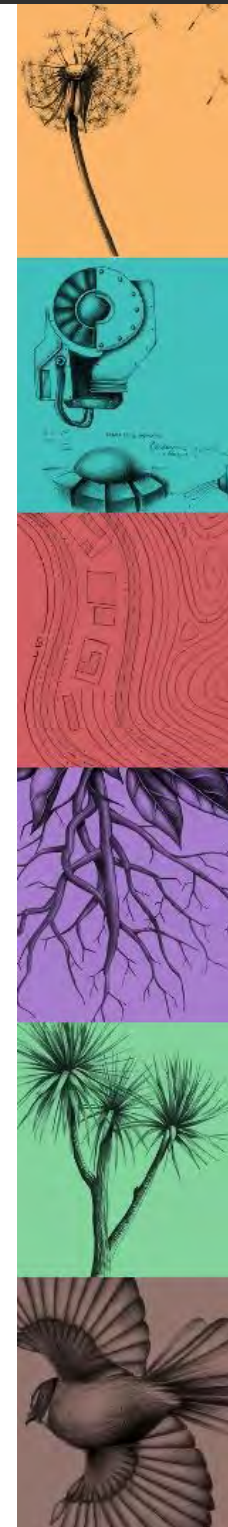
- Use DIA births data to classify women (and men) by whether they will ever become parents, and allow wages of future parents to differ from wages of never-parents (differently by gender)
- Use IDI earnings data to classify women into earnings quartiles pre-parenthood and control for earnings quartile
- Allows us to isolate how a parent's wages differ from what he/she would have earned without children



Regressions of log hourly earnings

	(1)
Female * Parent	-0.036 (0.022)
Parent	-0.009 (0.016)
Female * Ever a parent	-0.070*** (0.020)
Ever a parent	Yes
Ever a parent * Pre- parenthood income quartile	Yes
Age quadratic * gender	Yes
Year FE, Education FE	Yes
<i>Observations</i>	42,597
<i>R-squared</i>	0.248

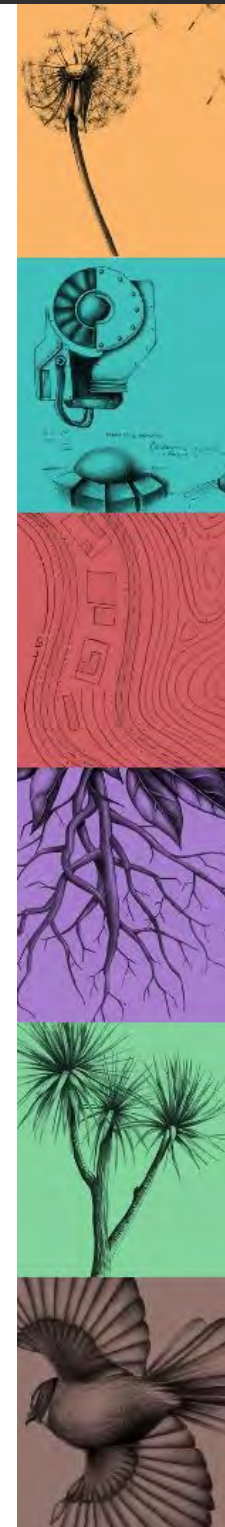
Robust standard errors in parentheses. Asterisks denote: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.



Regressions of log hourly earnings

		(1)
Female * Parent		-0.036 (0.022)
Parent	When men become parents their hourly wages are not significantly affected	-0.009 (0.016)
Female * Ever a parent		-0.070*** (0.020)
Ever a parent		Yes
Ever a parent * Pre- parenthood income quartile		Yes
Age quadratic * gender		Yes
Year FE, Education FE		Yes
<i>Observations</i>		42,597
<i>R-squared</i>		0.248

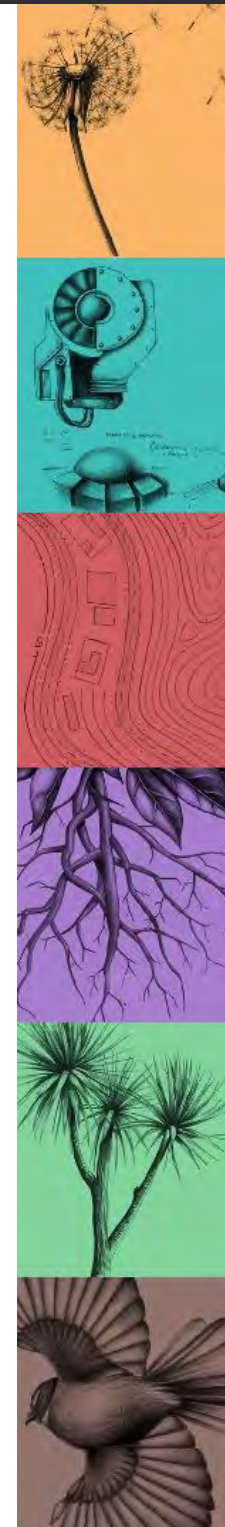
Robust standard errors in parentheses. Asterisks denote: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.



Regressions of log hourly earnings

		(1)
Female * Parent	<p>When women become parents their hourly wages decrease by 4.4% (statistically significant)</p>	-0.036
Parent		(0.022) +
Female * Ever a parent		-0.009
Ever a parent		(0.016)
Ever a parent * Pre- parenthood income quartile		-0.070***
Age quadratic * gender		(0.020)
Year FE, Education FE		Yes
<i>Observations</i>		Yes
<i>R-squared</i>		Yes
		42,597
		0.248

Robust standard errors in parentheses. Asterisks denote: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.



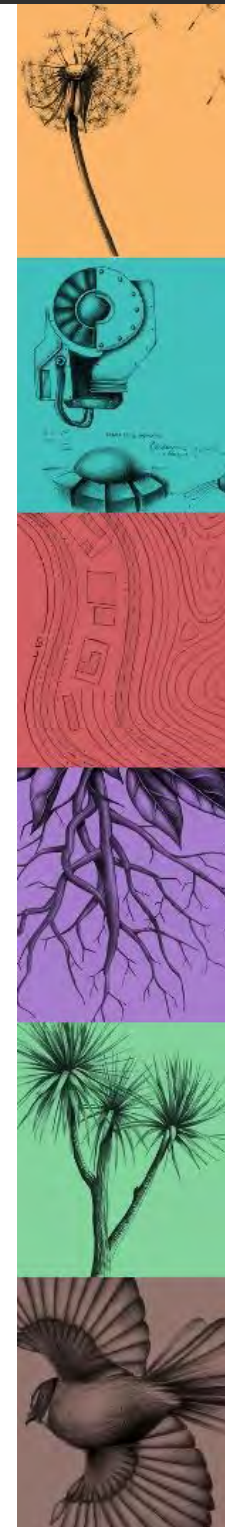
Do these impacts vary with how long the woman is out of work?



Regressions of log hourly earnings: Difference in motherhood penalty with time out of work

	(1)
Female * Parent * Returned in months 1 to 6	-0.013 (0.025)
Female * Parent * Returned in months 7 to 12	-0.058 (0.038)
Female * Parent * Returned in months 13+	-0.077** (0.036)
Parent	-0.010 (0.016)
Other controls	Yes
Occupation & Industry FE	
<i>Observations</i>	42,597
<i>R-squared</i>	0.248

Robust standard errors in parentheses. Asterisks denote: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Other controls include: gender interacted with Ever a parent; for females who are ever parents, FE for each return to work category; Ever a parent interacted with pre-parenthood income quartile; age quadratic interacted with gender; Year FE; and Education FE.



Regressions of log hourly earnings: Difference in motherhood penalty with time out of work

	(1)	
Female * Parent * Returned in months 1 to 6	-0.013 (0.025)	<p>Mothers who return to work within six months experience an insignificant 2.3% decrease in hourly wages</p>
Female * Parent * Returned in months 7 to 12	-0.058 (0.038)	
Female * Parent * Returned in months 13+	-0.077** (0.036)	
Parent	-0.010 (0.016)	
Other controls	Yes	
Occupation & Industry FE		
<i>Observations</i>	42,597	
<i>R-squared</i>	0.248	

Robust standard errors in parentheses. Asterisks denote: *** p<0.01, ** p<0.05, * p<0.1. Other controls include: gender interacted with Ever a parent; for females who are ever parents, FE for each return to work category; Ever a parent interacted with pre-parenthood income quartile; age quadratic interacted with gender; Year FE; and Education FE.

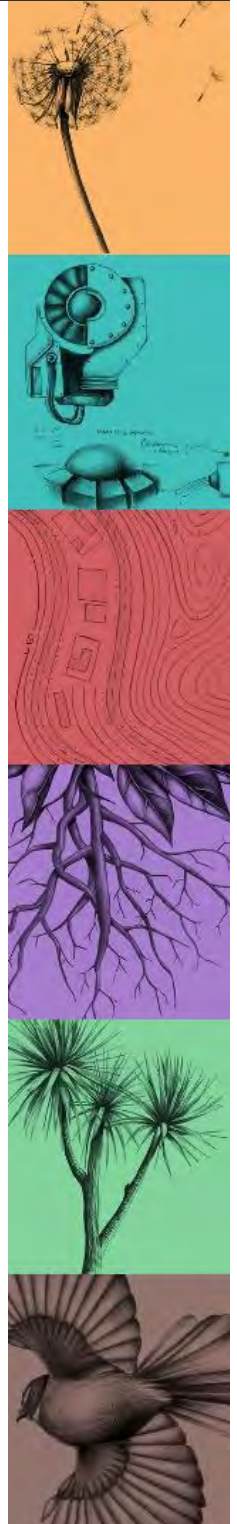


Regressions of log hourly earnings: Difference in motherhood penalty with time out of work

	(1)	
Female * Parent * Returned in months 1 to 6	-0.013 (0.025)	
Female * Parent * Returned in months 7 to 12	-0.058 (0.038)	
Female * Parent * Returned in months 13+	-0.077** (0.036)	Mothers who return to work in month 13 or later experience a significant 8.3% decrease in hourly wages
Parent	+ -0.010 (0.016)	
Other controls	Yes	
Occupation & Industry FE		
<i>Observations</i>	42,597	
<i>R-squared</i>	0.248	

Robust standard errors in parentheses. Asterisks denote: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Other controls include: gender interacted with Ever a parent; for females who are ever parents, FE for each return to work category; Ever a parent interacted with pre-parenthood income quartile; age quadratic interacted with gender; Year FE; and Education FE.



Discussion

- There is a gender pay gap even before men and women have children
- But motherhood imposes a significant earnings penalty, while fatherhood does not
- This is strongly related to women taking time away from work or working reduced hours when they have children—women who are out of work longer experience a larger fall in hourly pay

Consider:

- Are mothers' skills undervalued? Are mothers discriminated against?
- To what extent is time away from work a choice, to what extent a necessity, to what extent culturally dictated? Why do more men not choose to be the primary caregiver?
- What can employers/policymakers do to lower the barriers to mothers working?



