Awhi Rito

Roy McKenzie Centre
FOR THE STUDY OF FAMILIES
AND CHILDREN

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A fair chance for all?
Family resources across the early life course and children's development in Aotearoa New Zealand

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Dr. Susan Morton is a Professor in the Faculty of Medical and Health Sciences, University of Auckland, Director of the Centre for Longitudinal Research – He Ara ki Mua, and Foundational Director of *Growing Up in New Zealand.* Her research interests are in life course epidemiology, statistical methods for life course research and translational research, which together combine to develop and provide a robust and relevant inter-disciplinary evidence base for informing inter-sectoral public policy aimed at improving population health.

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Executive summary

Children's developmental pathways are shaped by their context – their family, community, environment, and the broader socioeconomic and cultural connections and circumstances. These influences are critical for equitable pathways to wellbeing and coexist across multiple domains such as: material resources and poverty; housing conditions and security; caregiver employment; and neighbourhood socioeconomic environment. It is also clear from life course research that there are critical time points in children's lives where modifications to these key influences can result in shifts in wellbeing that influence longer-term trajectories, break intergenerational cycles, and provide long-term fiscal benefit.

This study sets out to answer three primary research questions:

1) How do resources—such as household income, housing stability, and neighbourhoods with low levels of deprivation—cluster together across early-to-middle childhood for children/tamariki in Aotearoa New Zealand;
2) Which children are most likely to experience these different patterns of resources; and,
3) Are these resource trajectories associated with child wellbeing?

Using longitudinal data from *Growing Up in New Zealand,* over 5,000 children are followed from antenatal (data collected in 2009/10) through to 8-years old (2018) to examine how families' and children's access to resources known to matter for child development, such as income, housing stability, and parents' work engagement, change and cumulate across the early life course.

Latent class analysis identified patterns of resource clustering at each time point (i.e., antenatal, and when children were 9-months, 2-years, 4.5-years, and 8-years old), with social sequence analysis applied to examine resource clustering over time. Multinomial regressions were used to explore whether certain sociodemographic characteristics of children and their families increased the likelihood of access to resources. A further set of regression models examined whether resource experiences were associated with children's cognitive, socioemotional, and health outcomes.

Children are referred to as advantaged if their resources are significantly above the level of resources experienced by the average child, referred to as average, if resources are about the same as the average child, and disadvantaged if their resources are significantly below the average level of resources. For example, the average family income for advantaged children at age 8 was $130,000, $68,000 for children with average level of resources, and $28,000 for disadvantaged children.

One in ten children are disadvantaged for most of their early childhood

Overall, resources appeared to cluster across the life course in ways that produced six different trajectories of resource experiences:

- *Mostly disadvantaged:* Close to 10% of the cohort always, or mostly always, had low levels of resources at each wave, with 2.7% of children persistently experienced low levels of resources during their early and middle childhood.
- *Disadvantaged at antenatal to average:* The smallest group of children (4.5%) experienced an upward trajectory, having very low levels of resources at the antenatal period, but having average or more advantaged resource levels by 8-years old.
- *Average to disadvantaged:* Eight percent had average levels of resources at the antenatal period, but experienced downward mobility over time, transitioning to being in the most disadvantaged resource group by 8-years old.
- *Always average:* Close to one-third (29.8%) consistently had resources that were around the sample average at each wave.
- *Average to advantaged by school entry:* Representing 23.0% of the children, this trajectory was characterised by being more advantaged or average in terms of resources at antenatal, having average resource levels during the infancy and toddler years, returning to being more advantaged or average on resources by the start of primary school and by 8-years old.

- *Always advantaged:* One-quarter (25.0%) of children mostly or always had resources levels that made them more advantaged than average at each wave.

Mostly disadvantaged children had worse outcomes at 8-years old compared to always advantaged children

Importantly, these trajectories of resource experiences were associated with children's development. Children who consistently experienced low levels of resources across the early life course had higher levels of internalising (e.g., depressive and anxiety symptoms) and externalising (e.g., physical aggression, defiance) behaviours and poorer health compared to children who consistently experienced higher levels of resources across time.

Who has access to more or less resources is not random and may compound disadvantage

Compounding disadvantage due to a lack of resources, was that children with less access to resources were also more likely to have family characteristics that, on their own, were also associated with worse child outcomes. Having mothers with lower levels of education, who were younger, lived in poorer regions, who moved to New Zealand in adulthood, and spent less time living in two-parent families were all associated with worse child outcomes and with having less access to resources. Children identified as Pākehā were more likely than tamariki Māori and Pacific and Asian children to experience patterns of resources that made them most advantaged, pointing to the persistence of broader structural forces, such as racism and colonialism, that contribute to population-level inequities in children's outcomes.

Resource levels ebb and flow across the life course, with periods of low resources as well as cumulative experiences of consistently low resources mattering for children

While a majority (65%) of children were in trajectories of resource experiences that placed them either more or less advantaged *relative to other children*, resource levels appeared to ebb and flow across the life course. Resource levels for the most advantaged children and those children who represented the average had consistently more resources than those children who had less resources or experienced downward or upward resource trajectories at each time point. Resource levels improved across the time period for most groups, however, with the infant years often a low point for resources, improving back to pre-birth levels once children were in primary school.

Policy implications

These findings offer several important implications for policy.

- *Resource declines in the early years point to the heightened importance of policy support to bridge the 'resource gap' until children transition to school.* This is particularly salient for children with less resources to begin with, whose families may be less likely to tap into assets, such as savings and extended family economic support, to maintain their standard of living.
- *Policies aimed at the most vulnerable families must be multipronged.* Children with the least resources across the study period had less resources across multiple domains, such as very low household incomes coupled with high rates of material hardship and residential mobility.
- *More vulnerable families can be identified and targeted for more support.* Having fewer resources often went hand-in-hand with other factors that may disadvantage children. These findings point to particular children and families, such as younger, migrant mothers, and families in the regions, where policy support can be targeted. These findings also point to potential mechanisms through which broader population-level disparities emerge and how disadvantage is transmitted intergenerationally.
- *Longitudinal data and a life course lens are essential for evidence-backed policymaking.* Longitudinal data provide a more comprehensive picture of the lived experiences of children and their families, better highlighting crucial periods for support and for whom. An actionable framework that institutionalises longitudinal cohort studies into New Zealand's statistical data landscape is needed to support evidence-backed policymaking in the future.

Introduction

Children's development and wellbeing is shaped by the environments and people around them. While poverty has been identified by policymakers and researchers as an important force in shaping children's outcomes, poverty tends to coexist with a range of other factors that could impact negatively on children's lives, such as poor housing, living in areas of socioeconomic deprivation, and have parents disconnected from work, their community and their support networks. A more holistic understanding of the factors that may be contributing to and coexisting with poverty is important to understand what support families and whanau need to thrive and to help buffer children from the effects of growing up in disadvantaged circumstances, which, in turn, can help disrupt the intergenerational transmission of disadvantage.

Indeed, prior literature has shown how poverty co-exists with other critical influences across multiple domains —and these are also connected to children's health and wellbeing, such as parents' unemployment, and inadequate and insecure housing conditions. There is, however, little research in Aotearoa New Zealand about families' and children's access to resources across different domains throughout the early life course, nor whether different types of resources are more likely to co-exist than others. In short, we do not know whether and how different domains of disadvantage cluster together, and how they do so at critical points in children's lives. Importantly, the impact of being exposed to disadvantage is likely to be higher during a child's early years, with early childhood considered a critical and sensitive period of development—one that shapes children's lifelong health and wellbeing trajectories. This research will provide evidence for Aotearoa New Zealand that can be used to help shape and develop policies and programmes in early childhood that support children's development and wellbeing, while also providing long-term fiscal benefits.

This study aims to fill this knowledge gap in Aotearoa New Zealand by using data from *Growing Up in New Zealand*—Aotearoa New Zealand's most contemporary and ethnically and socioeconomic diverse longitudinal birth cohort study—to identify how resources cluster together across early childhood, who does and does not have access to these resources, and the extent to which these experiences impact children's socioemotional and cognitive development, and their physical health. The study provides insights into the developmental contexts of the lives of children in Aotearoa New Zealand, how these different contexts are associated with differences in the developmental outcomes of children, and whether there are critical points during early children for supporting whānau and families in caring for their children.

Background

Early childhood and lifelong trajectories

The period from antenatal (i.e., conception through birth) to early childhood has been consistently identified as an important stage in the development of children—one which is associated with future trajectories of health and wellbeing (Haas, 2008; Hayward & Gorman, 2004). Although not deterministic, what happens during early childhood sets the foundation for middle childhood and adolescence, and has an important influence on health and wellbeing in adulthood, and in explaining differences in educational attainment, employment in low wage occupations, safe and secure housing, and skills that provide better access to quality health services, among others (Evans & Schamberg, 2009; Grahman & Power, 2004; Jones, Greenberg, & Crowley, 2015; Moffit, Arseneau, Belsky, & Capsi, 2011).

Because of the critical nature of these life course influences on wellbeing trajectories, longitudinal evidence is increasingly being used to inform policies and practice for intervention programmes– their timing, focus, and who they target. Using longitudinal evidence to design investment strategies that prioritise the early life course has been shown to be effective, by focusing on prevention and therefore reducing the long-term community and fiscal impact of ill health (Heckman, 2006; Hertzman & Power, 2003).

In Aotearoa New Zealand, evidence on lifelong trajectories of health and wellbeing provides an unique opportunity to address the critical and enduring inequities experienced across a broad range of wellbeing outcomes. These inequities are most stark for Māori and Pacific communities, and for those living in socioeconomic deprivation. In Aotearoa New Zealand, a life course approach recognises that a person's health and wellbeing are cumulatively influenced by experiences throughout life, as well as the ongoing intergenerational impacts of colonial oppression on health and wellbeing for Māori (Pihama et al., 2014; Theodore et al., 2019; Wirihana & Smith, 2014), and provides a lens for identifying the most effective mechanism for realising obligations under Te Tiriti o Waitangi. Thus, research that incorporates a longitudinal examination, specifically, and ongoing national-level longitudinal data collection efforts more generally, are essential for understanding how children's lives develop in Aotearoa New Zealand and for generating policies aimed at equitable wellbeing outcomes.

Ecological contexts coexist, change, and matter for children's wellbeing

Life course models of health and wellbeing are consistent with the broad, intergenerational and interconnected understandings of health within te Ao Māori and Pacific communities (Durie, 1998; Pulotu-Endemann, 2001), and align with ecological models of child development. Indeed, Bronfenbrenner's bioecological model of child development (1992)—a widely applied conceptual

model for understanding children's development—explicitly recognises that all elements of children's development, including the contexts children interact with, are filtered through a multi-layered lens. At the broadest level, their contexts, such as family life and school settings, are influenced by sociohistorical time and structural forces, such as colonialism and political economy. This includes those contexts closest to children (i.e., what Bronfenbrenner calls the "microsystem"), such as their family, home, and school, but also how those settings, such as parents and schools, interact with each other (i.e., the mesosystem), and how those settings are influenced by factors outside of the direct involvement with the child, like how their parents' work conditions shape the time left available to be with their children (i.e., the exosystem).

While all these systems interact to support children's development, those settings considered more proximate, such as family resources, their home, and their community, exert more influence. Indeed, existing research, including in Aotearoa New Zealand, has highlighted the fact that living free of poverty and having material needs met are essential for healthy child development (Boston & Chapple, 2014; Gibb, Fergusson, & Horwood, 2012; Oliver, Foster, Kvalsvig, et al., 2018). In the Aotearoa New Zealand context where the housing crisis is particularly acute, access to stable housing, stability in that housing, and homes free from overcrowding have also been shown to matter independently and cumulatively for children (Bowie, Pearson, Campbell, & Barnett, 2014; Nathan, et al., 2019; Russell, Grant, & Morton, 2020). Beyond the home, contexts that shape parents' wellbeing, such as work engagement, and healthy communities also exert influence (Aminzadeh, et al., 2013; Exeter, et al., 2019; Muller, et al., 2022; Walsh, Joyce, Maloney, & Vaithianathan, 2020). This literature has consistently shown that these resources are critical for children's development, and given their direct interaction and impact on children's daily lives, are potentially amenable to intervention in order to support development and improve broader health and wellbeing outcomes.

Importantly, these contexts do not occur in isolation and they can change or persist over time. Given the timing or the cumulation of more or less resources—these experiences can have an outsized impact on children's wellbeing. Moreover, these influences do not operate in a vacuum, and are themselves influenced by contexts and structural forces more distal to children and their whānau.

Our framing of advantage and disadvantage

In the report, we discuss domains of 'disadvantage' (according to the absence of material resources) and 'advantage' (for example, assets such home ownership and well-resourced neighbourhoods). It is important to understand that we conceptualise these terms within the social, political, and economic context of Aotearoa New Zealand. Prior research on how disadvantage manifests from

social, political, and economic contexts, typically frames or links 'disadvantage' as resulting from structural and systemic discrimination and marginalisation. In this way, this 'disadvantage' is not the result of individual failure or personal blame, but rather it is the downstream impact of structural failures leading to unfair and inequitable access to the broader determinants of health and wellbeing. This framing of 'disadvantage' at the structural level not only highlights wider societal solutions (and therefore opportunities to intervene and achieve equity) but also acknowledges the normalisation of 'advantaged' or privileged communities (Borrell, et al., 2009; Talamaivao, Harris, Cormack, Paine, & King, 2020).

The current study

To enhance our understanding of a child's exposure to different contexts that shape their development and wellbeing across the early life course, this study uses data from *Growing Up in New Zealand* (GUiNZ). *Growing Up in New Zealand* is Aotearoa New Zealand's most contemporary longitudinal study, following over 6,000 children and their parents from antenatal through to adolescence, with the goal of understanding how children's experiences shape their development and wellbeing and, in turn, how families can best be supported by policies and services. In this study, we draw from the first five major data waves—interviews when mothers were pregnant with the study children, and when children were 9-months, 2-years, 4.5-years, and 8-years old. Antenatal data were collected between 2009-2010, with the most recent 8-year wave data collected in 2018.