Policy forum – 29 May 2018

- Parenthood and labour market outcomes
- Fertility trends in New Zealand



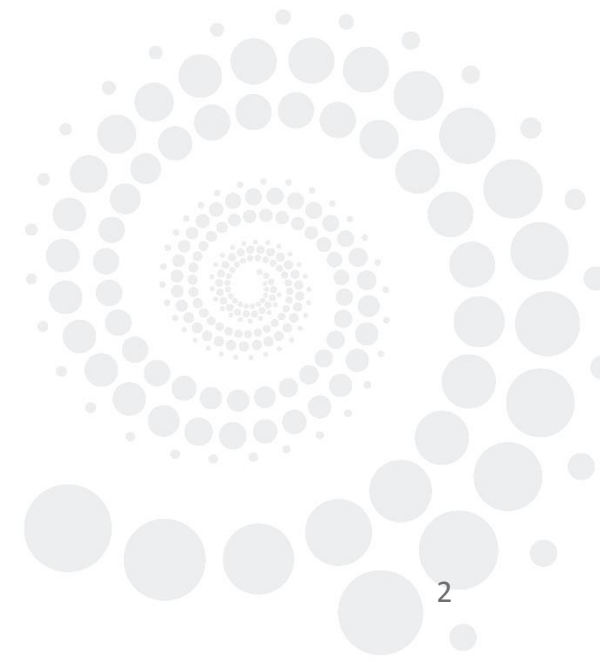
Fertility trends and mothers in NZ

Bridget Snodgrass
Population statistics
Stats NZ

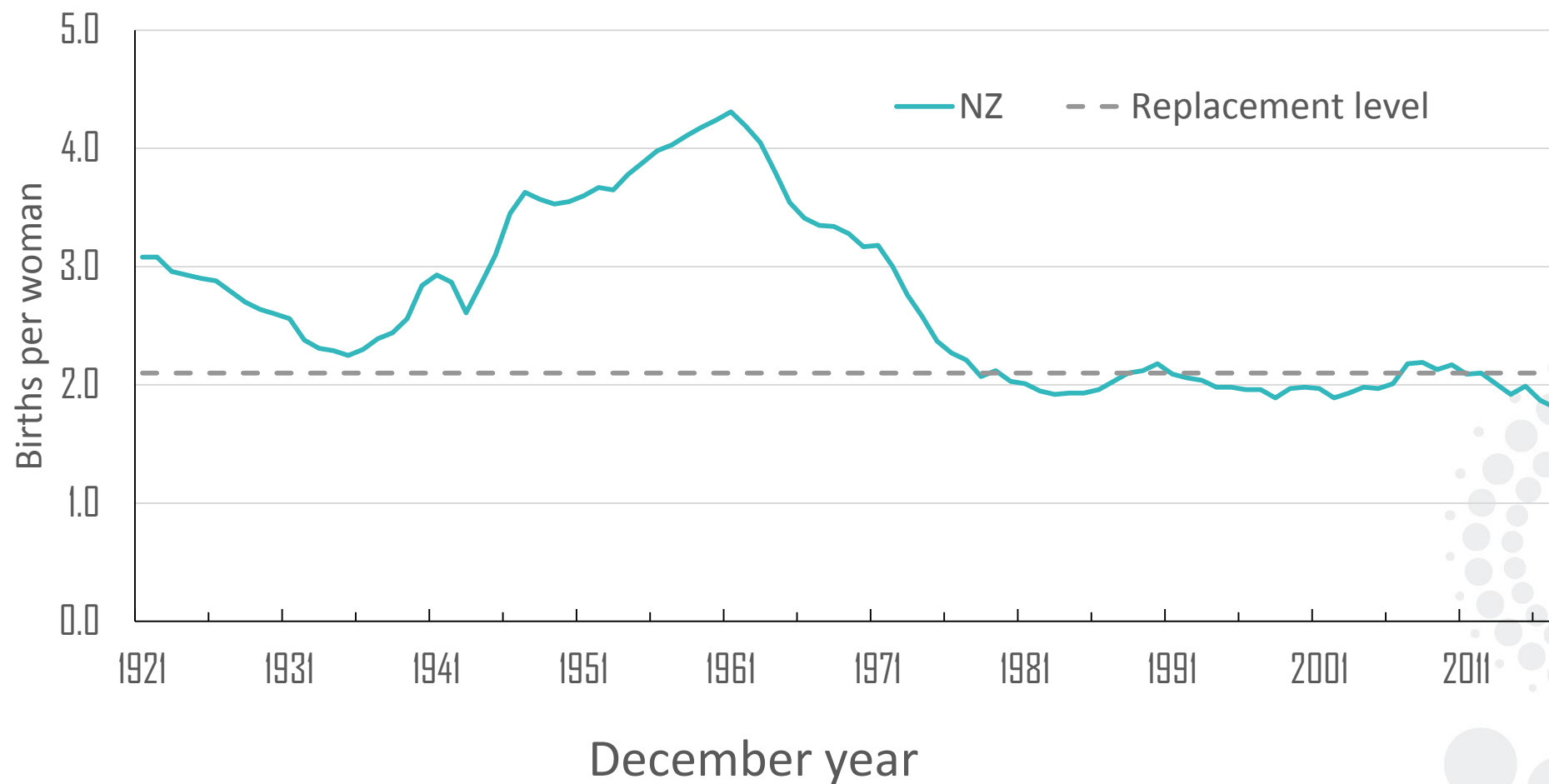


Outline:

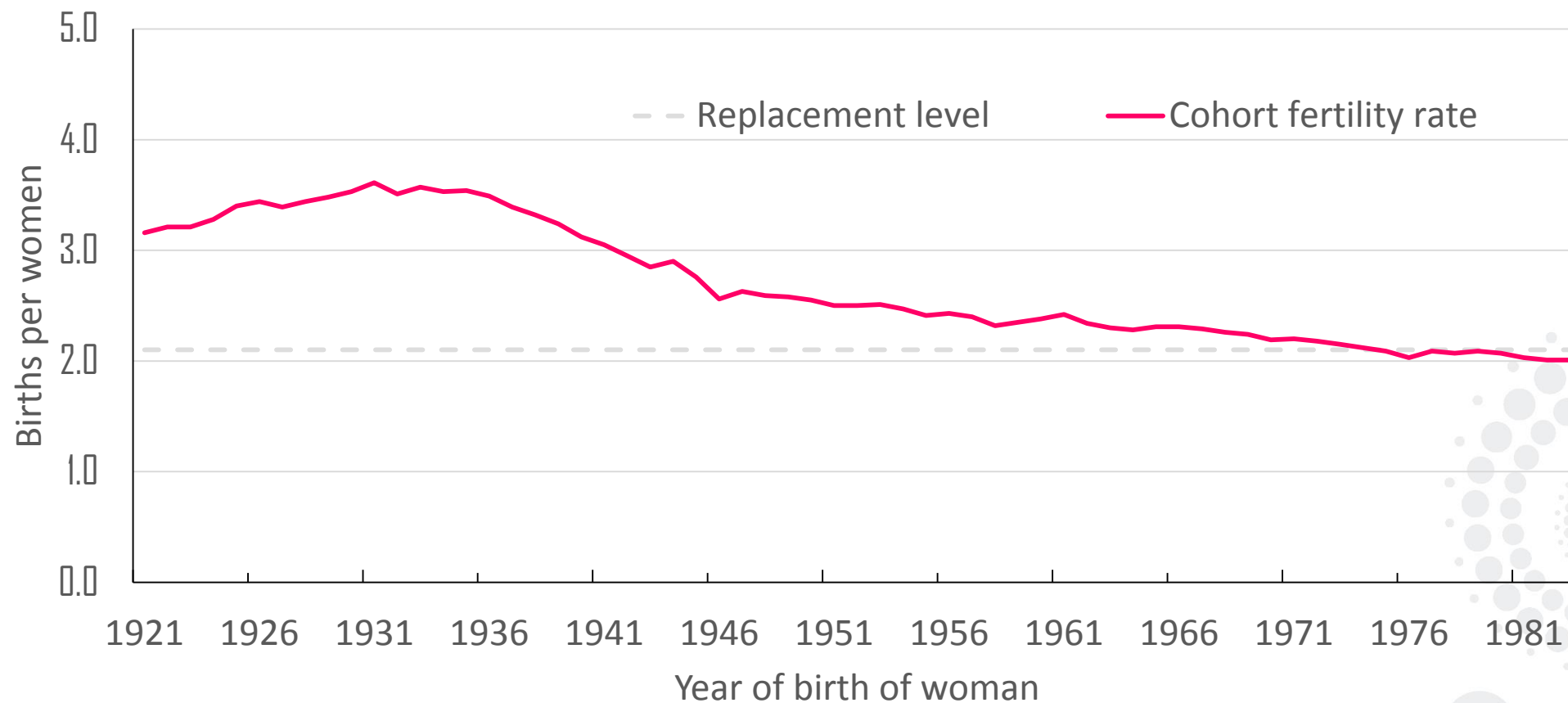
- Trends in fertility
- What are the drivers?
- What about the future?