To examine how children's access to resources across different contexts changes over time and shapes their development and wellbeing, this study answers three key questions:

1. *How do domains of disadvantage cluster together across early-to-middle childhood for children/tamariki in Aotearoa New Zealand?*

   We examine how different contextual domains, such as being in material hardship, parents' employment circumstances, and housing conditions, cluster together at different time points across early through middle childhood, and the extent to which children are persistently exposed to multiple domains of disadvantage or whether these experiences are short-lived.

3. *What are the key sociodemographic predictors of these different experiences?*

   Exposure to multiple domains of advantage and disadvantage simultaneously is not random—that is, there are factors that are associated with increased risk of being in more disadvantaged clusters or trajectories (identified in the first research question), such as parents' educational attainment, disability status, and ethnicity. The goal of this question, then, is to shed light on whether and to what extent exposure to multiple disadvantages is disproportionately felt by different segments of our population.

3. *Are these multiple disadvantage trajectories associated with child wellbeing?*
   These domains of disadvantage have been shown to matter independently for child development. Yet in the international and Aotearoa New Zealand research, however, they are rarely examined more holistically to understand how these domains matter cumulatively. To answer this question, we examine whether trajectories of advantage and disadvantage matter for children's development when children are 8-years old, and whether different patterns of disadvantage matter for child development at different points-in-time from early to middle childhood.

By answering these questions, this study will shed light on the ways that resources accumulate across the early life course and for whom, and provide evidence for how these experiences shape population-level differences in children's health and development. In turn, these insights can highlight when, in early childhood, support is needed from policy and practitioners to make sure all children in Aotearoa New Zealand get a fair chance.

Methods

Data and sample

Data come from GUiNZ, Aotearoa New Zealand's most contemporary and ethnically and socioeconomically diverse birth cohort longitudinal study. In 2009/10, over 6,000 pregnant women were interviewed at the baseline wave (i.e., antenatal wave) and have been re-interviewed at multiple points throughout early to middle childhood. Although the original cohort was drawn from pregnant mothers in the Auckland and Waikato regions, the cohort is ethnically and socioeconomically diverse and has been found to be broadly representative of Aotearoa New Zealand births in terms of sample's sociodemographic profile (Morton, et al., 2014).[1]

For this study, we use data from the major study waves, when parents were interviewed during the antenatal period, and when their children were 9-months, 2-years, 4.5-years (i.e., early childhood years), and 8-years old (i.e., middle childhood), representing five data waves in total. Importantly, GUiNZ collects information on families' experiences across multiple resource domains, such as family income, residential mobility, parents' employment, and neighbourhood deprivation at each wave. Hence, it provides a unique opportunity to examine children's experiences across multiple domains of disadvantage during early and middle childhood.

The final analytical sample for this study consists of 5,007 children whose parent(s) were surveyed at each major wave (dropping 1,803 children [26.3%] from the original cohort of 6,853), and where the primary caregiver was always the same mother from the antenatal wave (excluding a further 43 children [0.6%]). A comparison of sociodemographic characteristics at the antenatal wave between those in the final analytical sample and those excluded from the study is provided in Table A1 in the Appendix. Overall, those in the analytical sample were more advantaged than those excluded due to attrition or a change in the primary caregiver across almost all measures. For example, they had higher household incomes at antenatal (18.0% of the analytical sample had annual household incomes $50,000 or less vs. 42.8% of those who attrited from the study), more likely to live in homes their family owned (50.7% vs. 23.9%), have a working parent (84.9% vs. 59.7%), and their mothers had higher levels of educational attainment (44.9% with a university degree vs. 20.6% in the excluded sample). The analytical sample children were less likely to live in homes considered overcrowded (15.1% vs. 39.5%) and live in high deprivation neighbourhoods (5.6 average decile vs. 7.3 average decile).

In addition to differences between the analytical sample and those who attrited, a comparison between the analytical sample and New Zealand 2013 Census data is presented in Table A2 in the

[1] More information on the study, recruitment, and sample can be found at www.growingup.co.nz/en.html.

Appendix. Similarly, these findings show that the analytical sample for this study are more likely to identify as NZ European/Other ethnicity than the ethnic composition of children under 1 years old living in the Auckland/Counties Manukau/Waikato District Health Boards in the Census (54% vs. 35%) and less likely to identify as Pacific (11% vs. 19%) or Asian (14% vs. 21%). The analytical sample had similar rates of children being identified as Māori (22% vs. 25%). The analytical sample was more consistent with the Census in terms of child ethnicity when compared with babies for the whole of New Zealand (vs. the three DHBs from where the GUiNZ sample was recruited). The analytical sample was consistent with the Census in terms of sex composition (49% female; 51% male).

Overall, these findings suggest that the children excluded from the sample because of non-response or not meeting the inclusion criteria were more vulnerable to experiencing disadvantaged contexts compared to the analytical sample and, thus, the estimates we present are likely an undercount of children's experiences in more disadvantaged contexts and more conservative in terms of the inequities we find.

Domains of advantage/disadvantage

As discussed earlier, we focused on domains of advantage/disadvantage, or resources, that include: 1) financial resources; 2) housing; 3) parental work; and, 4) neighbourhood context. We focus on these areas for three reasons. First, these factors have been shown to help explain differences in child development in the existing literature. Second, we wanted to examine elements that are policy malleable. This is important to ensure our findings can be used to influence the design of policies to support child development, but also to avoid including statuses or factors that are 'disadvantages' for children insofar as they are mostly disadvantageous because of the structural or social constraints and systems that make them so. For example, while a parent's disability status may be considered to put children at a 'disadvantage,' and that having a disability potentially could make every day parenting activities such as dressing children and helping with homework harder, we argue that statuses such as disability are 'disadvantages' in a large part because society is structured in an ablest way that advantages those without disabilities. Third, we were also guided by the availability of variables across the waves. To conduct the longitudinal analyses it is important that the same resources (e.g., family income) can be measured at each wave (although not necessarily in exactly the same). A table describing the measurement of the different resource variables is provided in Table A3 in the Appendix.

In total, seven variables were created that tap into resources available to children. First, financial resources were measured by *household income* (a continuous scale ranging from *1* = less than $20,000 per annum through to *7* = $150,000 or more per annum) and material hardship. Material hardship variables were available at all waves except the antenatal wave, with measurement

differing across the waves. *Material hardship* tapped into whether families had difficulty in meeting basic consumption needs, such as putting up with being cold in their home because they could not afford heat or forgoing meat (or a protein alternative) because they could not afford it.

Second, housing resources was measured using three variables: home ownership, residential mobility, and overcrowding. *Home ownership* is a binary indicator at each wave indicating whether someone in the home was the owner or shared ownership of the home (*1* = yes; *0* = no). *Residential mobility* (measured at all waves except antenatal) is a continuous scale of the number of residential moves between survey waves (*0* = did not move between waves through *4* = four or more moves between waves). *Overcrowding* was measured as a binary indicator at each wave and indicates whether there were fewer bedrooms than people (minus partners) in the home (*1* = yes; *0* = no). We captured overcrowding in this parsimonious way for two reasons. First, it allowed for consistency across the survey waves. Some waves contained more information to measure overcrowding more precisely than other waves. Second, prior research suggests that, although not a precise measure, the bedrooms-to-people ratio provides an adequate proxy for overcrowding (Cable & Sacker, 2020).[2]

Third, *parental work* is captured as a binary indicator of whether the mother and/or the father (or mother's cohabiting partner) is employed in paid work. Similarly, to the measure of overcrowding, this more parsimonious measure of labour force engagement was chosen to create a consistent measure across survey waves. This measurement approach captures households that are disconnected from the labour force or experiencing periods of unemployment, but it doesn't differentiate between households by the amount of the level of employment, such as the number of people employed in the household or the total number of hours being worked each week

Fourth, *neighbourhood deprivation* is captured consistently across the waves using the NZDEP index that measures neighbourhood-level deprivation using nine socioeconomic variables, including the proportion of working-age adults in the area receiving a means-tested benefit, the proportion of adults without any educational qualifications, and/or without access to a telephone or car (Salmond & Crampton, 2012). 'Neighbourhood' is measured at the meshblock level (approximately 30-60 households) —the smallest standard administrative geographic area measured by Statistics New Zealand. The index is standardised across meshblock areas in Aotearoa New Zealand and can be used to indicate whether someone lives in a low-deprivation neighbourhood or a high-deprivation neighbourhood using a 1-10 scale, with each point on the scale represents 10% of area meshblocks

[2] StatsNZ uses the Candian National Occupancy Standard (CNOS), which calculates overcrowding by taking into consideration both the number of bedrooms and the demographic composition of the household (e.g., number of people in the home, partners who can share bedrooms, ages and gender of children who could potentially share bedrooms).

(e.g., *NZDEP = 10* contains the most deprived area meshblocks and *NZDEP = 1* contains the least deprived area meshblocks).

Factors which potentially increase or decrease exposure to disadvantage

To understand which children were most likely to experience differences in more or less advantaged contexts, we explored a wide range of factors, including child, maternal, family, and geographic characteristics.[3]

Child characteristics included ethnicity, low birthweight status, gender, and age deviation from the interview wave. For child ethnicity, we used ethnicity reported by the mother at the 9-month wave. Although mothers could list multiple ethnic identities for their 9-month old children, in this report we present mutually-exclusive, prioritised ethnicity for ease of interpretation of the multivariable regression models. Ethnicity was categorised into five groups (in prioritised order): 1) Māori; 2) Pacific; 3) Asian; 4) all other ethnicities except for NZ European/Pākehā; 5) NZ European/Pākeha.

A binary variable indicated whether a child was born at a low birthweight (below 2,500 grams/5.5 lbs; *1* = yes; *0* = no). Child gender was a binary variable measured at the 9-month wave (*1* = female; *0* = male). Age deviation between the wave age and the actual age of the child interview was measured in months and was included to account for variation in interview age across the sample and the impact this has on the developmental outcomes examined in the study (particularly cognitive outcomes).

Maternal characteristics include educational attainment (*1* = no secondary school/NCEA qualifications; *2* = secondary school/NCEA qualifications only; *3* = Diploma/trade certificate; *4* = university degree or more), maternal age (continuous in years ranging from 18 through 41)[4] and maternal migrant status (*0* = born in New Zealand; *1* = moved to New Zealand between 0-18 years; *2* = moved to New Zealand after age 18 years).

Family characteristics include whether the household was a two-parent family (*1* = yes; *0* = no), whether there was a change in family structure between waves (from two-parent family to single-parent family, or vice versa; *1* = yes; *0* = no),[5] and whether there were other, non-parental adult household members (*1* = yes; *0* = no) in the home.

[3] The sample characteristics for these variables across the waves can be found in Tables A9a through A9f in the Appendix.
[4] Maternal-age is top-coded in the data at 41 years for confidentiality purposes.
[5] Not measured for the antenatal wave because there was no prior wave.

Geographic characteristics captured whether the family lived in a rural area (*1* = rural; *0* = urban) and the district health board where they were located, collapsed into five categories: 1) Auckland/Waitemata; 2) Counties Manukau; 3) Waikato; 4) rest of North Island; 5) South Island.

Several variables were constructed to be included in the longitudinal analyses that accounted for exposure to certain contexts/characteristics across the study period. This included the proportion of survey waves living in a two-parent family (0.00 through 1.00), with other adult household members (0.00 through 1.00), and in a rural area (0.00 through 1.00). A count of family structure transitions (0 through 4 scale) across the study period was also included in the models.

Child wellbeing and development outcomes

To understand whether experiences of more advantageous versus disadvantageous contexts is associated with child development, we examined child development measures prevalent in the developmental psychology and public health literature—socioemotional, cognitive, and physical health outcomes. All measures of socioemotional and cognitive development are validated tools for assessing development and used widely internationally. For brevity, we list the concepts and what they measure below, however a full table of the constructs, scales, and measurement of these outcomes can be found in Table A4 in the Appendix.

Socioemotional development. Socioemotional development was measured at 9 months, 2 years, 4.5 years, and 8 years. At the 9-month wave, we measured negative emotionality (infant temperament characterised by frequent expression of sadness, frustration, fear, and discomfort), positive affectivity/surgency (e.g., positive emotions along with using their developing motor skills), and orientating and regulatory capacity (e.g., attention to tasks). At the 2-year, 4.5-year, and 8-year waves we measure internalising behaviours (e.g., reflective of children's emotional and psychological states that are correlated with depressive or anxiety disorders) and externalising behaviours (e.g., physical aggression, defiance).

Cognitive development. Cognitive development was measured at the 9-month, 2-year, and 4.5-year waves. At the 9-month wave, a measure of maternal-reported communication and early language development was used. The 2-year wave used a scale assessing maternal-reported verbal communication. At the 4.5-year wave, an interviewer-assessed scale of early literacy skills was applied. There were no cognitive development measures available at the 8-year wave.

Health. Children's general physical health was assessed at each wave through a question that asked mothers "In general, how would you say your child's health is?" Answer options were on a 5-point scale ranging from *1* = poor through *5* = excellent. This subjective physical health measurement has been shown to have a high correlation with more objective measures of physical health (Cleary,

1997). A count of acute illnesses, which may be more responsive to immediate temporal circumstances, was measured at each wave. At the 9-month and 2-year waves, this represented a count of the number of instances of gastroenteritis, chest infections or other respiratory illnesses, and ear infections since the prior wave (or birth, for the 9-month wave). For the 4.5-year and 8-year wave, this was a count of whether the child had experienced a bout of gastroenteritis, a chest infection or other respiratory illness, and/or an ear infection since the prior wave. Differences in measurement across the waves was due to changes in the way questions were asked at each wave.

Antenatal maternal outcomes. We examined four maternal outcomes at the antenatal wave, including parenting expected support (e.g., whether the mother thought family, friends, etc., would be a form of support once baby arrived), relationship conflict (e.g., how often couples verbally and/or physically fight with each other), whether mothers are experiencing clinical-level depressive symptoms (*1* = yes; *0* = no), and maternal self-reported health ("Thinking about before you became pregnant, in general would you say your health is…" *1* = poor through *5* = excellent).

Analysis

Aim 1: How do domains of disadvantage cluster together across early-to-middle childhood for children/tamariki in Aotearoa New Zealand?