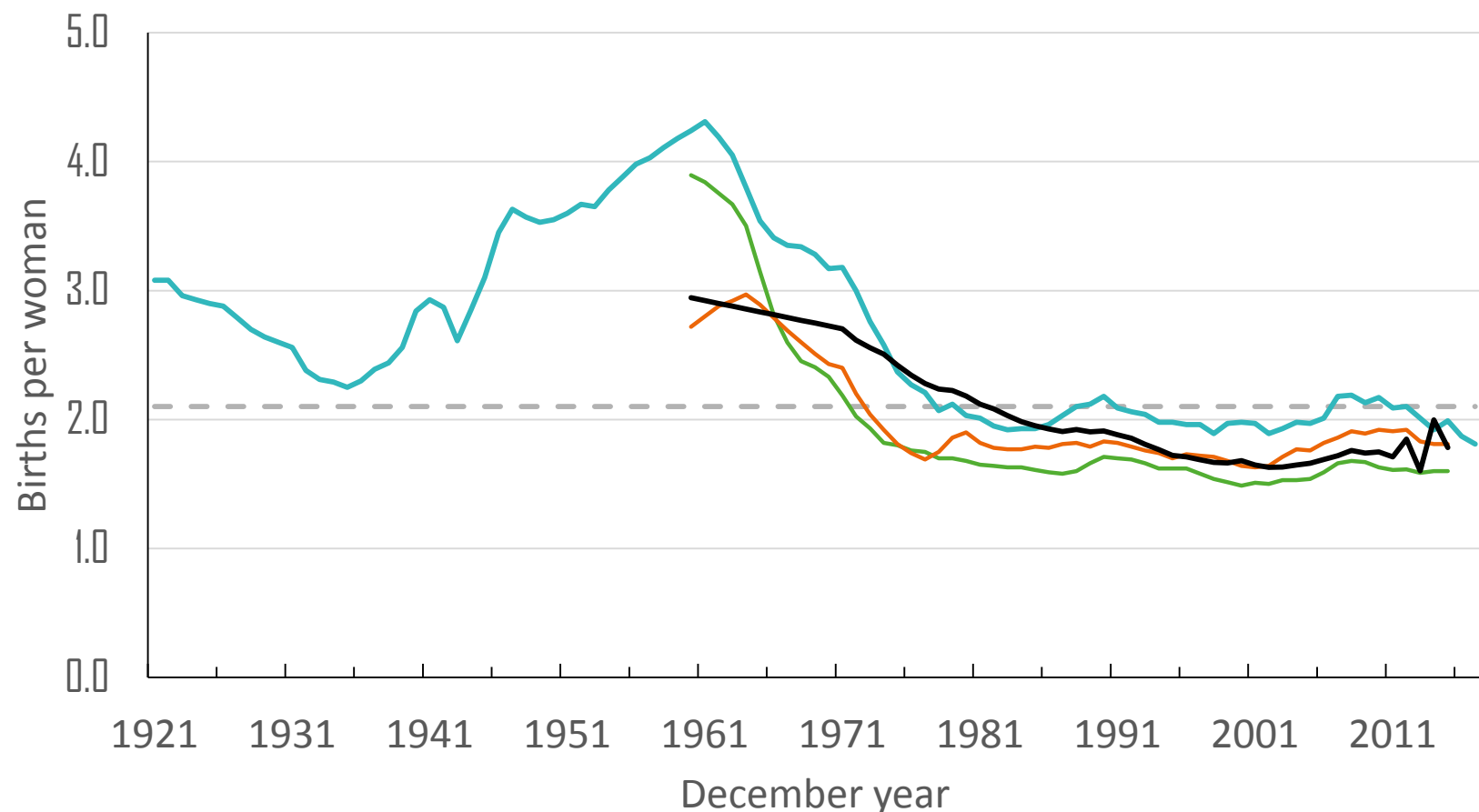
Total fertility rate (TFR), 1921-2017



Cohort (completed) fertility rate



TFR - international comparison

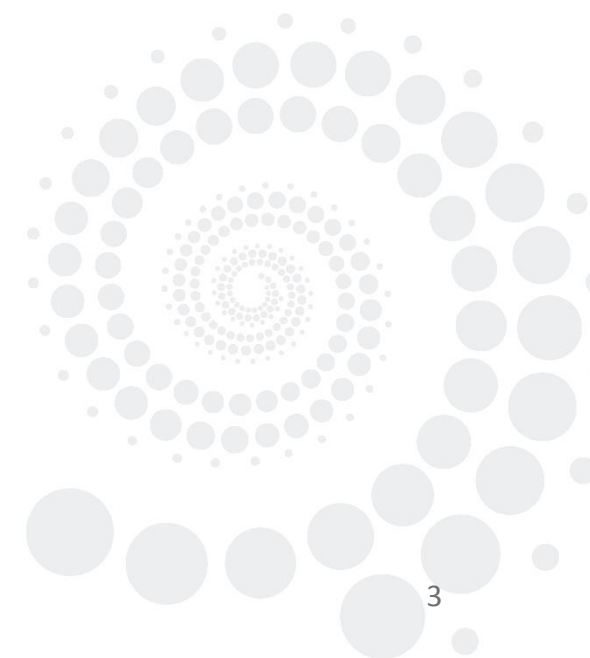
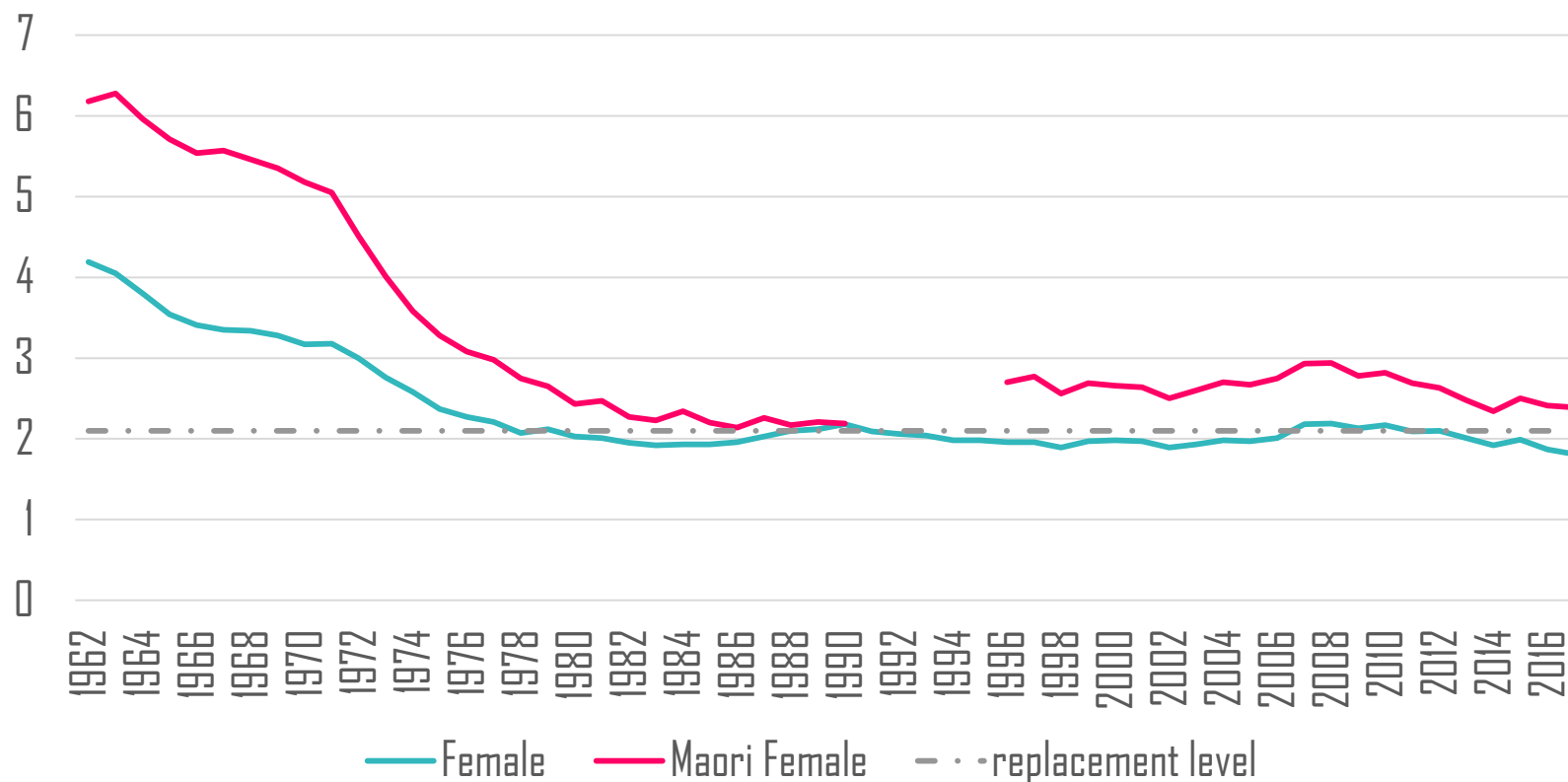


-- Replacement level — NZ — Canada — UK — OECD average

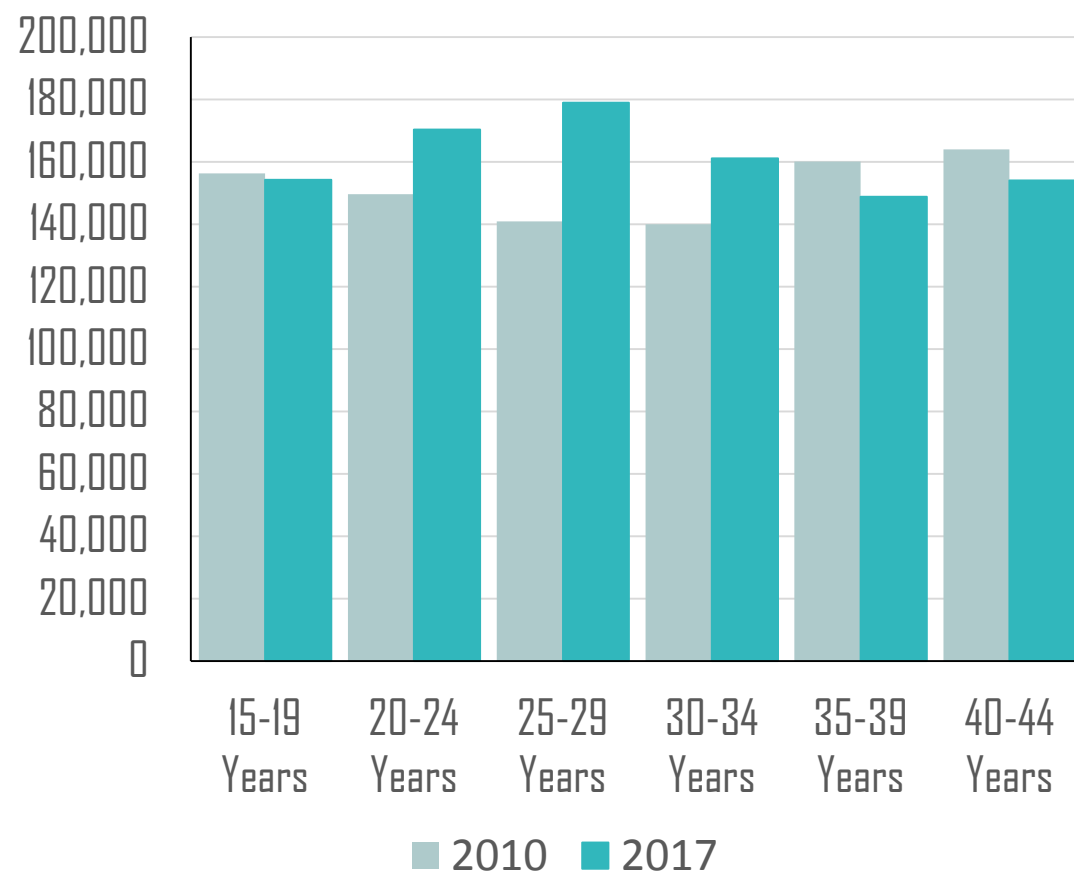


Māori mothers

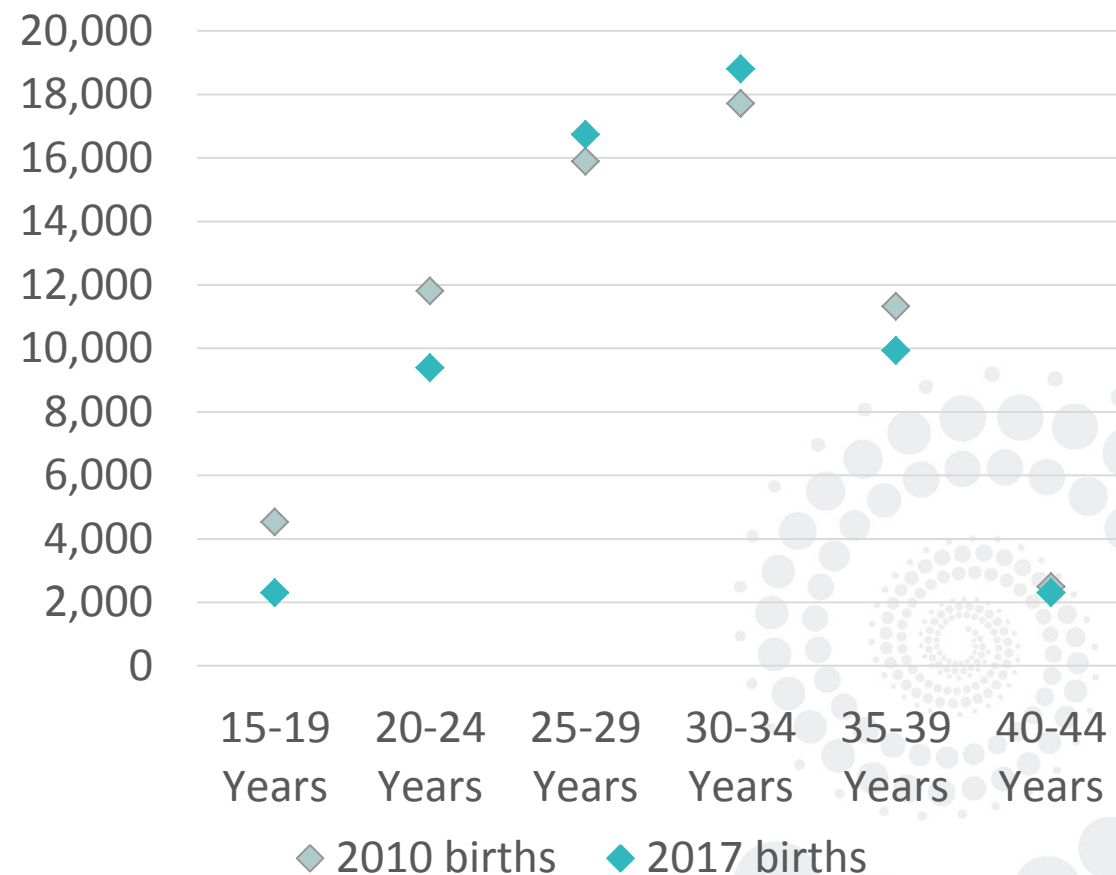
Total fertility rate,
For Māori/Total NZ women,
1962-2017



NZ female population, mean year ended December, selected age groups



Live births, by age of mother, December years



Mothers in NZ

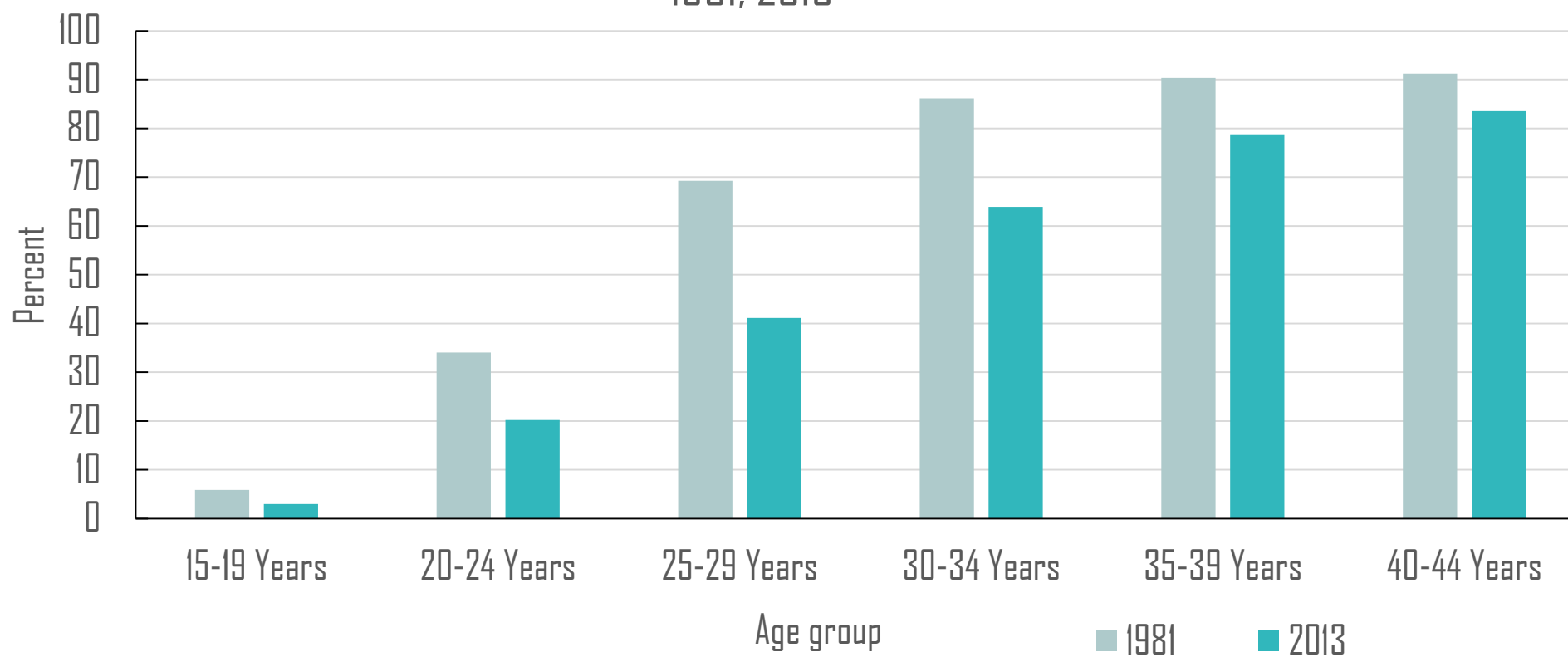
In 2013:

- Most women aged 15-45 who had had biological children, were in a parenting role in a family nucleus