To examine how different resources (i.e., financial resources, housing conditions, parental labour force engagement, and neighbourhood deprivation) cluster together at different time points across early through middle childhood, we employed latent class analysis. Latent class analysis (LCA) is a statistical method that allows for the identification of subgroups or 'classes' based on similarities in the level of resources among children across multiple resource types. What subgroup or 'class' a child is assigned to is based on their conditional probability that the observed pattern of experiences aligns with the classes that are identified. For example, and to preview, at the antenatal wave, a five-class solution fit the data best, whereby there was one group that was clearly more advantaged across a majority of the domains/resources than the rest of the sample (e.g., higher than average incomes, less material hardship, higher home ownership) and one group that was more disadvantaged across the domains (e.g., low incomes, high neighbourhood deprivation, low parental work engagement). A third group appeared to be 'average' across all domains, whereas a fourth group was average on several domains but was unique in terms of having high rates of overcrowding and living in higher deprivation neighbourhoods. A fifth group, while not as disadvantaged as the most disadvantaged group, was moderately disadvantaged across several domains, but most disadvantaged by having very low household income.

The LCA was conducted at each survey wave (i.e., five times—once at the antenatal wave, once at the 9-month wave, etc.), with the number of classes that best fit the data identified through several

statistical model fit statistics.[6] Class membership is assigned based on the highest conditional probability across each subgroup/class for each child (Collins & Lanza, 2009). The latent classes were conducted using the *poLCA* statistical package in R (Lewis, 2011), with the small amount of item-level missing data retained using FIML.

To examine children's exposure to disadvantage across the study period, we next applied social sequence analysis to the latent classes identified earlier. Social sequence analysis is a statistical approach that can be used to examine how certain experiences, such as being in disadvantaged or advantaged resource profiles, are experienced more or less at different points in time, or change over time, and in what ways. For example, children always experiencing being in profiles with low levels of resources, or experiencing low levels of resources in the earliest years but being in higher resource contexts in later years. Pairwise dissimilarities are computed between 'sequences' or trajectories of experiences, with a clustering process applied to the dissimilarities to determine the appropriate sequence solution to group children's trajectories of experiences (Ritschard & Studer, 2018). To simplify the interpretation of the sequences and enable the sequences to be constructed longitudinally, latent classes needed to be consistent across the waves. To create this consistency across waves, classes within each wave were grouped into three categories: 1) most advantaged class(es); 2) average class(es); and 3) disadvantaged class(es).[7]

The sequence analysis was applied to the three-category classification at each wave. To preview, we found that the appropriate number of trajectories was six sequences, whereby one group always or mostly experienced being in an advantage class, another typified by being consistently always or mostly in the most disadvantage class(es), and four groups somewhere in the middle (i.e., always in an average class group, starting in an advantaged class group and moving to a more disadvantaged class group, moving from a disadvantaged to advantage or average class).[8]

Analytically, social sequence analysis is an appropriate approach for categorizing trajectories of experiences in a more empirically manageable way. For example, by looking at latent class membership across the waves for this study, there were 158 unique trajectories of experiences. Social sequence analysis, then, is a useful tool for moving from identical experiences to clustering

[6] Specifically, we fit the data from two through eight class solutions at each wave, using the Akaike Information Criterion (AIC), Bayesian information criterion (BIC), and Log Likelihood statistics to select the class solution which best fit the data. The results of this selection proceedure, including fit statistics, are presented in Table A4 in the Appendix.

[7] Identification of how each class was categorised appears in the table notes in Appendix Table A8.

[8] Similarly to the LCA, we fit the data from two through ten class sequence solutions, using the Point Biserial Correlation, Hubert's Gamma, and Average Silhouette Width statistics, among others, to select the sequence solution which best fit the data. The results of this selection proceedure, including fit statistics, are presented in Table A6 in the appendix.

children into similar experiences that make interpretation and use of these trajectories more empirically manageable and theoretically meaningful. A limitation of this approach, however, is that grouping 'like' but not identical experiences potentially creates statistical noise in the groupings. An example of this noise, and to preview from our findings, is that those children always in a disadvantaged class were grouped with those who were in a disadvantaged class in most waves (i.e., spending one or two waves in an 'average' class over the time period). It is possible that always being in a disadvantaged class versus having experienced a period not in a disadvantaged class might have a differential association with child development. In this way, it is likely the disparities in child outcomes between the most and least advantaged trajectories in our analyses are more conservative than had we split this 'disadvantaged' group into two groups.

Aim 2: What are the key sociodemographic predictors of these different experiences?

Using the latent classes and trajectories created in Aim 1, we next examined whether there were specific sociodemographic characteristics at the child (e.g., ethnicity), parent (e.g., educational attainment, age, migration status), family (e.g., family structure, adult household members), and geographic level (e.g., region, urbanicity) that are associated with an increased likelihood of experiencing more or less disadvantaged classes or trajectories.

Six multinomial regressions—one for each of the five waves and one regression predicting the longitudinal trajectory exposure—were performed to determine the relative likelihood of experiencing different classes or trajectories compared to the most advantaged classes and trajectory. Multinomial regressions were performed in Stata, with the suite of *mi estimate* commands used to conduct multiple imputation on the small amount of item-level missing data in the model covariates and estimate model coefficients (between 0.0% to 11.8% item-level missing across all independent variables) and estimate the coefficients across the 100-imputed datasets.[9] Time-variant covariates (e.g., family structure, region, urbanicity) included in the models were measured at the same survey wave as the latent classes, whereas the models predicting trajectory membership included time-variant covariates at baseline (i.e., the antenatal or 9-month wave) as well as additional variables aimed at capturing the longitudinal exposure of time-variant covariates (proportion of survey waves living in a two-parent family, with other adult household members, in an urban area, etc.). The same time-invariant covariates were included in all models and were measured at either the antenatal or 9-month survey wave.

[9] Models were also conducted using listwise deletion. Substantive findings remained largely similar, although with some differences in statistical significance, likely due to a smaller sample size.

Aim 3: Are these multiple disadvantage trajectories associated with child wellbeing?

The final aim used both ordinary least squares (OLS; for continuous or scale outcomes) and logit (for binary outcomes) regression models to examine whether these latent classes and trajectories predicted disparities in child health and developmental outcomes. Models were estimated twice for each outcome: once with no covariates (except child gender and age deviation from the survey wave) in the models and again with covariates from Aim 2. This step was taken to examine whether there was evidence to suggest that some of the association between latent classes/trajectories and child outcomes might be due to differences in factors that identify who is most at risk of different class exposure (as uncovered in Aim 2) and that are also associated with child outcomes. Similar to Aim 2, the models were estimated using Stata and the small amount of item-level missingness (0.0-11.8% item-level missing across the independent variables) addressed through multiple imputation.[10]

[10] Models were also conducted using listwise deletion. Substantive findings remained largely similar, although with some differences in statistical significance, likely due to a smaller sample size.

Findings

As a first step, we describe the patterns and trajectories of children's experiences of advantage/disadvantage across multiple domains (e.g., financial resources, housing conditions, neighbourhood deprivation) from antenatal through to age 8 years. For ease of interpretation and analysis, we categorised the multi-faceted experiences of advantage/disadvantage identified at each wave through the latent class analysis (presented in the next section) into groups representing:

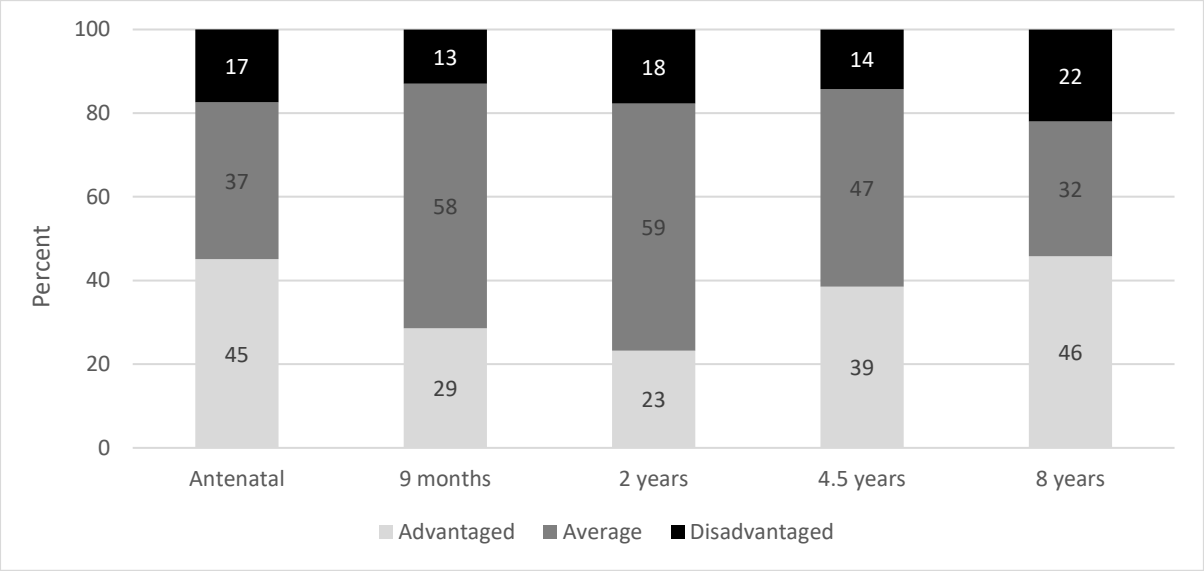
- *Advantaged:* the most advantaged across multiple domains;
- *Average:* characteristics across domains were close to or representative of the average experience of the children in the sample at the particular survey wave, or average but more advantaged/disadvantaged on one specific domain (e.g., average across most domains, but more likely to live in an overcrowded home);
- *Disadvantaged:* the most disadvantaged across multiple domains.

Figure 1 presents the proportion of children in each of these three groups at each study wave. Overall, a majority of children were in the 'advantaged' or 'average' group at each wave, with between 13% (at 9 months) and 22% (at 8 years) of the cohort in the 'disadvantaged' group across the study period. This compares to between 23% (at 2 years) and nearly half (in the antenatal period and at 8 years) of the cohort in the 'advantaged' group.

Differences appeared largest at the antenatal and 8-year waves, with children more likely to be classified in the 'advantaged' or 'disadvantaged' groups versus the 'average' group. During the 2-year and 4.5-year survey waves there was a decline in the proportion of children in the 'advantaged' group, however, the proportion of children in the 'disadvantaged' group across all waves remained consistent.[11] These patterns provide some preliminary insight into how parenting is often most time-intensive during infancy and the preschool years, disrupting the resources children and families need to survive and thrive, such as a steady income, meeting consumption needs, and housing stability. It also points to a potential trade-off available to families with more resources who may be able to cushion the blow of a temporary reduction in their incomes and material wellbeing to focus on parenting during the early years.

[11] The difference in the proportion of children in the disadvantaged group between each wave was statistically different from zero at at least $p < .05$.

Figure 1. Experiences in advantaged, average, and disadvantaged contexts across time

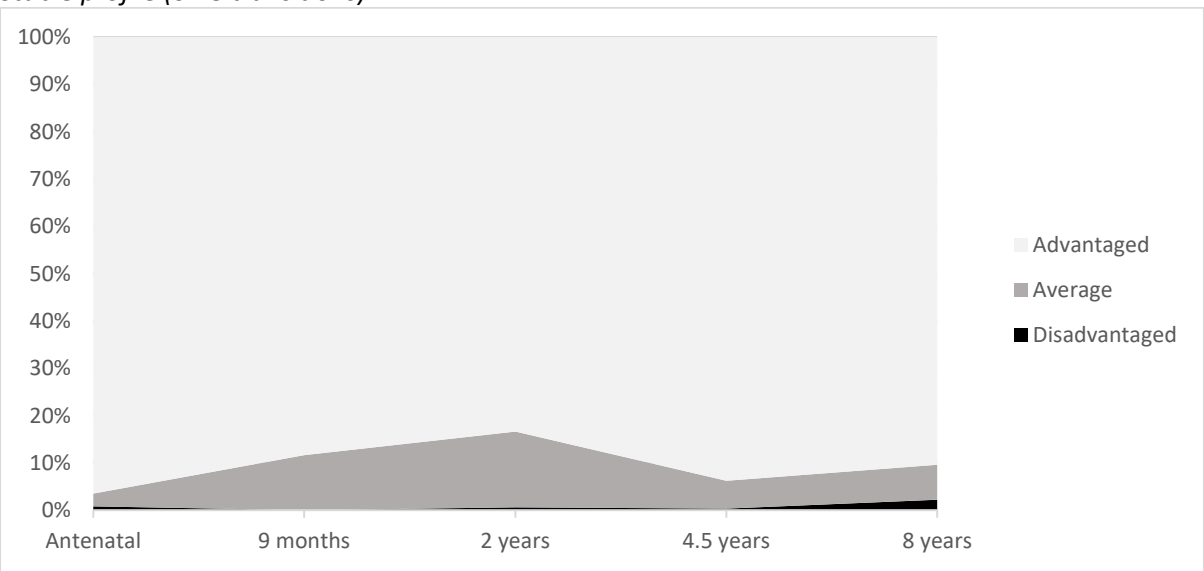


Trajectories of advantage and disadvantage

Using these same categories, social sequence analysis was applied to examine patterns of experiences among individuals across the study period from antenatal through to age 8 years. Six trajectories emerged and are presented in Figures 2a through 2f.[12]

Figure 2a. Trajectory: Always advantaged (n = 1,249; 25.0%)

Stable profile (0.78 transitions)



[12] Table A7 in the appendix provides information, by trajectory type, on the proportion of children in each category at each wave, their experiences of ever being in an advantaged/average/disadvantaged group, and the number of changes in group 'status' between waves.

Beginning with the most advantaged trajectory group (Figure 2a), representing one-quarter (25.0%) of the cohort, were those children who were always, or mostly always, in the advantaged group at each wave (Figure 2a). On average, children in this trajectory experienced less than one (0.78) shift in resource class (e.g., moving from advantaged to average, or average to advantaged) across the time points. Children classified in this trajectory who were not always in the advantaged group were more likely to fall into the average group, versus disadvantaged group, during the wave they were not in the advantaged group, with this transition most common at the 9-month and 2-year waves.

Figure 2b displays the pattern of experience for the second trajectory—'average to advantaged by school entry'—typifying an experience for 23.1% of the sample of moving from being in the advantaged and average group at antenatal, more likely to fall in the average group during infancy and toddler years, but returning to the advantaged/average groups at the beginning of primary school. On average, children in this trajectory experienced over two (2.17) shifts in resource class (e.g., moving from average to advantaged or vice versa) across the time points. A third trajectory (Figure 2c)—the largest, representing 29.8% of the cohort—was categorised by being consistently in the average group.

Figure 2b. Trajectory: Average to advantaged by school entry (n = 1,156; 23.1%)
High instability profile (2.17 transitions)

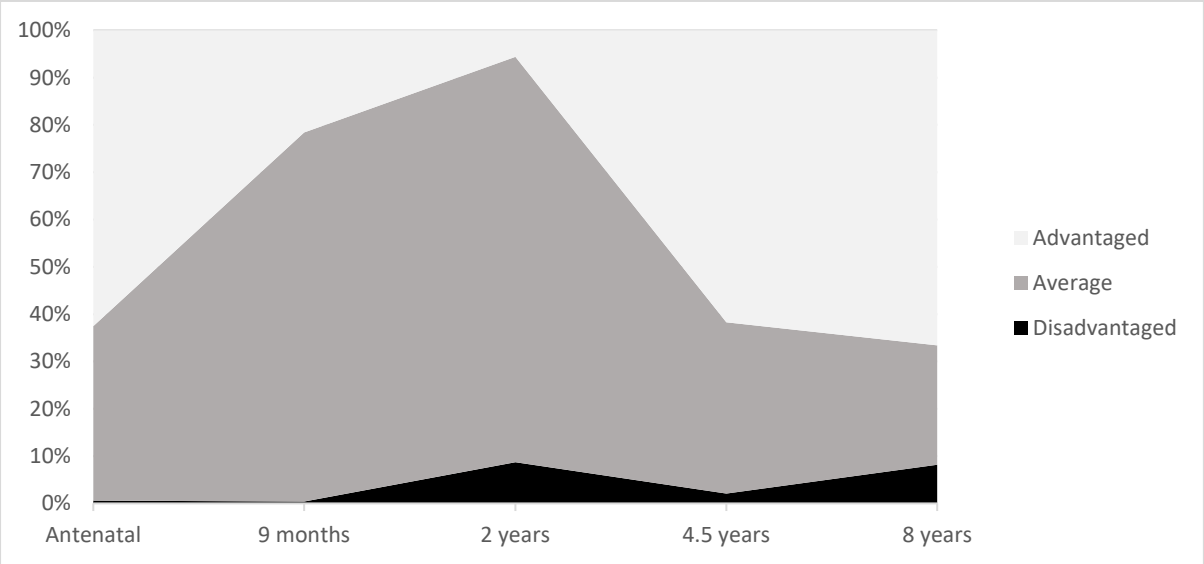


Figure 2c. Always average (n = 1,490; 29.8%)

Stable profile (0.96 transitions)

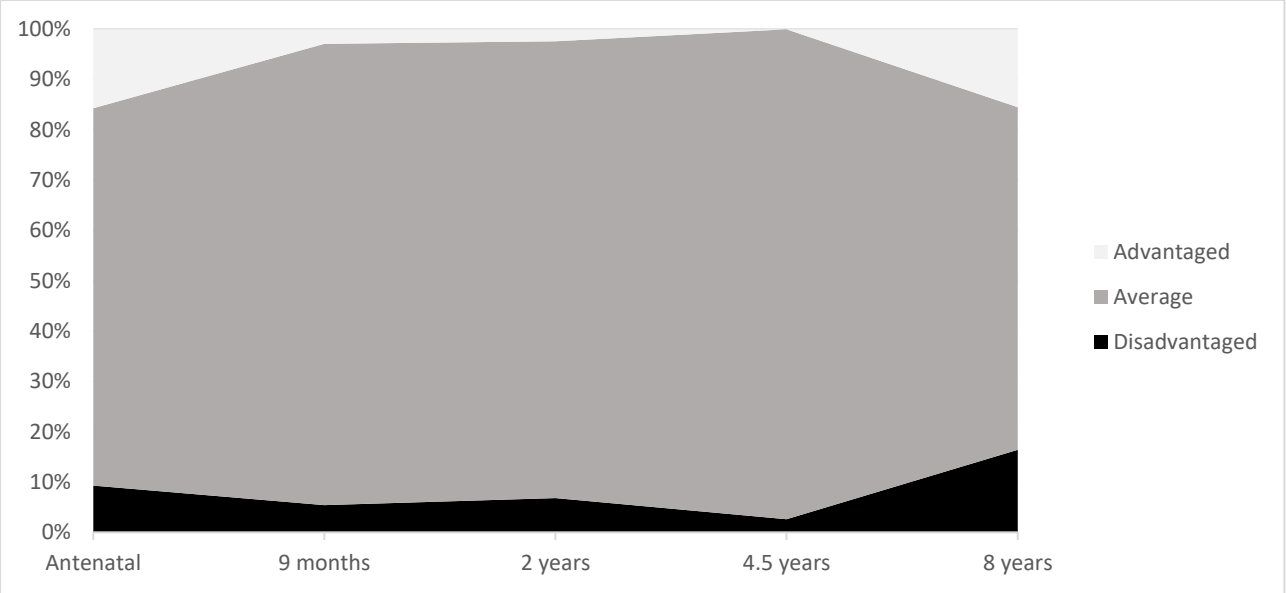
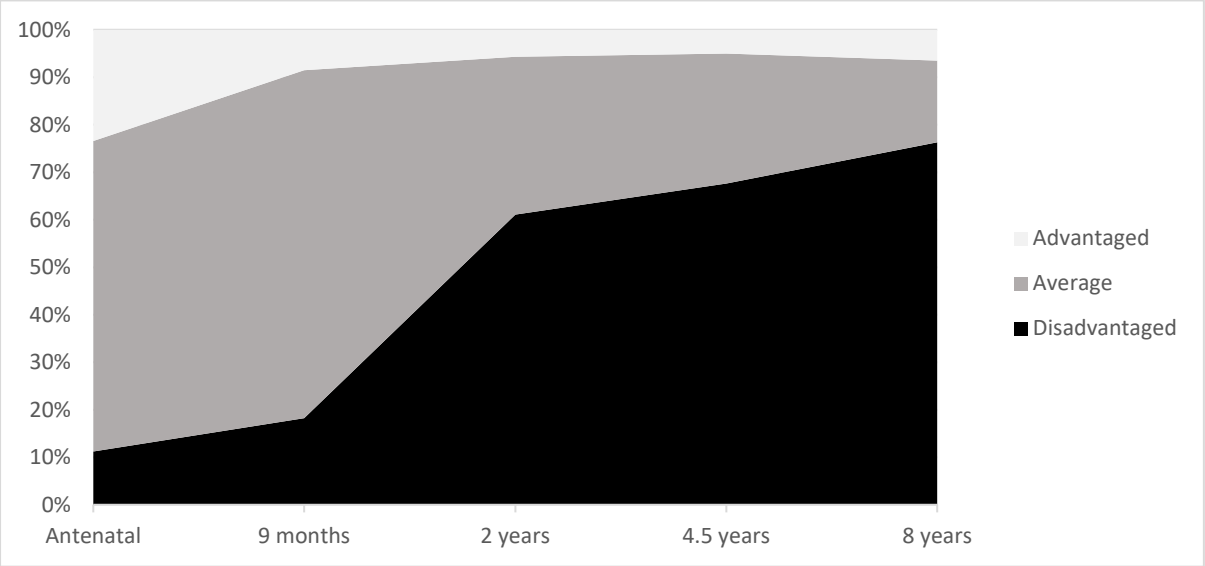


Figure 2d. Average to disadvantaged (n = 401; 8.0%)

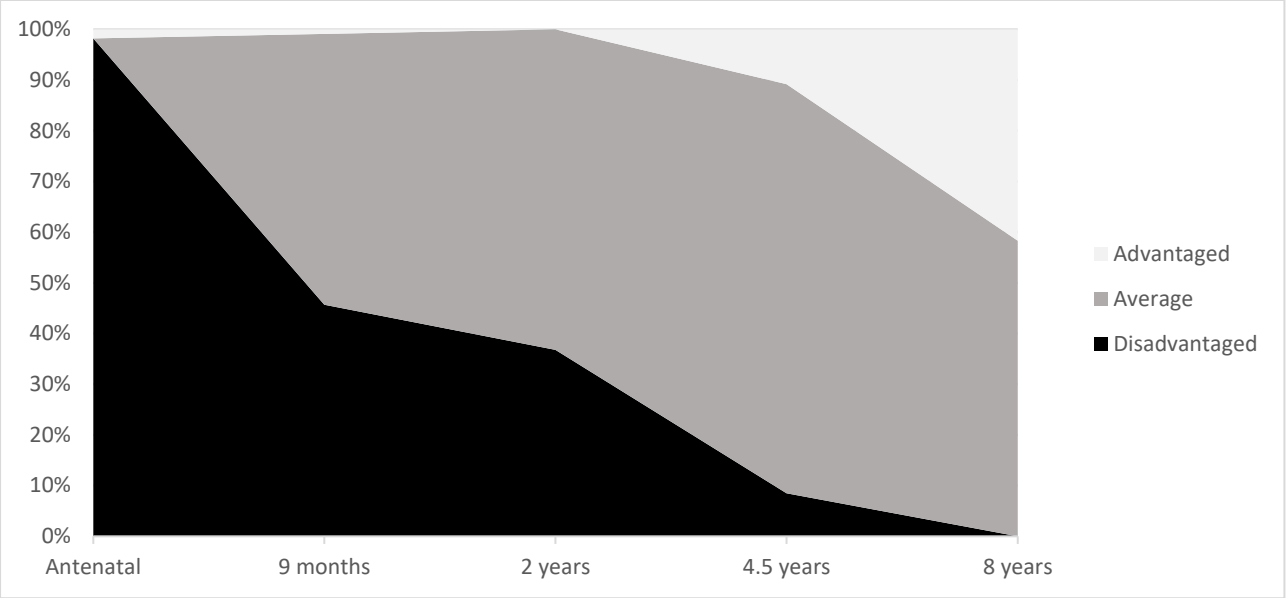
High instability profile (2.28 transitions)



Figures 2d and 2e present trajectories that were representative of downward and upward mobility, respectively. The downward mobility pattern, whereby 90% of the children in this trajectory were in an average or advantaged group at antenatal but 70% transition into a disadvantaged group by the time they are 8-years old, represents 8% of the total cohort. Conversely, just 4.5% of the sample experienced the upward mobility trajectory, where close to all the children in this trajectory were in the disadvantaged group at antenatal, but almost all had moved into the average or advantaged group by the 8-year wave. These patterns provide preliminary evidence that, when mobility occurs, it is more likely to be downward—than moving to opportunity—after the birth of a child.

Figure 2e. Disadvantaged at antenatal to average (n = 223; 4.5%)

High instability profile (2.25 transitions)

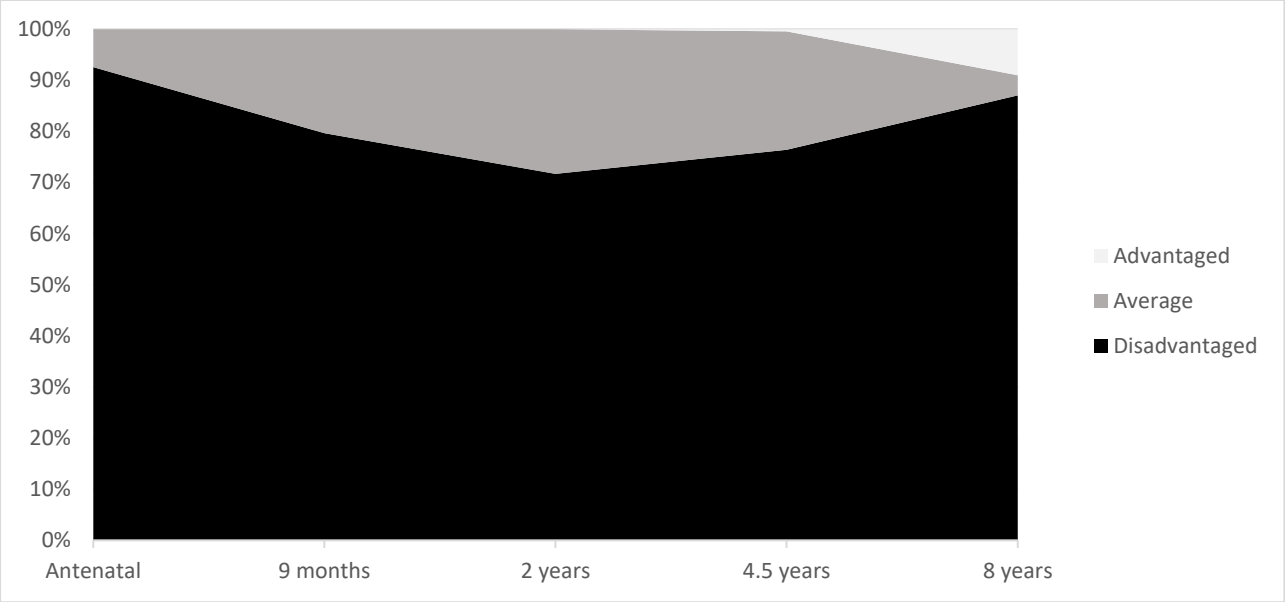


The sixth trajectory represents those children who were always, or mostly always, in the most disadvantaged group at each wave (Figure 2f). Representing close to 10% of the sample, this group was larger than the upward and downward trajectory groups. It is important to note, however, that just 2.7% of the total sample were always in the disadvantaged group at each wave, meaning a majority of children in this trajectory experienced periods of reprieve where they had resources that resembled those of the average or advantaged groups.[13]

[13] There was little statistical difference in the sociodemographic characteristics of those who were always in the disadvantaged group versus those who were just mostly disadvantaged within the 'mostly disadvantaged' trajectory. This included no significant differences by ethnicity, maternal education, nativity, or maternal age—key factors that predicted risk of 'trajectory' membership in the multinomial models. One exception was family structure, whereby those who were always in the disadvantaged group were more likely to be born to a mother who was not partnered at the antenatal wave (71.0%) versus those who were just 'mostly' in the disadvantaged group (60.8%).