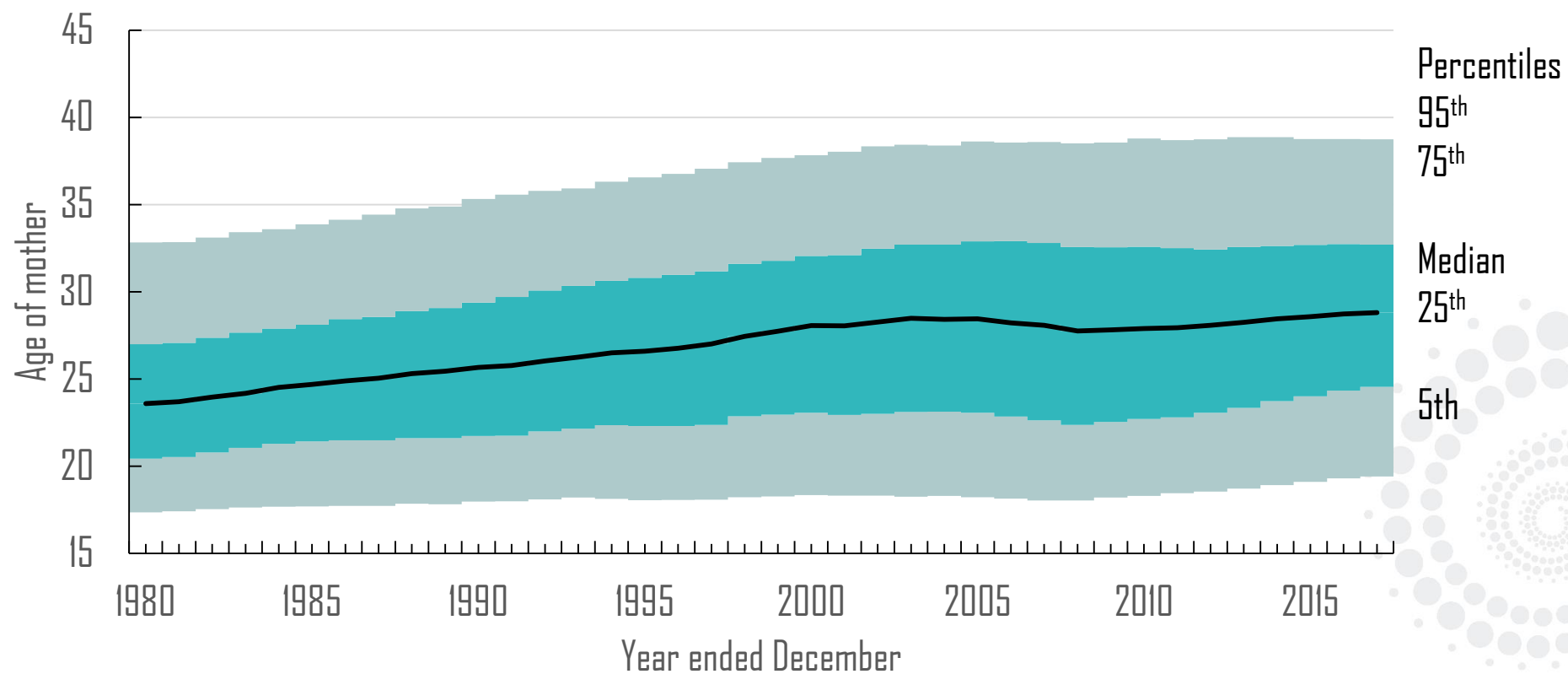
But:

- About 2% of female parents in these age groups had not had children.
- Around 6% of women in these age groups who'd had children, weren't currently in a parenting living arrangement.

Percent mothers in NZ female population, by selected 5 year age group, 1981, 2013

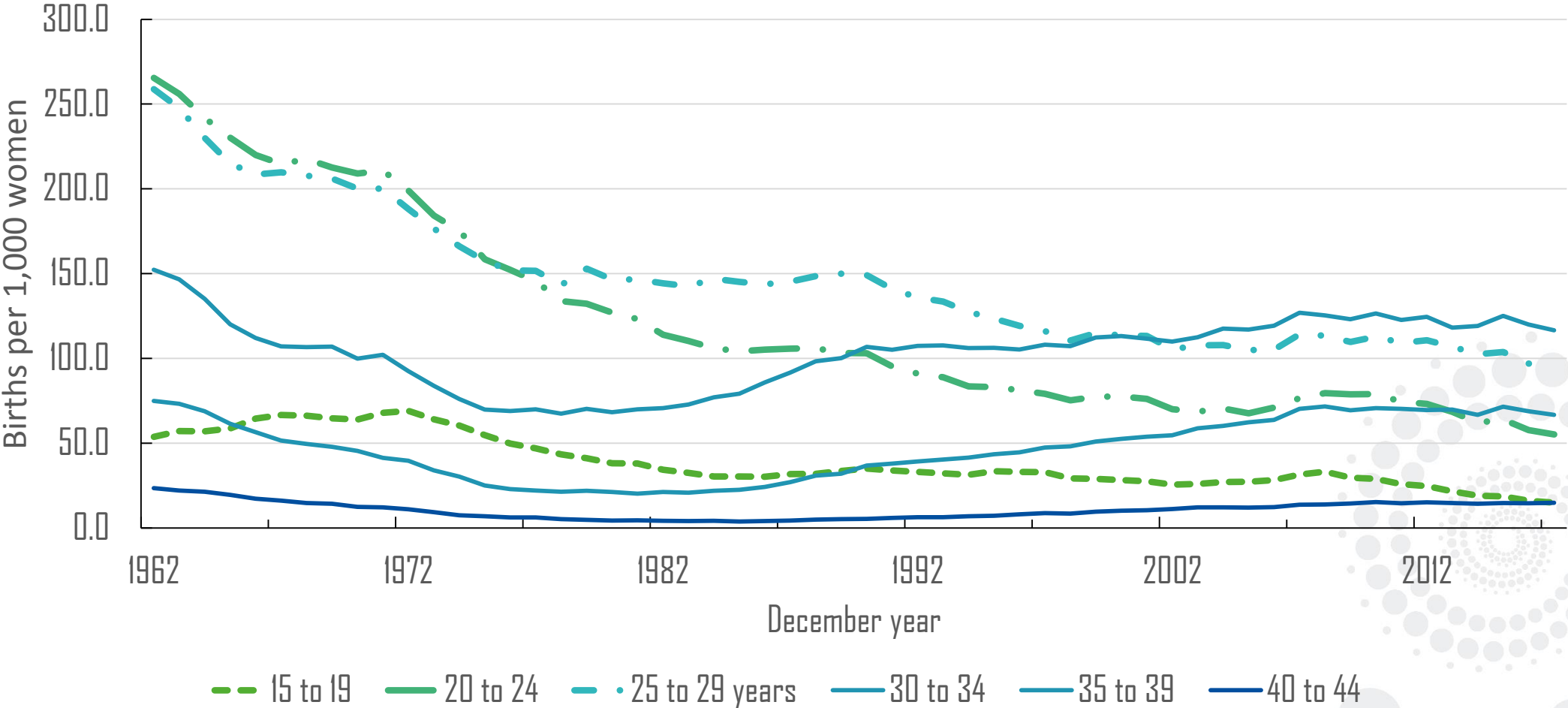


Mother's age at first birth, by 5th, 25th, 50th, 75th, and 95th percentiles, 1980-2017

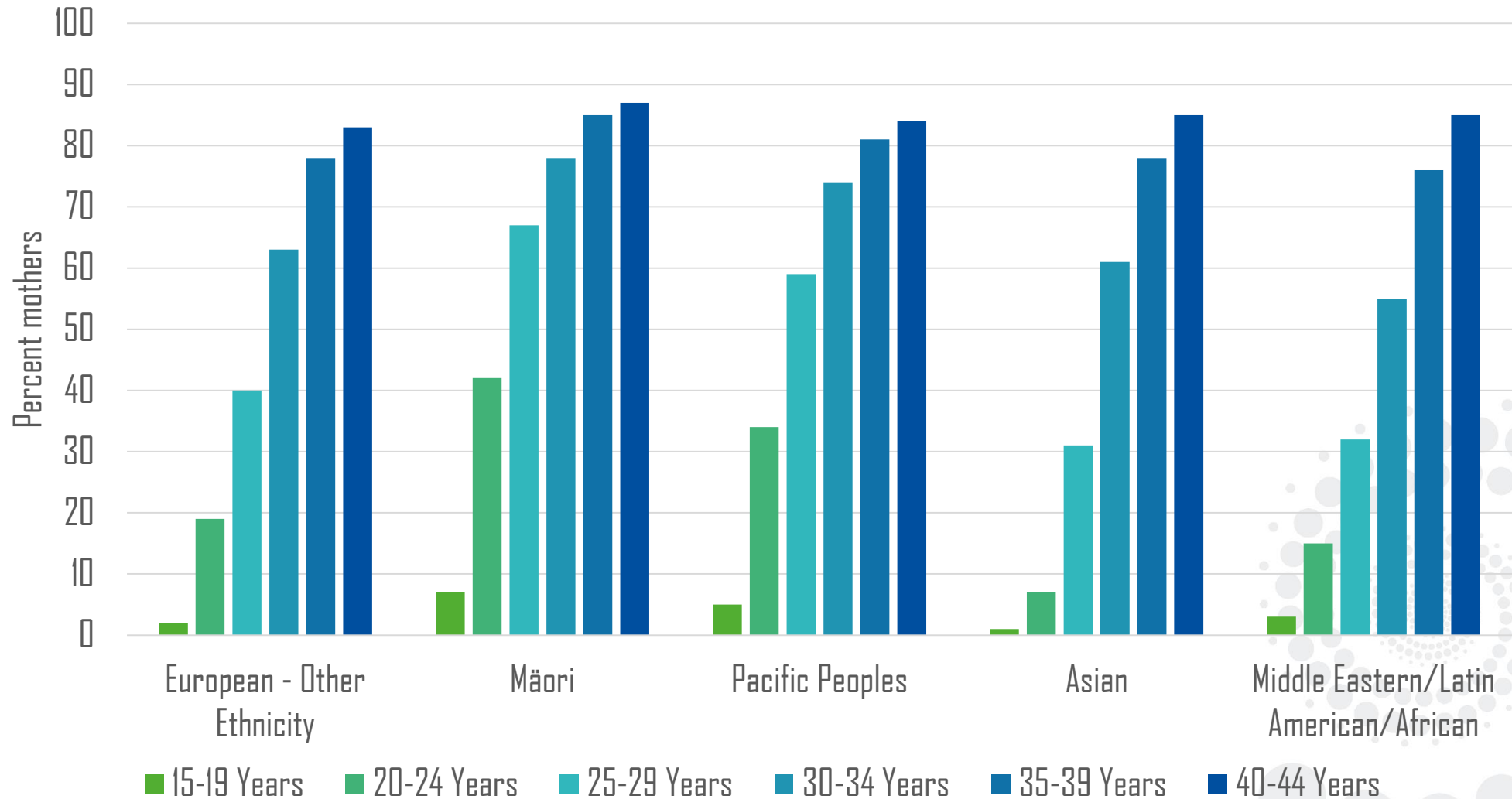


Fertility patterns by age

Age specific fertility rates, 1962-2017

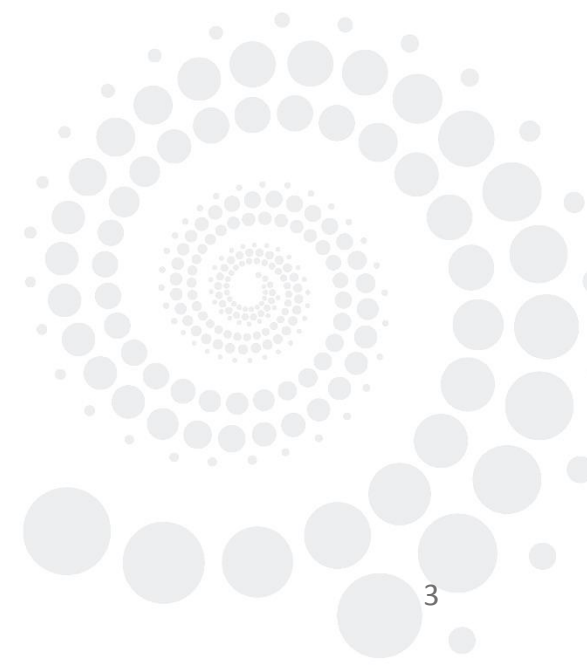


Mothers in NZ – by ethnicity

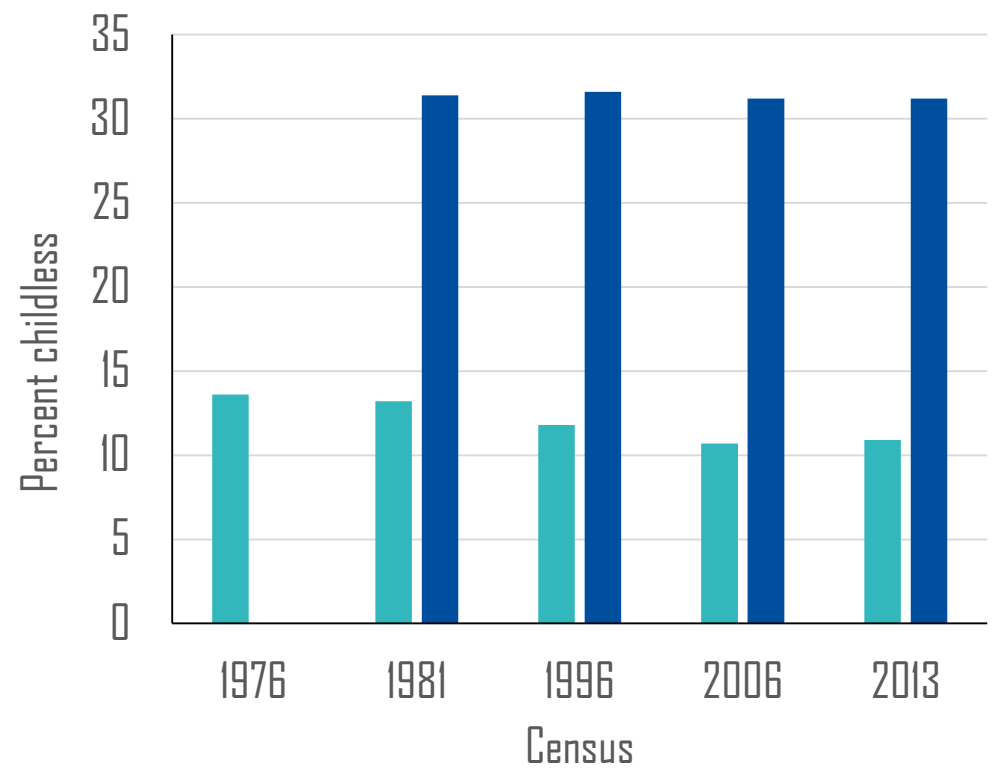


Childlessness

- Around 30% of women over the age of 15 are childless.
- This proportion has remained about the same for 40 years.