Figure 2f. Mostly disadvantaged (n = *488; 9.8%)*

Moderately stable profile (1.54 transitions)

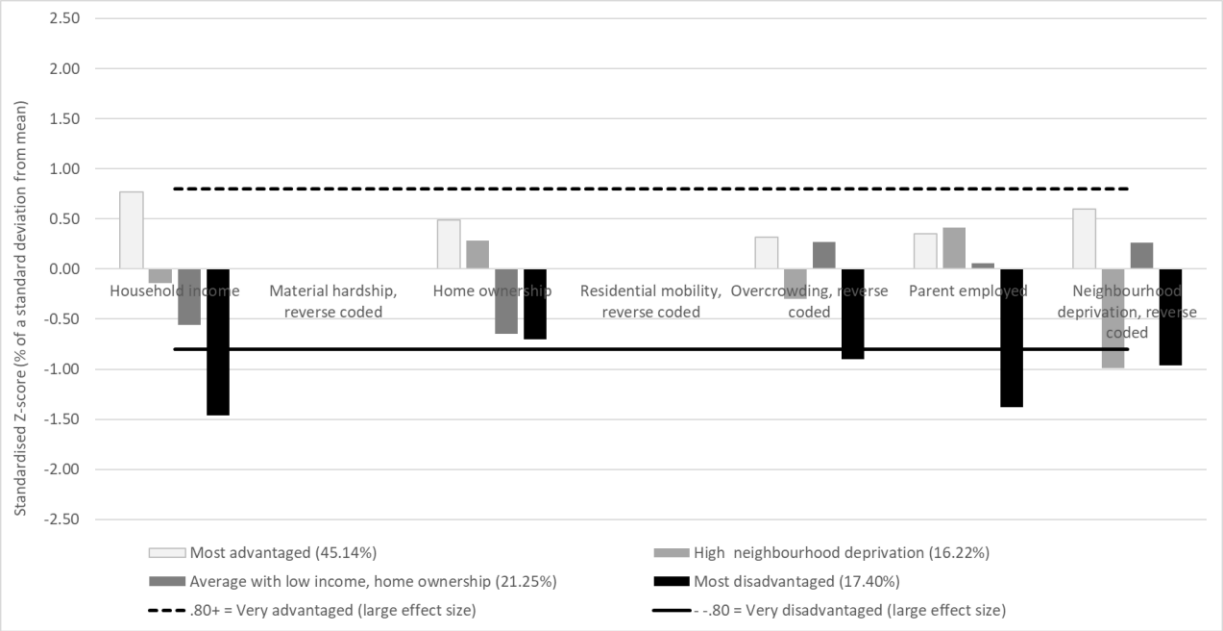


Point-in-time clustering of domains of disadvantage

While the trajectories shed light on the experiences of advantage and disadvantage across the life course, we next drill down to examine the features of these advantaged/disadvantaged groups at each wave in order to understand the types of—and differences in—those resources. Latent class analysis was applied to each wave to identify the patterns in resources, so that children were group at each individual wave based on their resources (vs. examining how they grouped across the whole study period). Although the latent class patterns at each wave were similar to the trajectories (e.g., a more advantaged group, a less advantaged group, some in between), the latent classes presented here are unique to each wave.

Figures 3a through 3e present these findings. Standardised z-scores are presented, which indicate how much higher or lower, in standard deviations, the mean for a particular group was from the sample mean. Lines indicating 80% of a standard deviation above the mean and 80% of a standard deviation below are presented in the next series of Figures to give an indication of effect size, whereby 80% of a standard deviation difference from the mean can be interpretated as a 'large' effect size (Cohen, 1990). For ease of interpretation across the resources, factors that are considered disadvantageous—material hardship, residential mobility, overcrowding, and neighbourhood deprivation—were reverse coded for the Figures so that all bars pointing upwards can be considered more *advantaged* than the sample mean and bars pointing downwards more *disadvantaged* than the sample mean.

Figure 3a. Characteristics of latent classes at antenatal



Note. Material hardship and residential mobility not measured at the antenatal wave.

Figure 3a presents the findings of the latent class analysis at the antenatal wave. Overall, four classes fit the data best. The most advantaged group, typified by above average household incomes, higher rates of homeownership, and living in lower deprivation neighbourhoods, represented 45% of the sample. Approximately 17% of the sample, however, were in the most disadvantaged group, with very low household incomes, low rates of homeownership, high rates of overcrowding, and least likely to have at least one parent employed. Two middle-tier groups were identified, which were relatively average across most indicators except for two distinct features. First, one of these groups, representing 16% of the sample, were much more likely to live in higher deprivation neighbourhoods, with an average neighbourhood deprivation index similar to the most disadvantaged class. The second group (21% of the sample) were again average on most indicators, although with modestly lower household incomes than the sample average and home ownership rates similar to the most disadvantaged group.

Figure 3b. Characteristics of latent classes at 9 months

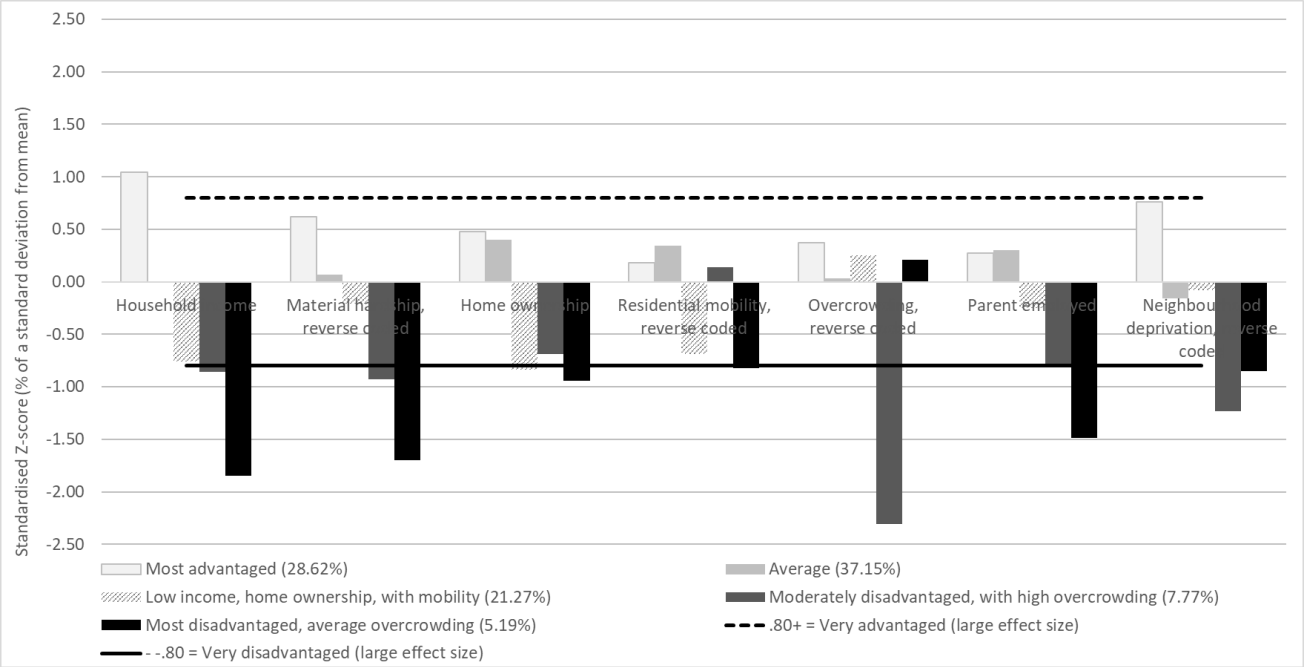


Figure 3b displays the findings from the latent class analysis at the 9-month wave, where a five-class solution was determined the best fit. Similar to the antenatal findings, there was a clear advantaged group, typified by higher household incomes, less material hardship, and higher rates of homeownership. They were also living in neighbourhoods with less deprivation. Interestingly, the most advantaged group were not particularly more advantaged than the sample in terms of their residential stability or having a parent employed. Unlike the antenatal findings, however, a smaller proportion of children were deemed to belong to the most advantaged group, dropping from 45% at antenatal to 29% of children at the 9-month wave.

The largest group, representing 37% of the sample, was mostly average across the resources. Close to 22% of the sample were clustered into a group that lived in households with lower incomes and rates of homeownership, and rates of residential mobility that were on par with the disadvantaged class. Another mid-tier group (8% of the sample) were moderately disadvantaged across all resources, but were unique in terms of their high rates of overcrowding. A final group consisting of 5% of the sample was deemed most disadvantaged given their lack of resources across all domains except for their average rate of overcrowding.

Figure 3c. Characteristics of latent classes at 2 years

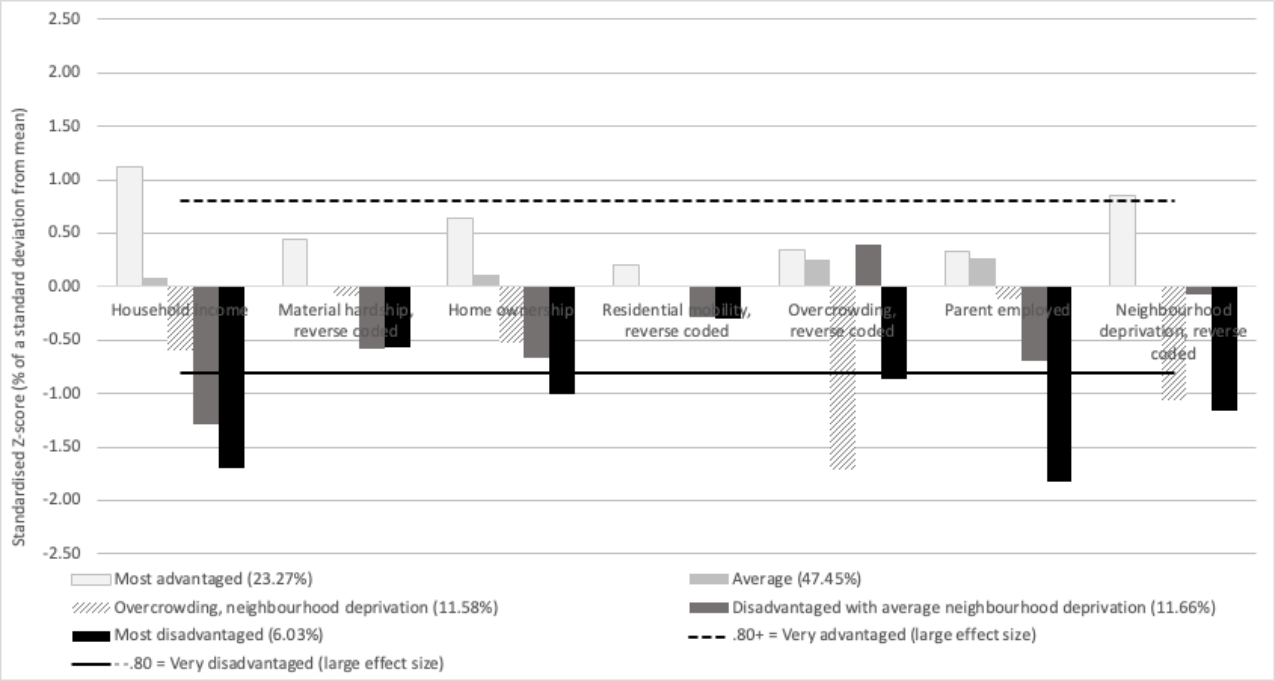
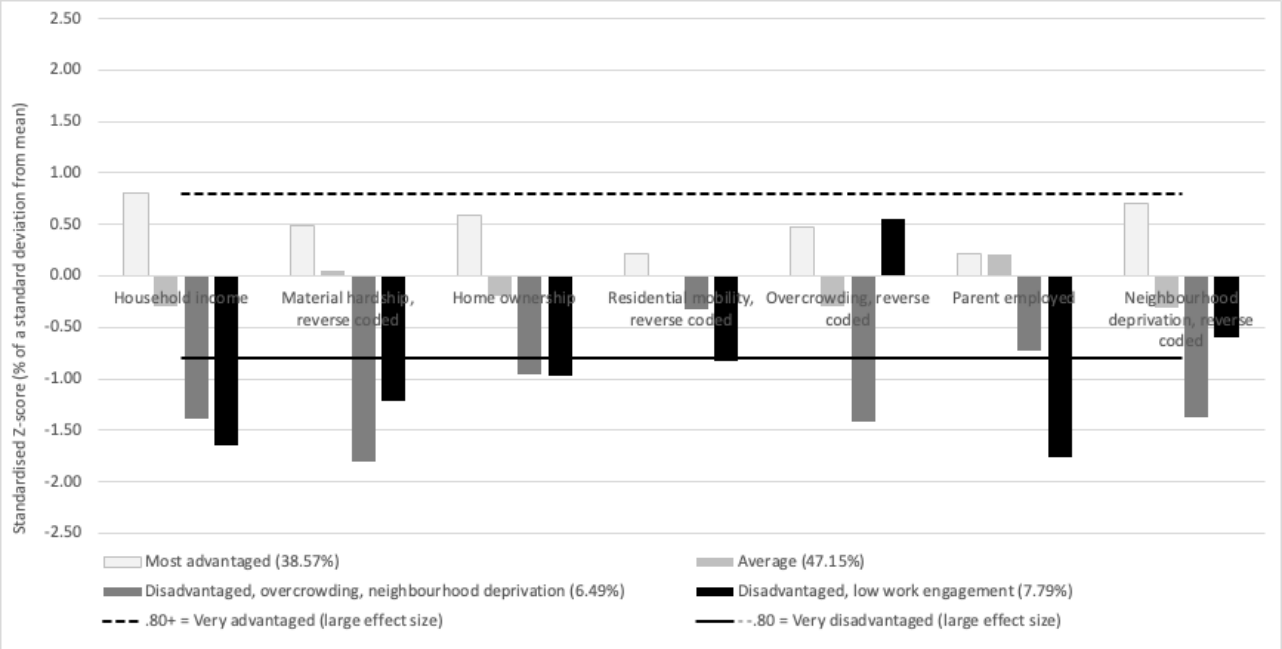


Figure 3c presents the findings from the latent class analysis at the 2-year wave. A five-class solution fit the data best. The most advantaged group, consisting of 23% of the sample, consistently had more resources across all the domains, but advantages were particularly pronounced in terms of household income and living in low deprivation neighbourhoods. The largest group representing close to half of all children (48%) represented the sample mean across all resource domains.