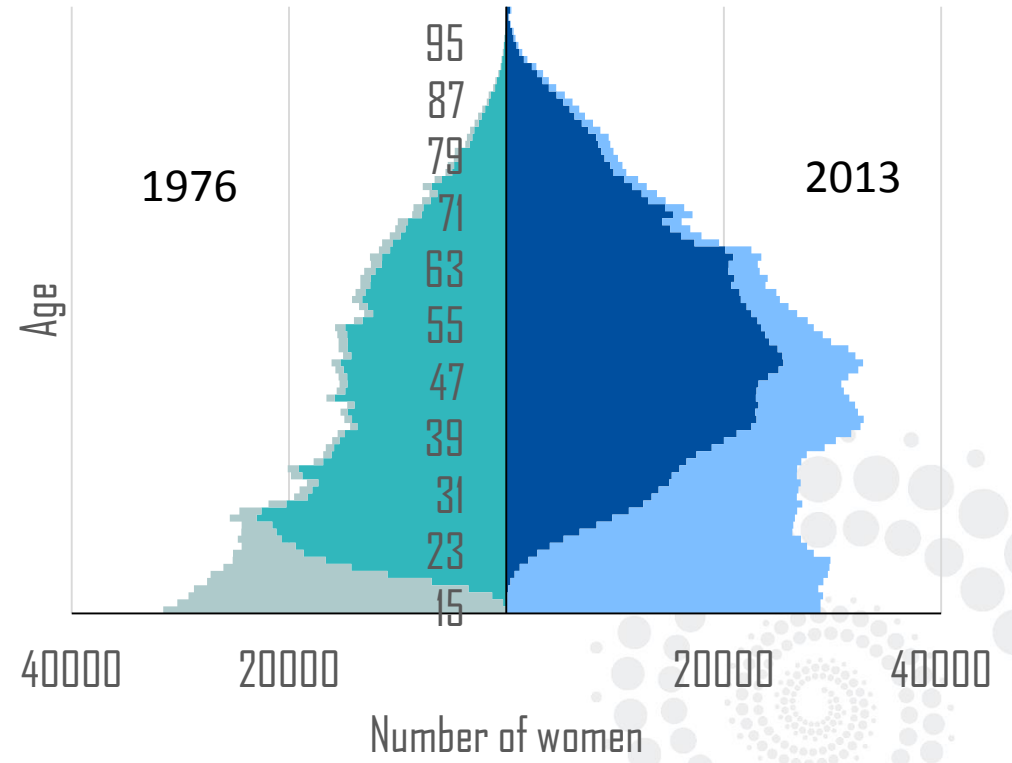


Proportion childless, women aged 15+



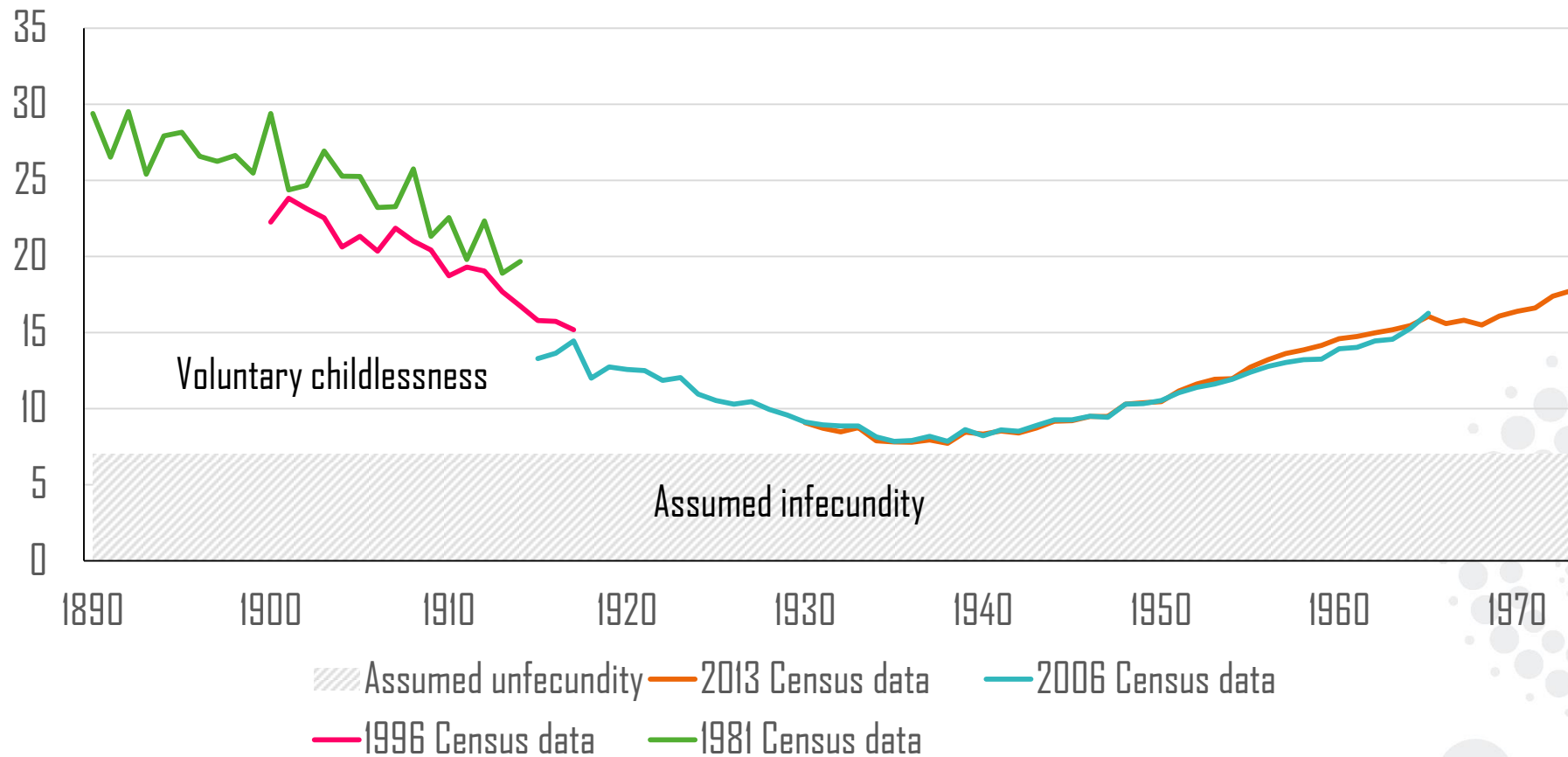
■ Ever married ■ All women

Marital status Women aged 15 years and over, 1976 and 2013



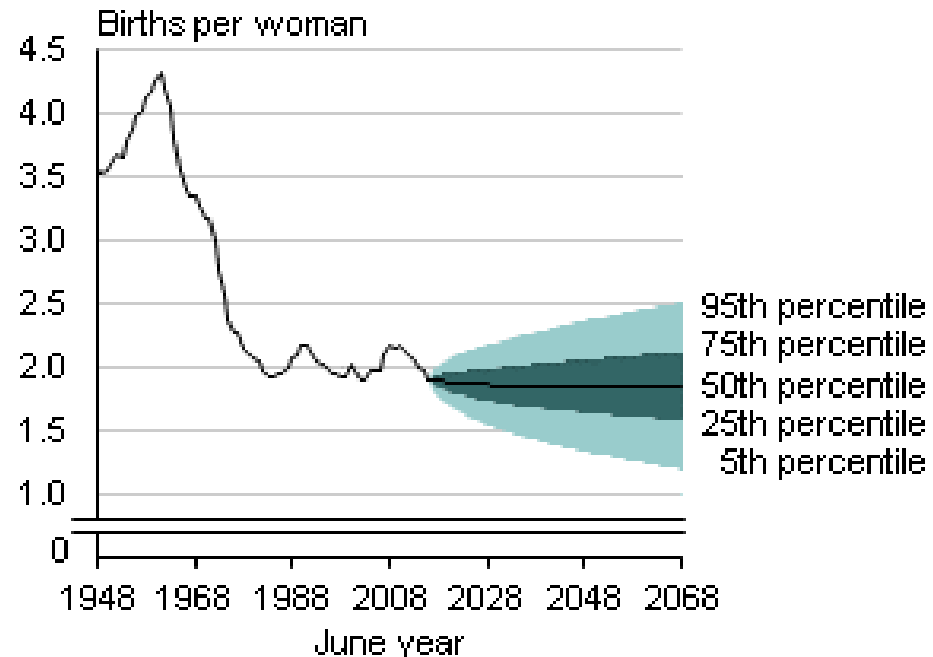
■ EverMarried 1976 ■ Other 76
■ Evermarried13 ■ Other 13

Proportion of women who remained childless by year of birth



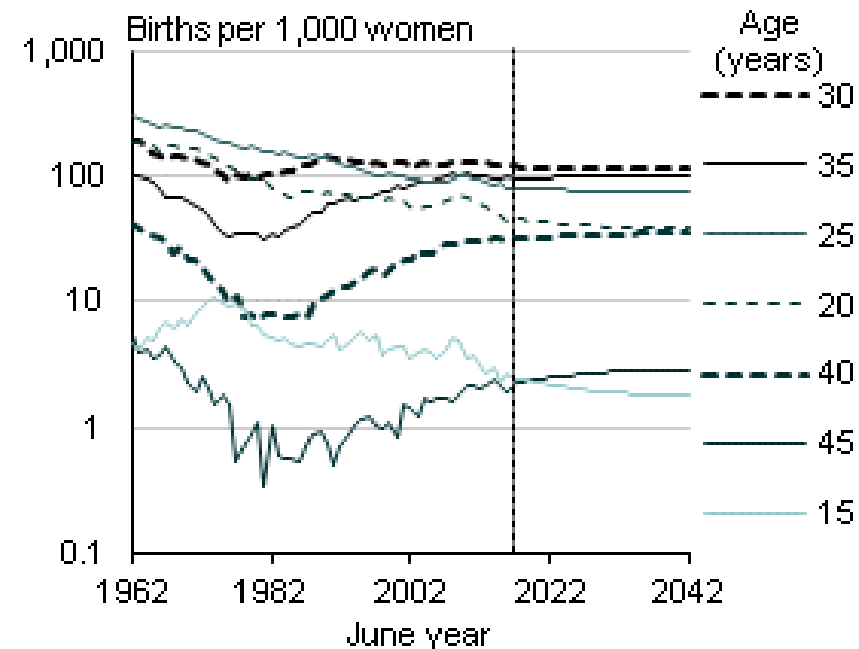
Looking forward – projected fertility

Period total fertility rate
1948–2068



Source: Statistics New Zealand

Period fertility rates at selected ages
1962–2042



Note: These figures are estimated up to 2016. From 2017, figures are the assumed 50th percentile.