A middle-tier group (12% of the sample) were around average across all resources, except for much higher rates of overcrowding and living in higher deprivation neighbourhoods. A fourth group (another 12% of the sample) resembled the most disadvantaged group across the resource domains, although they were average in terms of their experience of neighbourhood deprivation. A fifth and final group were the most disadvantaged across most resources (6%).

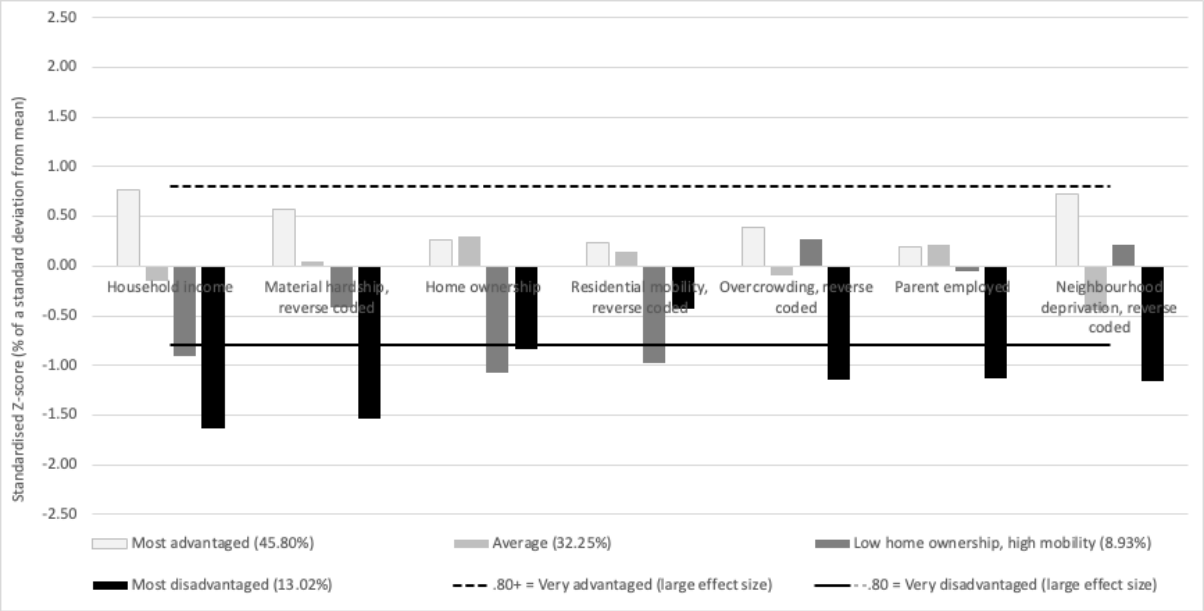
Figure 3d. Characteristics of latent classes at 4.5 years



At the 4.5 year wave, a four-class solution fit the data best (Figure 3d). Similarly to previous waves, there was one group that was moderately more advantaged across all the resources, representing 39% of the sample. Also like prior waves, the advantage compared to other groups was less pronounced when examining residential mobility and parental employment. The largest disparities were in household income, material hardship, and neighbourhood deprivation. Again, the largest group (47% of the sample) was mostly average across all resources. A third group (6%) was disadvantaged across most resources, but particularly so in terms of higher rates of material hardship, overcrowding, and neighbourhood deprivation. A final group (8%) was disadvantaged across all resources, however, had lower rates of overcrowding but very low incomes and lower rates of parental work engagement.

Figure 3e displays the latent class analysis results at the 8-year wave. Similar to prior waves, an advantaged group emerged that was higher across all resources, but particularly so for household income and lower rates of neighbourhood deprivation. Another group, consisting of one-third of the sample was approximately average across all resources. A third group (9%) was modestly disadvantaged across all resources, but more disadvantaged in terms of rates of homeownership and residential mobility. The fourth group (13%) was disadvantaged across all resources except for residential mobility.

Figure 3e. Characteristics of latent classes at 8 years



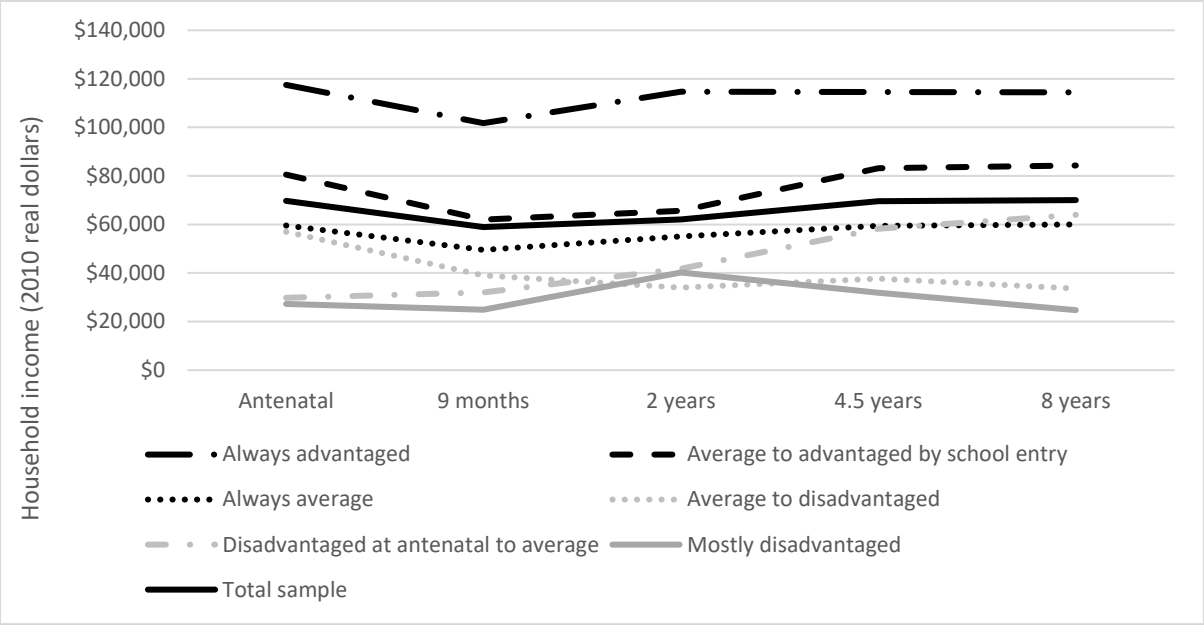
Overall, the pattern emerging from the latent class analyses was the presence of a most advantaged group, and one or two clearly disadvantaged groups. Moreover, differences in resources between the advantaged and disadvantaged classes appeared to be driven more so by the very low levels of resources (e.g., low incomes, high rates of material hardship and overcrowding) among children in the disadvantaged groups, than by those children in the advantaged groups having many more resources. Household incomes among the disadvantaged group of children were between 146% and 185% of a standard deviation below the average income at each wave. Whereas incomes among the most advantaged group of children were between 77% and 112% of a standard deviation above the average income at each wave.

It is important to note, however, that despite differences in resources being driven more so by the disadvantaged groups, the children in the advantaged groups often had access to more resources than the average groups at rates that would be considered large disparities in terms of effect size. Finally, while the middle-tier categories were often average across a majority of areas, there was typically a domain that these groups were specifically advantaged or disadvantaged compared to the sample mean. Moreover, that unique domain appeared to differ at different ages. For example, among these middle-tier groups, higher rates of residential mobility (compared to the average rate of residential mobility at that particular wave) were experienced among an average group at the 8-year wave, whereas higher than average rates of overcrowding were experienced by children in the middle-tier groups at the 2-year and 4.5-year waves.

Ebbs and flows of resources within and between trajectories across the early life course

Although the latent class descriptions presented above display differences in resources among groups relative to the mean at each point-in-time, highlighting how levels of these resources changed in an absolute sense across the early life course is important for understanding whether there are particular ages were differences are wider or driven more so by changes in families' resources or by changes in resources of particular groups of children. Figures 4a through 4g present the average level of resource, by resource, at each survey wave for the trajectories identified in the social sequence analysis and for the total sample.

Figure 4a. Average household income at each wave by trajectory



Beginning with household income (Figure 4a), as expected, those children in the 'always advantaged' trajectory consistently had higher levels of income across the study wave, at around $118,000 per annum.[14] This dipped slightly at the 9-month wave to $100,000, likely reflecting income loss from time out of the workforce for parental leave. This pattern was similar for those in the "average to advantaged by school entry" and "always average" trajectories, albeit incomes were lower at around $80,000 per annum and $60,000 per annum, respectively. Children in the "average to disadvantaged" trajectory experienced the same decline in income levels from the antenatal wave to the 9-month wave, but continued a modest income decline across the study period. Children in the "disadvantaged at antenatal to average" trajectory had similar income levels as the children in the

[14] The average value of the household income categorical scale (where *1* = less than $20,000 per annum through *7* = $150,000 per annum) for each trajectory at each wave was converted to a nominal dollar amount, and then converted to 2010 (when antenatal data were collected) real dollars at the 9-month, 2-year, 4.5-year, and 8-year waves.

"mostly disadvantaged" trajectory at antenatal, however income levels recovered by the end of the study period to be on par with the "always average" trajectory income levels. Children in the "mostly disadvantaged" trajectory had the lowest income levels across the study period, with an average increase at the 2-year wave before reverting back to income levels similar to those they experienced at the antenatal wave.

Figure 4b. Material hardship at each wave by trajectory

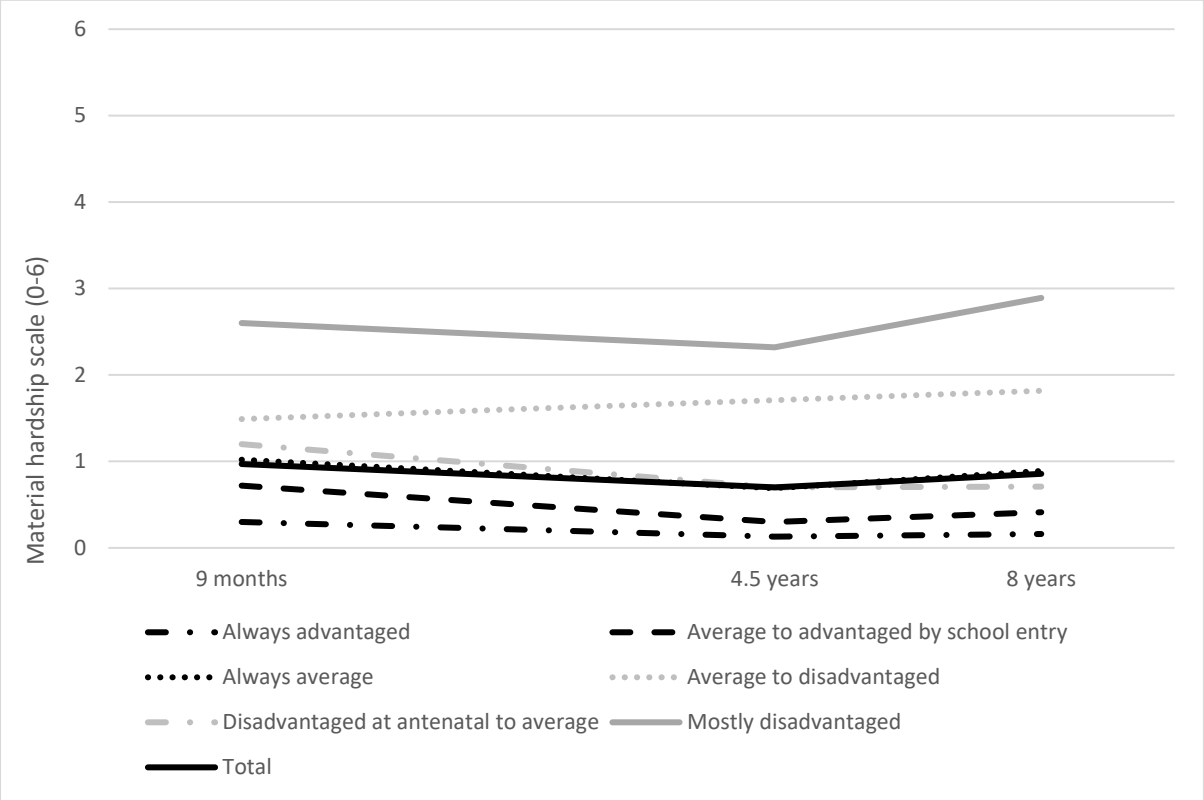


Figure 4b presents material hardship experienced across the early life course.[15] A different picture from household income emerged, with material hardship remaining low, with a modest decline, for the more advantaged and average trajectories. Children in the "average to disadvantaged" and "mostly disadvantaged" groups experienced much more material hardship at antenatal than children in the other trajectories, with material hardship increasing across the study period. This increase in material hardship among these disadvantaged trajectories appeared to be a stronger factor driving the widening gap in material hardship across time than the modest declines among more advantaged and average trajectories.

[15] Due to differences in measurement and lack of comparability in the scale across time, material hardship at the 2-year wave is not presented. Material hardship at the 8-year wave was rescaled from a 0-5 to 0-6 scale for comparability to the 9-month and 4.5-year waves.