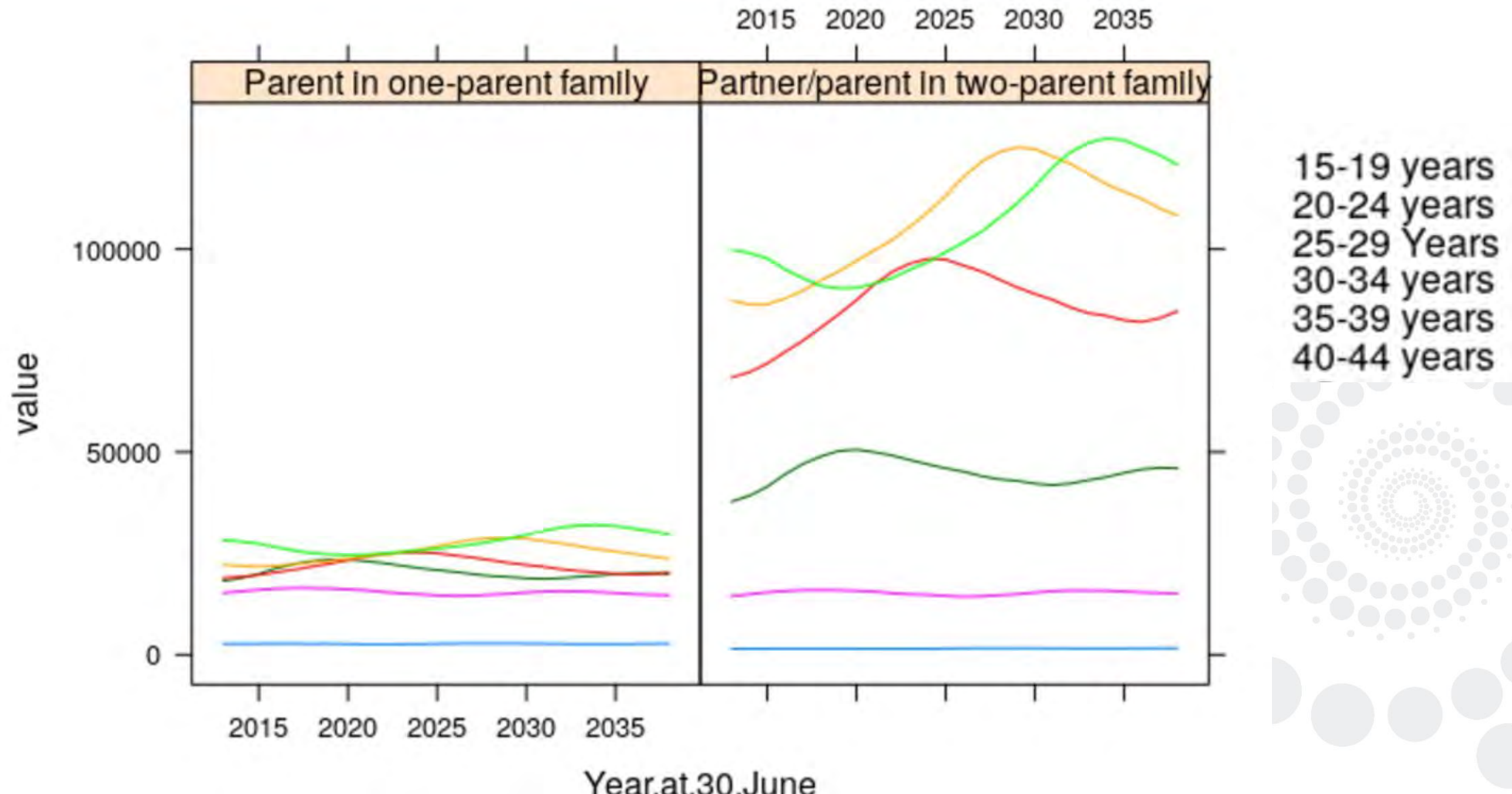
Source: Statistics New Zealand

Thank you for listening!

Bridget.snodgrass@stats.govt.nz

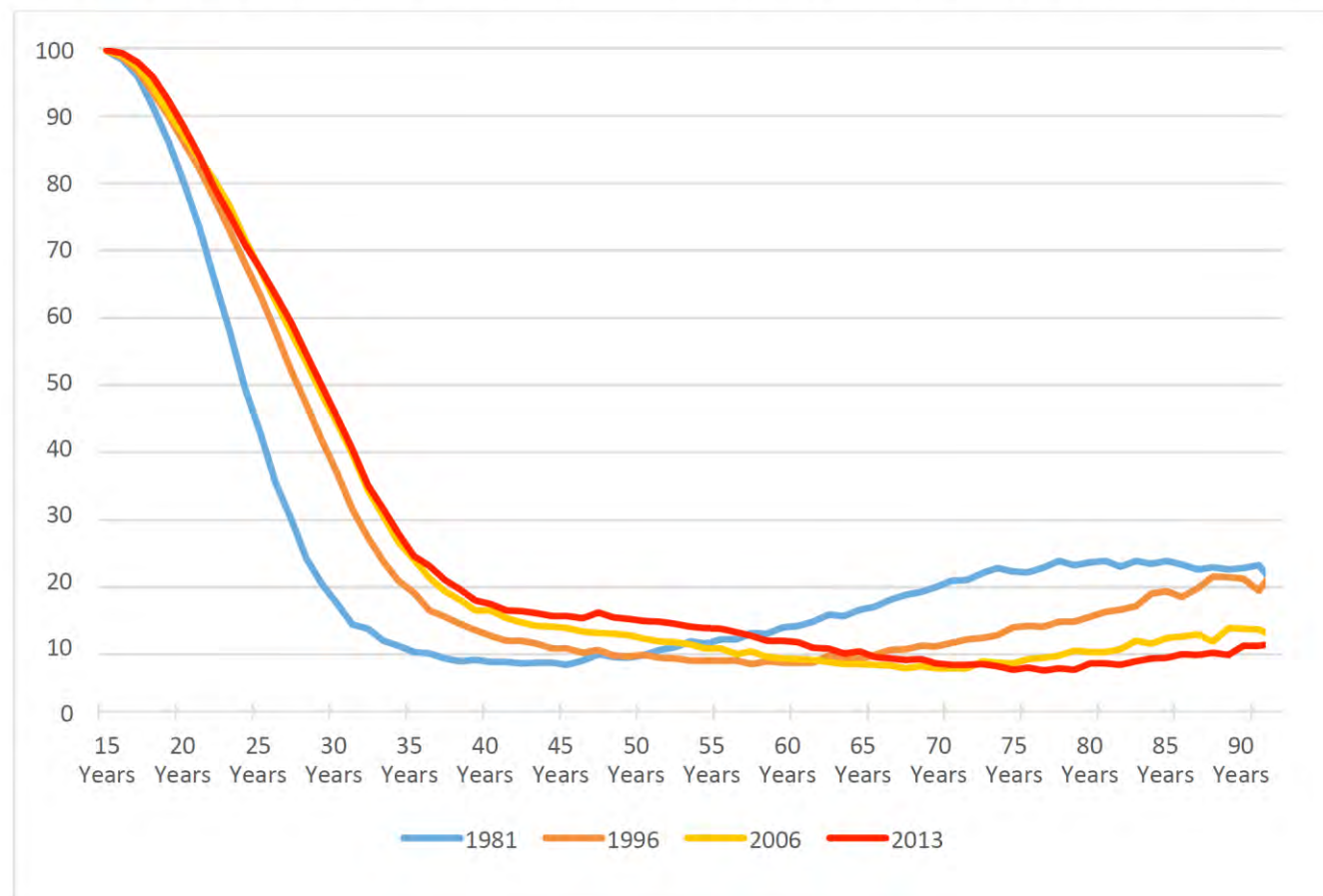
Looking forward – family composition

Projected female parents in by family type,
Selected age groups

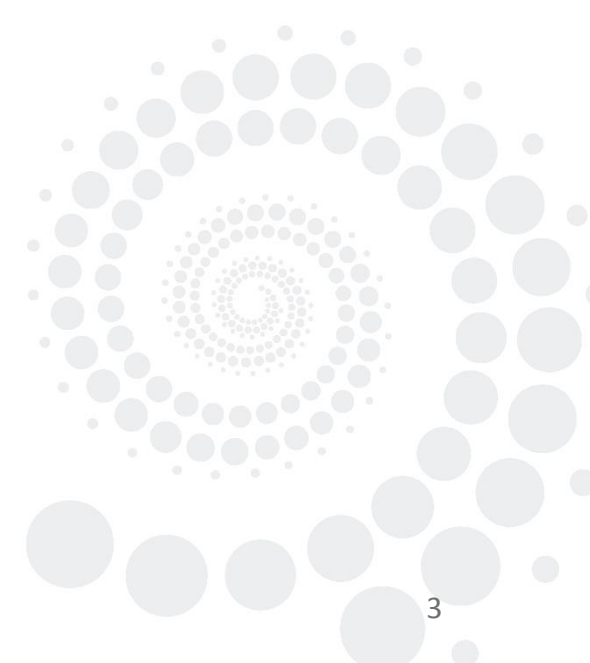


Proportion childless by age

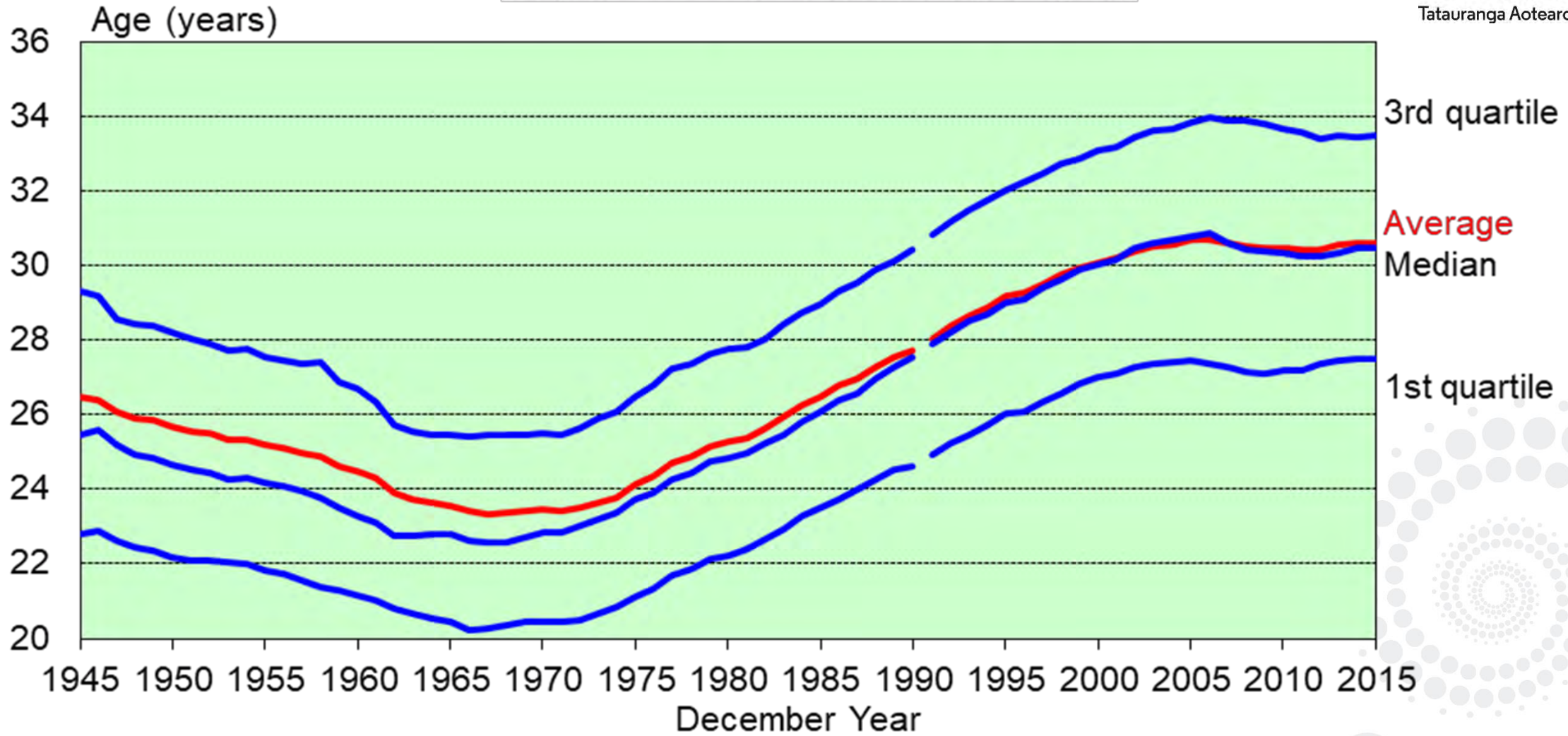
Figure 3: Percentage childless by age, all women aged 15 years and over, 1981, 1996, 2006, 2013



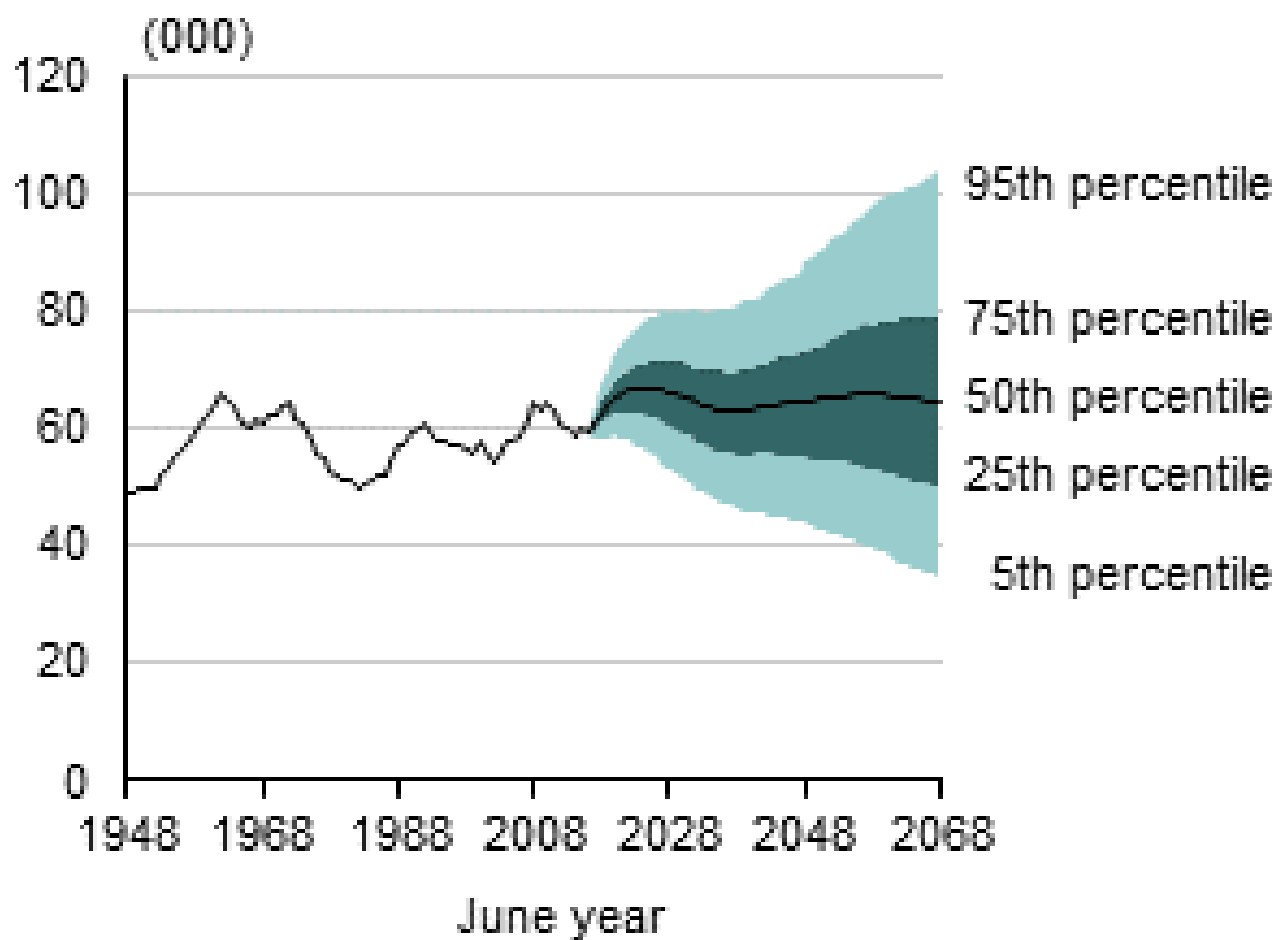
der 1981 to 2013



Age of Mothers Nuptial Live Confinements (Parity=0)



Births 1948–2068

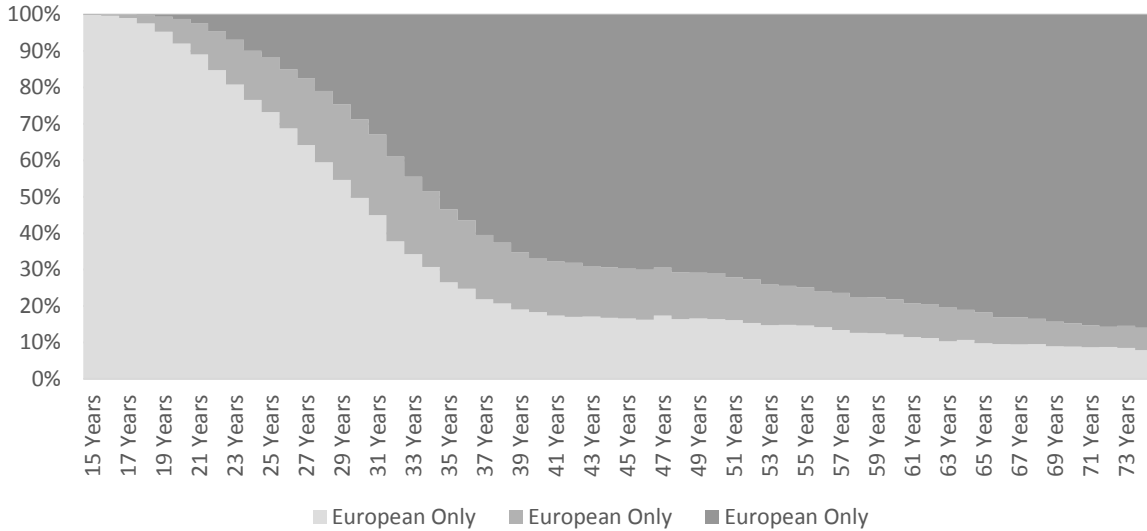


Source: Statistics New Zealand

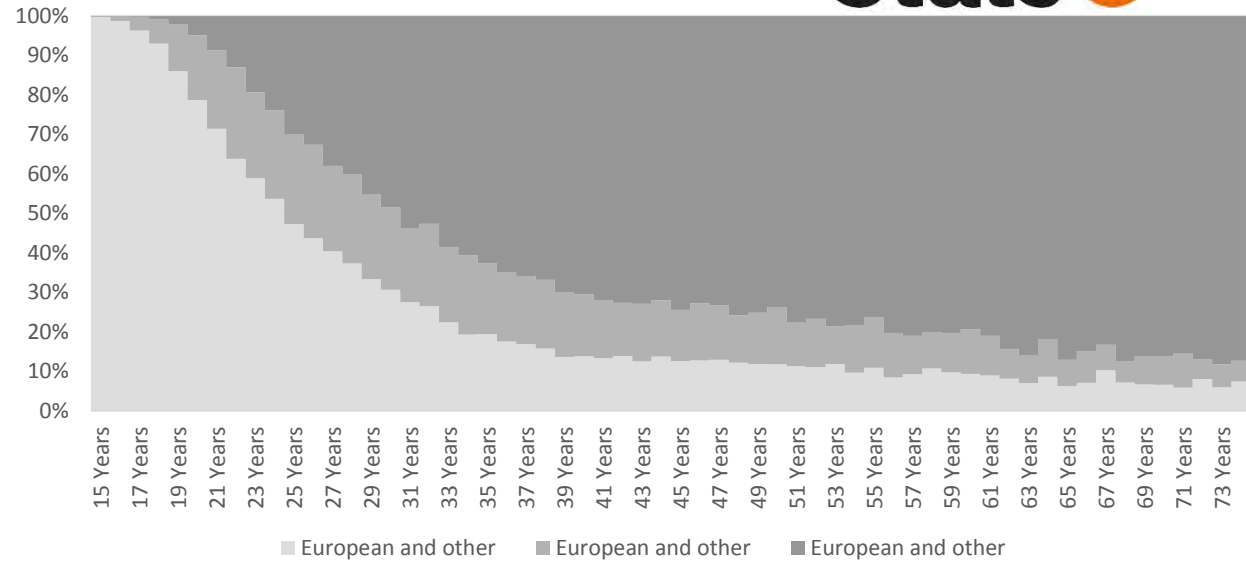
Childlessness by age: European and Asian