Figure 4c. Home ownership at each wave by trajectory

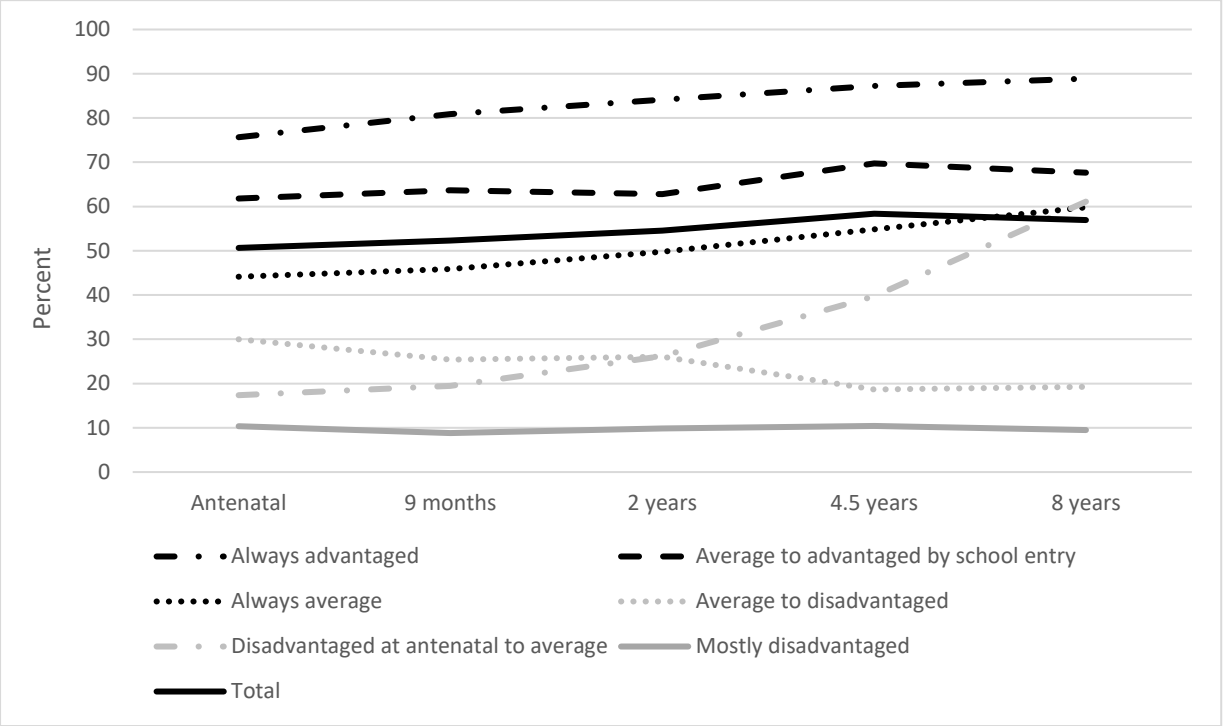


Figure 4c shows the percent of children who lived in a home that was owned by their family at each survey wave. Over three-quarters of children in the "always advantaged" trajectory were born into a family that owned their own home. This increased to 90% of children in this trajectory by the end of the study period. Sixty percent of children in the 'average to advantaged by school entry' trajectory were born into homes owned by their family, with this modestly increasing to 69% by the time the children turned 8-years old. Children in the 'always average group' also experienced an increase in their families' home ownership across the study period (from 43% to 60%). The largest increase in home ownership was experienced by children in families in the "disadvantage at antenatal to average" trajectory, started at 19% at antenatal but increasing to exceed the sample mean (58%) at 61% by the 8-year wave. Children in the "average to disadvantaged" trajectory were the only group to experience a decline in the proportion living in their own home (from 30% to 20%), whereas those in the "mostly disadvantaged" trajectory had stable but very low rates of home ownership across the study period, with approximately 10% of children at each wave in this trajectory living in a home owned by someone living the house.

Figure 4d. Residential mobility between waves by trajectory

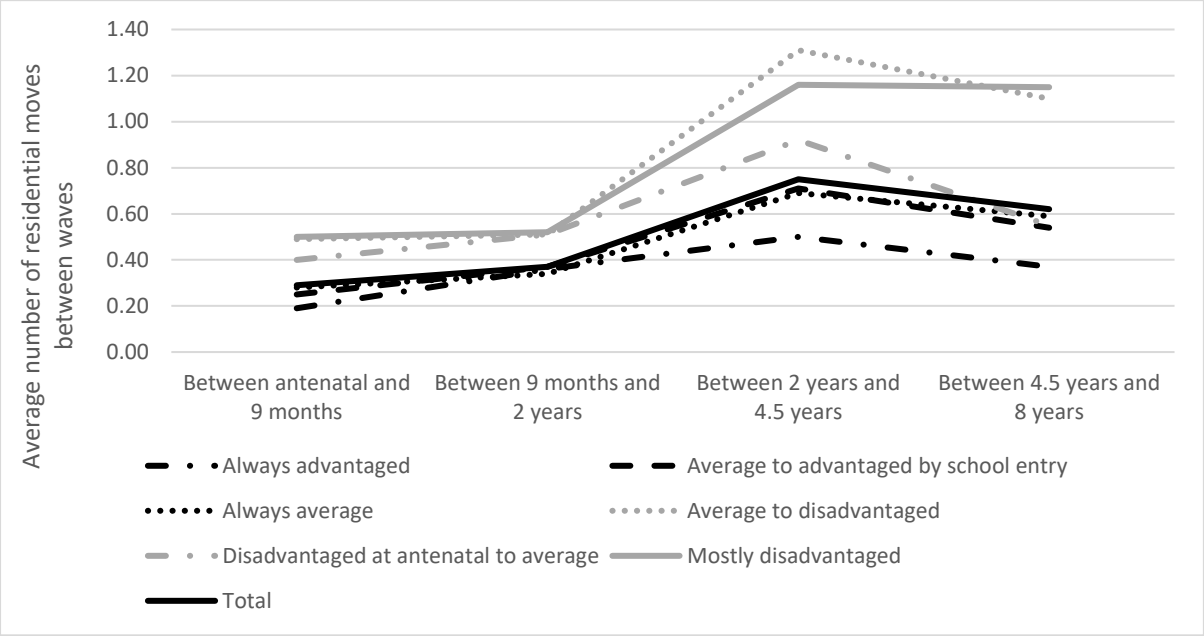
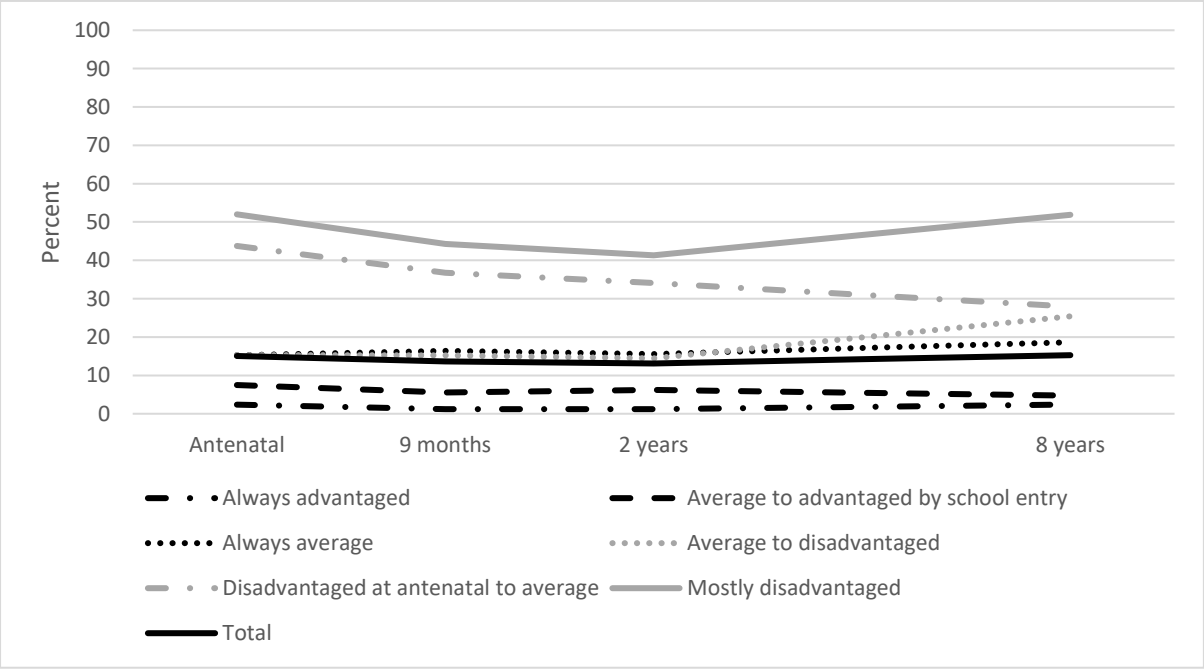


Figure 4d presents the average number of residential moves between study waves. Unlike income, material hardship, and home ownership, the patterns of advantage are not as pronounced. Children in the three most advantaged trajectories experience similar rates of mobility between the antenatal and 9-month waves, and those in the three most disadvantaged trajectories clustered to experience similar rates of mobility. All children experienced increases in mobility between the 2-year and 4.5-year waves, this mobility was more pronounced for children in the "mostly disadvantaged" and "average to disadvantaged" trajectories. The findings between the waves should be interpreted with caution, however, given the differing lengths of time between study waves across the study period.

Figure 4e. Overcrowded housing at each wave by trajectory



In terms of experience living in overcrowded households (Figure 4e), children in the two most advantaged trajectories experienced consistently low rates (less than 10%) of overcrowding across the study period.[16] Children in the "always average" and "average to disadvantaged" trajectories experienced similar levels of overcrowding (approximately 15%) until the 8-year wave, where 28% of children in the "average to disadvantaged" trajectory lived in an overcrowded home compared to 19% of children in the "always average" trajectory. Children in the "disadvantaged at antenatal to average" trajectory began life with higher rates of overcrowding, but experienced similar rates as the "average to disadvantaged" trajectory by the 8-year wave. Those in the "mostly disadvantaged" trajectory had the highest rates of overcrowding, with over half of pregnant mothers at the antenatal wave living in overcrowded homes, declining to a low of 41% by the time the child was 2-years old, before increasing again to antenatal levels (52%).

Figure 4f. Parental work engagement at each wave by trajectory

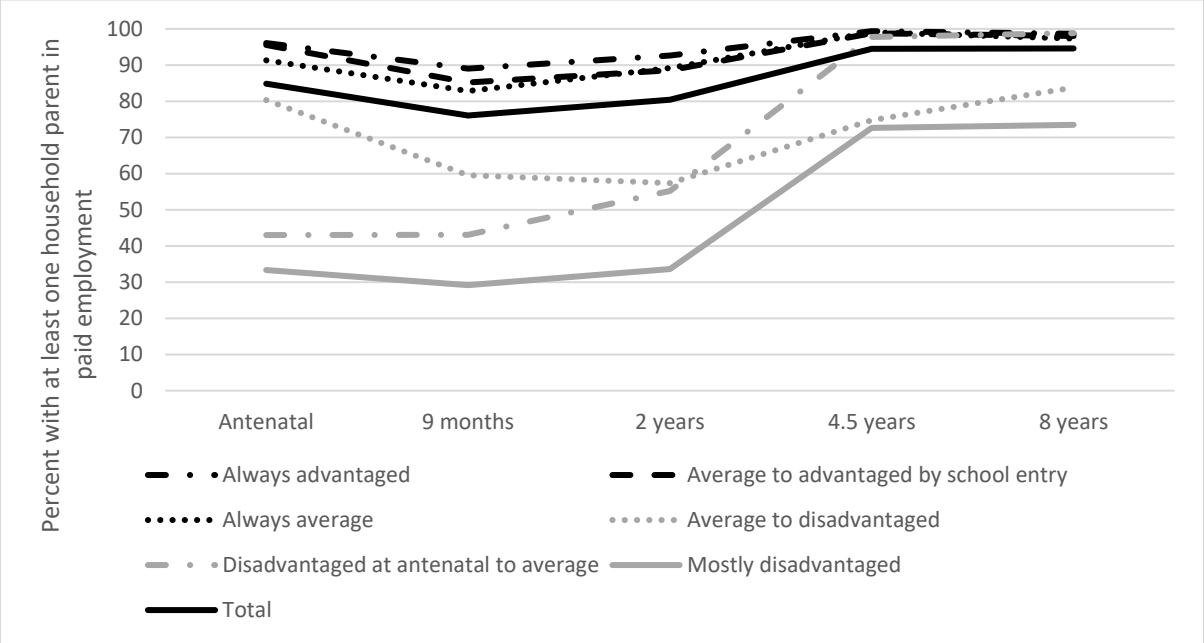
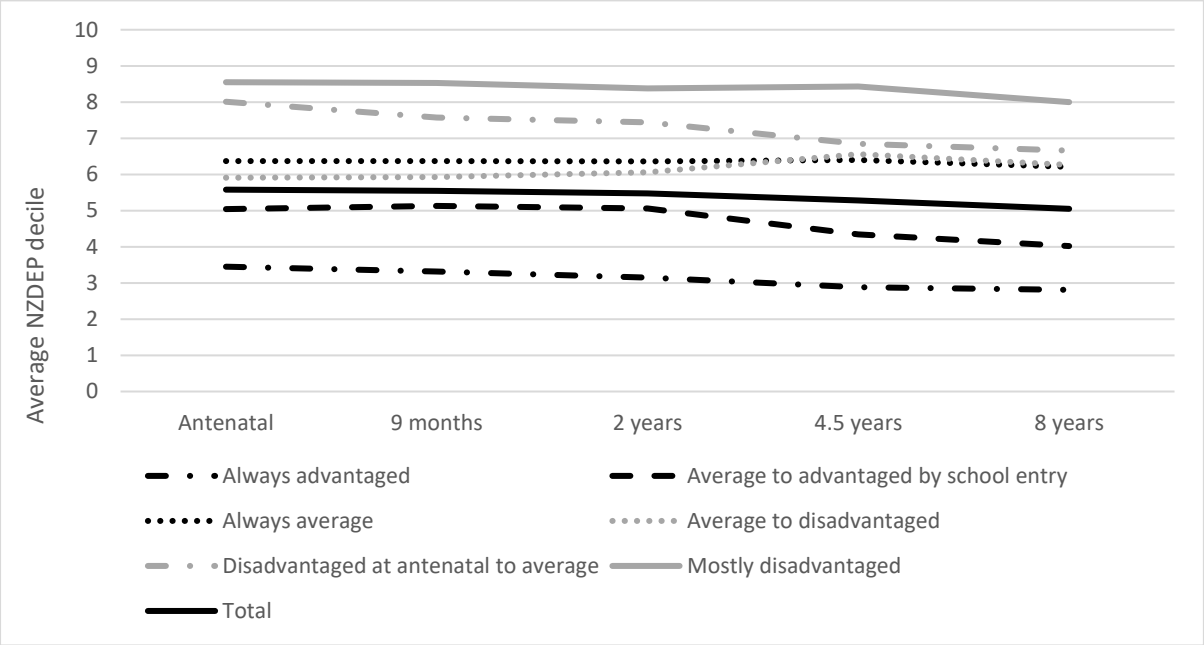


Figure 4f displays changes in parental work engagement at each wave. It is important to note that this measure of work engagement—an indicator of whether the mother, or mother's partner if living in the household, are in any paid employment—does not distinguish how many hours worked and is likely influenced by the number of parents in the home and able to work. Most trajectories follow a similar pattern, albeit to different extents, whereby there was a drop in work engagement from the antenatal to the 9-month wave, increasing again by the 2-year and 4.5-year waves, and settling at or higher than antenatal levels by the 8-year waves. For the three most advantaged trajectories, there was very little difference in their high rates of work engagement (over 90%). Children in the

[16] Overcrowding status at the 4.5-year not presented in this chart due to differences in measurement with the antenatal, 9-month, 2-year, and 8-year waves which limits comparisons.