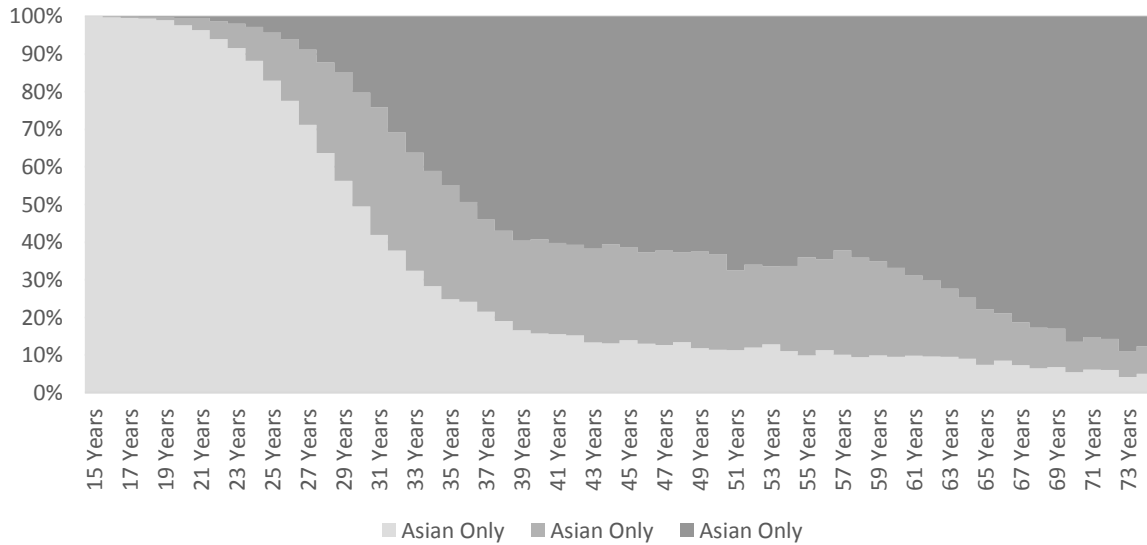
European only



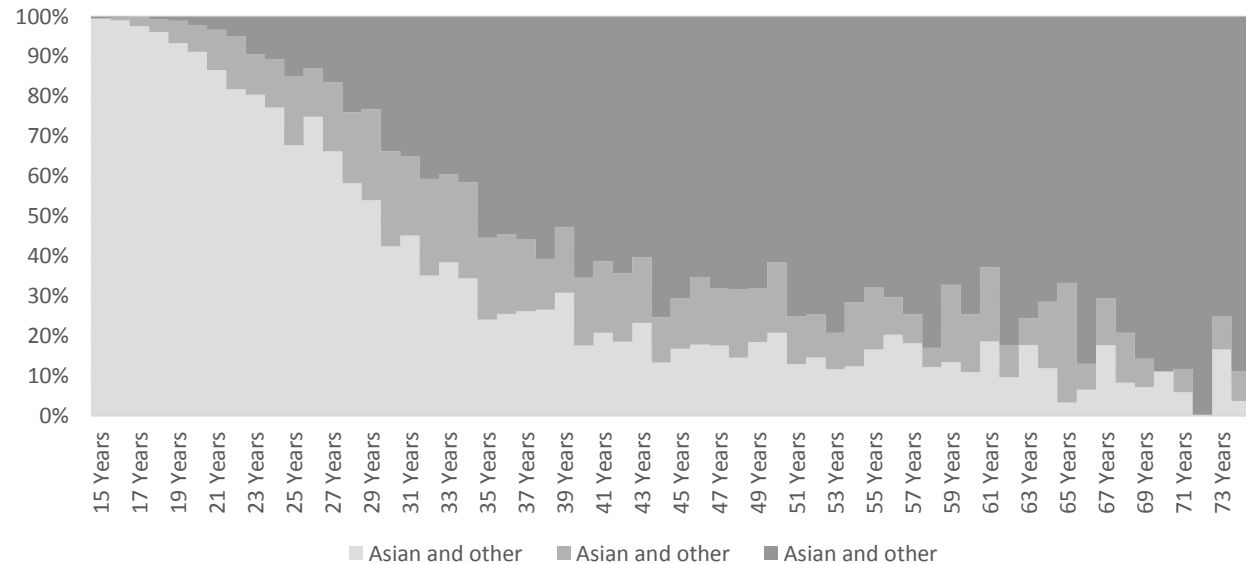
European and other



Asian only

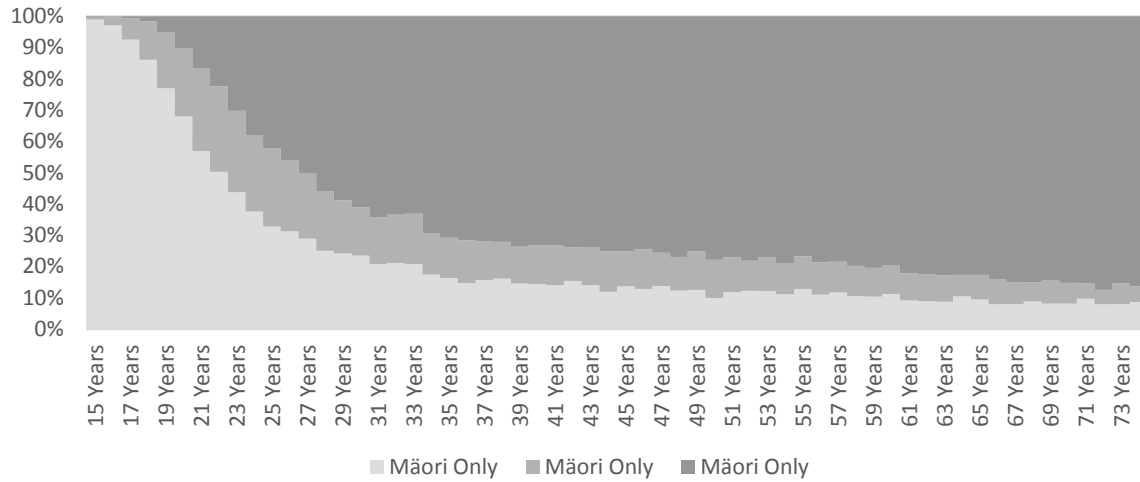


Asian and other

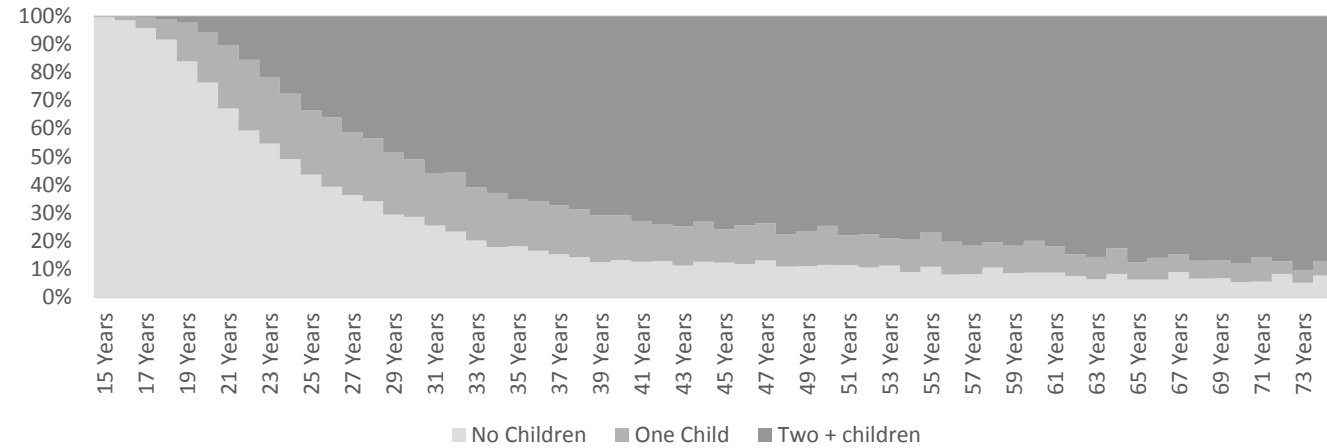


Childlessness by age: Māori and Pacific

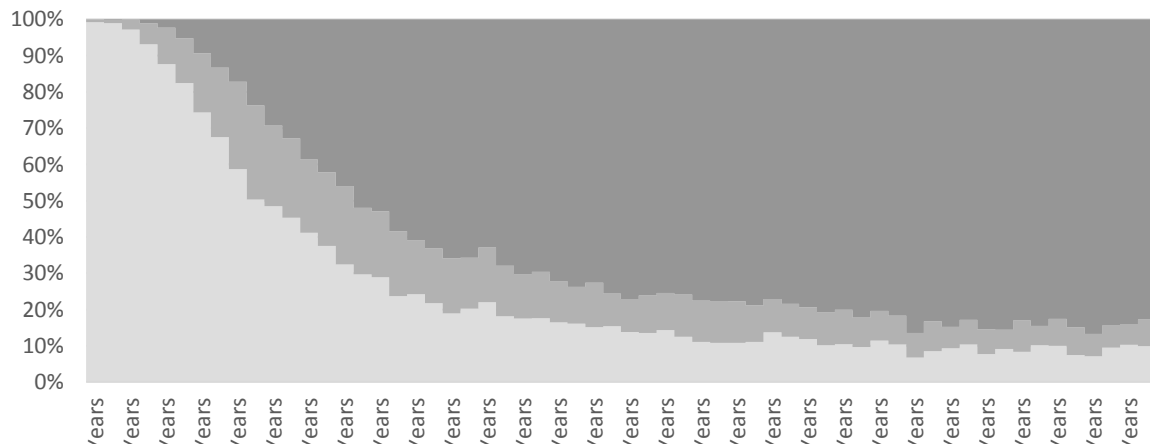
Māori only



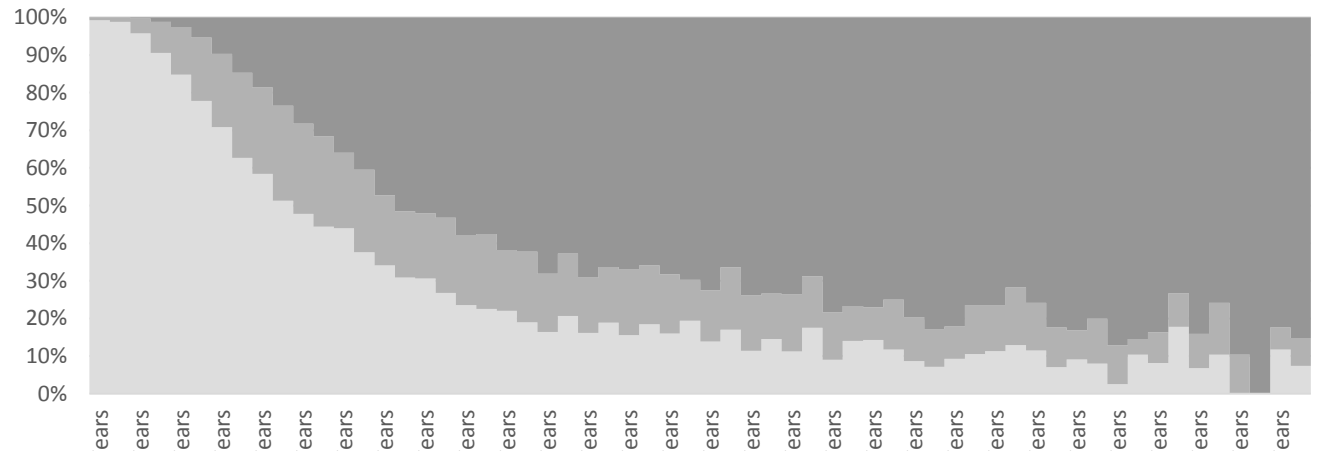
Māori and other



Pacific only

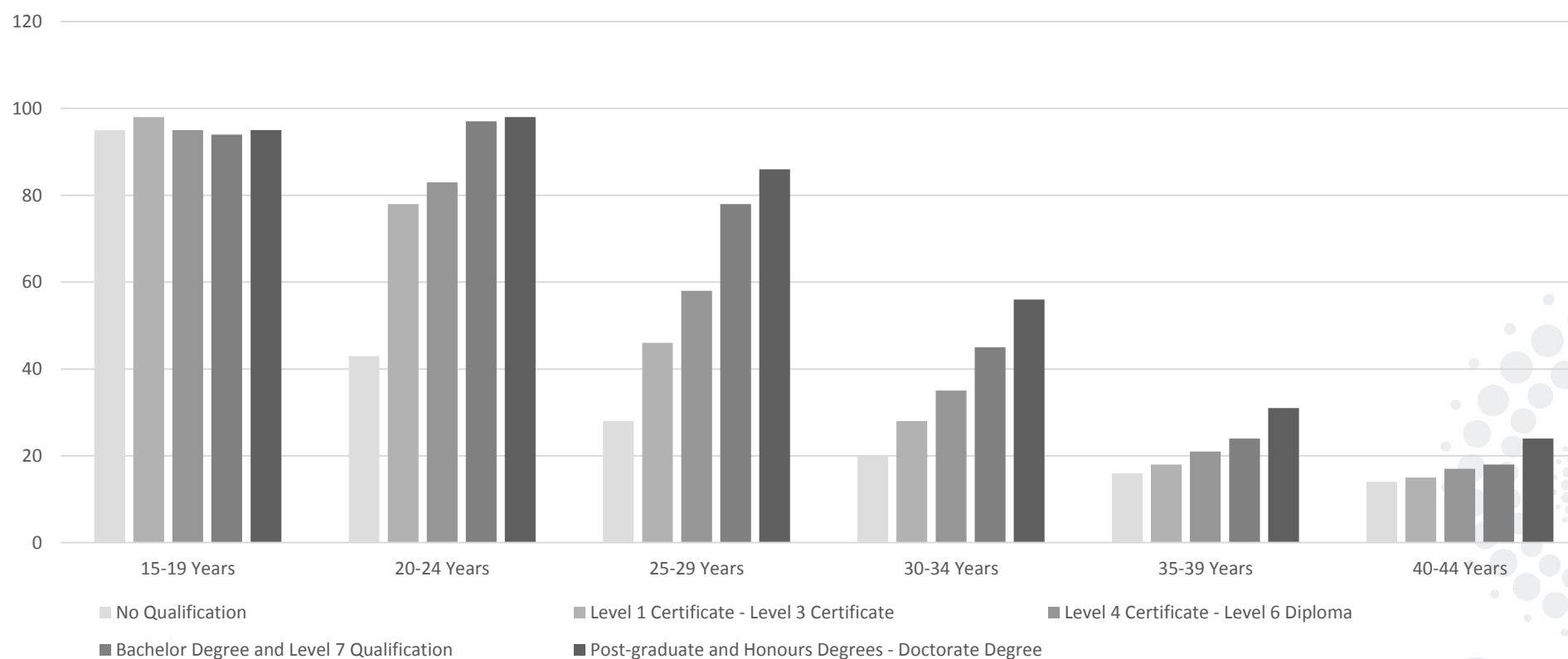


Pacific and other



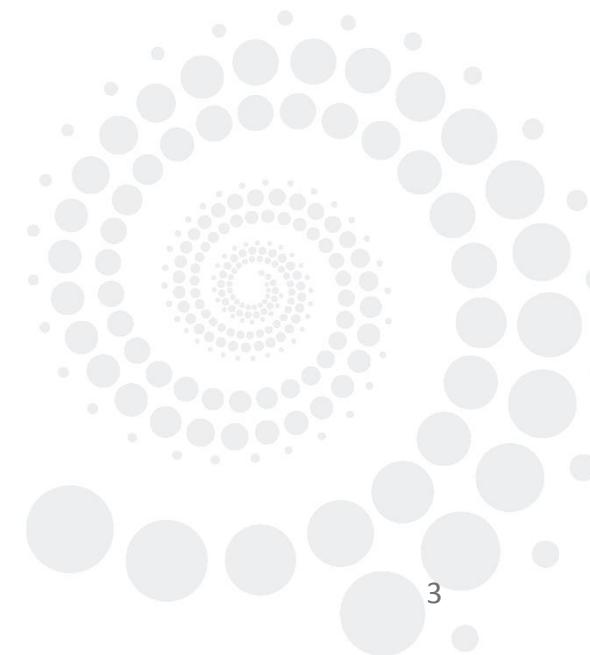
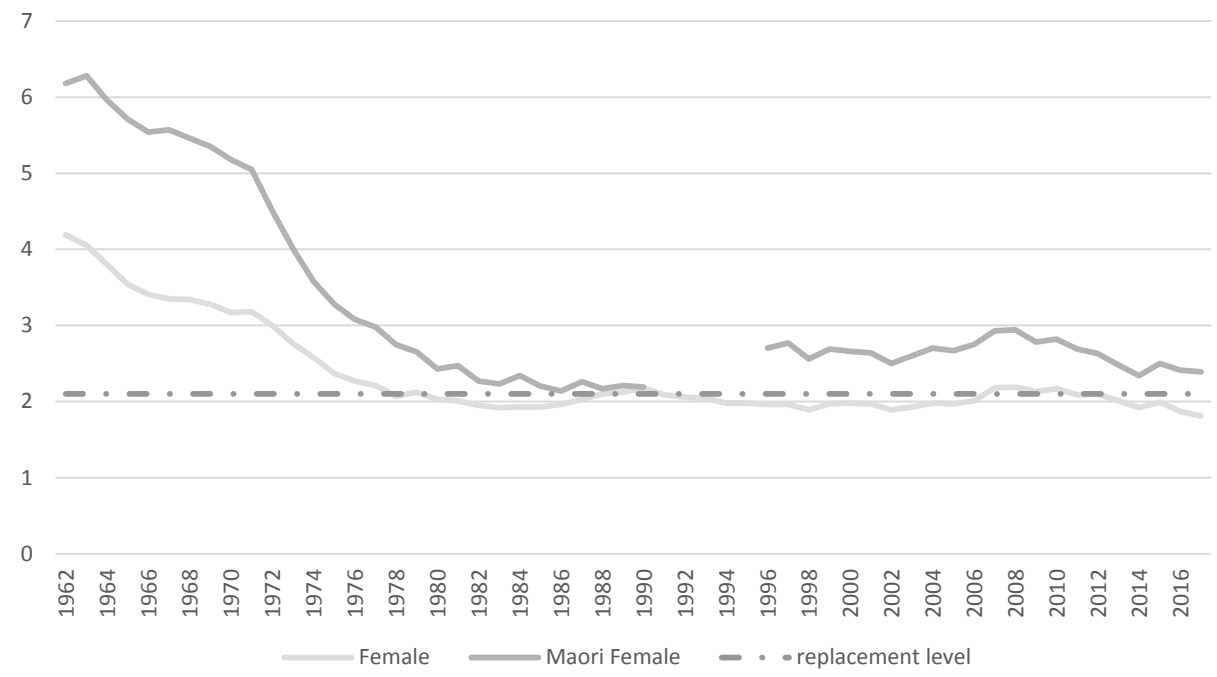
Childlessness by education

Percent childless of NZ women,
2013,
By select age groups and grouped highest qualification



Māori fertility

Total fertility rate,
For Māori/Total NZ women,
1962-2017



Timing of births

Chart Title