"disadvantaged at antenatal to average" trajectory began with low levels of parental work engagement (43%) that rose to be on par with the most advantaged trajectories by the 8-year wave (99%). A similar pattern was observed among children in the "mostly disadvantaged" group, although work engagement was still lower than all other trajectories at 73% by the 8-year wave.

Figure 4g. Neighbourhood deprivation at each wave by trajectory



Finally, Figure 4g presents average neighbourhood deprivation by trajectory across the study period. While the relative stability in these patterns may reflect the distributional element of the neighbourhood deprivation measures (i.e., ranked deciles), it is important to note that there were high rates of residential mobility across all trajectories (as highlighted in Figure 4d), suggesting that a greater proportion of those residential moves were likely within neighbourhood or to neighbourhoods with similar deprivation profiles. Over the study period, children in most trajectories were more likely to move into a neighbourhood with a lower deprivation profile (than higher deprivation levels), with these shifts more pronounced for children in the "average to advantaged by school entry" and "disadvantaged at antenatal to average" trajectories.

Overall, these findings point to the way that some resources, such as household income and residential stability, are more likely to shift and change across the early life course, whereas other resource levels are more stable, such as neighbourhood resources and living in overcrowded households. Moreover, when resources do shift and change, there are clear age-graded patterns, with these patterns typically more pronounced among children in more disadvantaged trajectories. For example, while children in most trajectories experience a household income drop from antenatal to 9-months old, this drop was smaller in both absolute and relative terms, and those in the more advantaged groups were more likely to return to pre-birth household income levels later.

Which children are more likely to experience more or less resources?

In line with prior research, it is unlikely that the probability of being in advantaged versus disadvantaged contexts is spread evenly across the population. We apply multinomial regression analysis to examine whether certain sociodemographic characteristics increase the likelihood of children being exposed to relatively low or high levels of resources during early and middle childhood. Using a regression analysis allows for the interpretation of the potential likelihood of specific factors *net of each other.* A description of the different sociodemographic characteristics associated with different trajectories and the latent classes at each wave can be found in Tables A9a through A9f in the Appendix.

Tables 1a through 1f present the results of the multinomial regression analyses. Relative risk ratios are presented, which are an estimate of the probability a child/family with a certain characteristic being a member of a specific trajectory/latent class versus the most advantaged trajectory/latent class. Likewise, when interpreting relative risk ratios for factors that are categorical, the relative risk ratios should be interpreted as the relative probability of membership in that particular trajectory/latent class versus the reference category. For example, in the case of child ethnicity, the ratios should be the relative risk of Māori/Pacific/Asian children—the non-dominant groups—compared to being in the dominant group (NZ European/Pākeha). The presentation of these findings here cannot tell us, for example, whether there are statistical differences in the risk of different trajectory/latent class membership within the other non-reference groups, such as whether Māori are more likely to experience one trajectory versus another compared to Pacific children.

Factors associated with the likelihood of being in different trajectories

Table 1a presents the results predicting the likelihood of being in a particular trajectory based on a families' socioeconomic characteristics. Lower maternal education attainment was consistently and strongly associated with increased likelihood of being in a less advantaged trajectory than being in the always advantaged trajectory. The pattern was linear, whereby children with mothers with no secondary school qualification were at greater likelihood of being in a less advantaged group, followed by children with mothers who had obtained a secondary school or NCEA qualification, and then those who had received a post-secondary school diploma or trade certificate. As an example, children with mothers with no secondary qualification were over five times more likely to be in the 'always average' trajectory (compared to the 'always advantaged' trajectory) compared to children with mothers with a university degree. The probability lessened to just over three times more likely among children of mothers who gained a secondary school qualification and 2.4 times more likely among children of mothers with a diploma or trade certificate.

Similarly, child ethnicity was associated with trajectory membership, albeit the associations were less strong than for maternal education. Not being in the dominant ethnic group (NZ European/Pākehā) increased the probability of being in a less advantaged trajectory. This finding was particularly acute when examining differences in probability of being in the 'mostly disadvantaged' trajectory versus the 'always advantaged' trajectory.

Table 1a. Multinomial regression predicting trajectory (ref: always advantaged)

	Average to advantaged by school entry	Always average	Average to disadvantaged	Disadvantaged at antenatal to average	Mostly disadvantaged
	RRR	RRR	RRR	RRR	RRR
Maternal education (ref: university degree +)					
No secondary school qualification	2.41+	5.45***	23.05***	14.63***	94.66***
	(1.18)	(2.48)	(11.04)	(7.63)	(46.30)
Secondary school qualification/NCEA	1.60***	3.13***	5.46***	3.89***	12.36***
	(0.22)	(0.40)	(1.03)	(0.89)	(2.92)
Diploma/Trade certificate	1.53***	2.38***	3.87***	2.89***	8.80***
	(0.16)	(0.25)	(0.65)	(0.60)	(1.93)
Maternal age (years)	0.91***	0.87***	0.87***	0.85***	0.83***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Child ethnicity (ref: NZ European/Pākehā)					
Māori	1.70***	2.70***	2.54***	6.81***	10.47***
	(0.23)	(0.34)	(0.45)	(1.62)	(2.12)
Pacific	2.52***	5.79***	4.18***	15.29***	33.63***
	(0.58)	(1.25)	(1.17)	(4.78)	(9.32)
Asian	1.63**	2.46***	1.86*	5.12***	4.03***
	(0.25)	(0.38)	(0.45)	(1.52)	(1.13)
Other ethnicity	1.92**	1.90**	2.26*	3.06*	4.09***
	(0.45)	(0.47)	(0.78)	(1.52)	(1.68)
Maternal nativity (ref: born in NZ)					
Moved to NZ between 0-18 years old	0.85	0.99	1.09	1.43	1.39
	(0.13)	(0.15)	(0.25)	(0.37)	(0.31)
Moved to NZ after 18 years old	1.61***	1.71***	2.30***	2.68***	4.15***
	(0.20)	(0.22)	(0.46)	(0.68)	(0.90)
Mother has a disability (ref: no disability)	1.13	1.26	1.81**	1.17	2.02**
	(0.19)	(0.21)	(0.40)	(0.38)	(0.48)
Two-parent family at antenatal (ref: single parent family)	0.83	0.84	3.09+	0.55	0.70
	(0.46)	(0.46)	(1.83)	(0.37)	(0.42)
Number of family structure changes over study period	1.13	0.90	1.01	1.41*	1.10
	(0.13)	(0.10)	(0.13)	(0.21)	(0.14)

Proportion of waves spent in two-parent family (0.0-1.0 scale)	0.37	0.26*	0.01***	0.17*	0.03***
	(0.24)	(0.17)	(0.01)	(0.14)	(0.02)
Other adult household members at antenatal (ref: no other members)	1.49	0.88	1.06	0.90	1.09
	(0.37)	(0.22)	(0.35)	(0.34)	(0.36)
Proportion of waves spent living in households with other adult members	0.80	1.53	1.27	1.99	0.98
	(0.30)	(0.56)	(0.61)	(1.12)	(0.48)
Lived in a rural area at antenatal (ref: lives in an urban area)	0.99	1.20	1.58	0.55	1.38
	(0.35)	(0.42)	(0.75)	(0.45)	(0.78)
Proportion of waves spent living in a rural area (0.0-1.0 scale)	1.30	1.08	1.07	0.72	0.44
	(0.48)	(0.40)	(0.56)	(0.61)	(0.28)
District Health Board region at antenatal (ref: Auckland/Waitemata)					
Counties Manukau	1.34**	1.62***	1.37+	1.55*	1.91***
	(0.15)	(0.18)	(0.23)	(0.30)	(0.33)
Waikato	2.01***	3.21***	2.74***	2.58***	3.89***
	(0.23)	(0.37)	(0.48)	(0.58)	(0.75)
Child female (ref: male)	1.05	0.99	1.03	1.25	0.90
	(0.09)	(0.09)	(0.13)	(0.20)	(0.12)
Constant	23.90***	104.43***	92.26***	16.53***	48.22***
	(13.79)	(59.62)	(61.92)	(13.27)	(33.81)
Pseudo R^2	0.174	0.174	0.174	0.174	0.174
N	5,007	5,007	5,007	5,007	5,007

Note. *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$, + $p < 0.1$. Standard errors in parentheses.

Maternal age was also statistically associated with being in different trajectories, with children with mothers who were older at a decreased risk of being in more disadvantaged trajectories. The importance of age was greater for the likelihood of being in more disadvantaged groups versus membership in the average or more mobile trajectories. Having a mother who moved to Aotearoa New Zealand during her adulthood increased the odds of being in a more disadvantaged trajectory, whereas time during early childhood spent living in a two-parent family (vs. single-parent family) was associated with being in a more advantaged trajectory.

Interestingly, having a mother with a disability did not distinguish the likelihood of being in an advantageous trajectory (i.e., 'always advantaged,' 'average to advantaged by school entry,' 'always average,' and 'disadvantaged at antenatal to average'), but did double the likelihood of being in the downward mobility trajectory ('average to disadvantage') and the mostly disadvantaged trajectory versus the most advantageous trajectory. Finally, living in outside Auckland (vs. the Auckland/Waitemata district board area) also increased the likelihood of being in more disadvantaged trajectories.

Having other adult household members living in the home at antenatal and the proportion of study waves where other adult household members were in the home did not statistically increase the likelihood of being in a more advantaged or disadvantaged trajectory, potentially pointing towards more diverse living arrangements as protective resources.

Factors predicting point-in-time advantage/disadvantage experiences

The factors that were associated with membership in disadvantaged and advantaged trajectories were also associated with membership in similar disadvantaged and advantaged latent class groups at each survey wave. Beginning with the antenatal wave (Table 1b), mothers with more education, that were older, and were born in or moved to Aotearoa New Zealand as a child or youth were more likely to be in more advantaged classes, and were less likely to be in the most disadvantaged group, compared with the 'high neighbourhood deprivation' and 'average with low income, homeownership' groups. Tamariki Māori, Pacific and Asian children, and children of other ethnicities, were most strongly associated with being part of the disadvantaged groups (vs. the most advantaged group) than NZ European/Pākehā children. Mothers who were living with their partners at the antenatal wave (vs. not) were more likely to be in the most advantaged group than the other groups, whereas having other adult household members in the home decreased the likelihood of being in the 'average with low income, homeownership' group versus being in the 'most advantaged' group. Living in a rural area was associated with groups typified by high neighbourhood deprivation and being mostly disasdvantaged across domains (vs. being in the most advantaged

group). However living in a rural area increased risk of being in the 'average with low income, homeownership' group.

A similar pattern emerged when examining factors predicting latent class membership at the 9-month wave, whereby maternal education, age, and nativity and age of migration were associated with being in a more advantage group in similiar ways as the antenatal wave. Tamariki Māori, Pacific and Asian children, and children of other ethnicities (vs. NZ European/Pākehā) were also at increased likelihood of being in less advantaged groups, when compared to the most advantaged group, as too were children living in single-parent families. In contrast to the antenatal wave, children living in homes with other adults apart from their parents were at increased odds of being in the more disadvantaged groups (apart from the most disadvantaged group, which had rates of overcrowding similar to the sample mean). Living in a rural area decreased the likelihood of being in the 'average' and 'moderately disadvantaged, with high overcrowding' groups, versus the most advantaged group. Living in Counties Manukau and Waikato also decreased the likelihood of being in most advantaged group.

These findings were consistent at the 2-year wave (Table 1d), although with two notable differences. First, changes in family structure (i.e., being in a two-parent family at the 9-month wave and a single-parent family by the 2-year wave, or vice versa) increased the odds of being in a more disadvantaged group (vs. more advantaged group). Second, having other adult household members in the home was associated with being in the 'overcrowding, neighbourhood deprivation' group.

Again, findings were similar at the 4.5-year (Table 1e) and 8-year (Table 1f) waves, with several noticeable differences. First, at the 4.5-year wave, children whose mothers moved to Aotearoa New Zealand when they were between 0-18 years old increased the likelihood of being in the 'disadvantaged, with high overcrowding and neighbourhood deprivation' group. In prior waves there was no statistical difference between NZ-born mothers and this group. Second, living in a rural area no longer decreased the odds of being in the 'disadvantaged, low work engagement' group at the 4.5-year wave. Third, and at the 8-year wave, mothers' age at migration no longer increased odds of being in more disadvantaged groups, except in the case of increasing the likelihood of being in the most disadvantaged group (vs. most advantaged). Fourth, having other adult household members in the home decreased the likelihood of being in the 'low homeownership, high mobility' group (vs. the most advantaged group) at the 8-year wave.

Table 1b. Multinomial regression predicting latent class at antenatal (ref: most advantaged)

	High neighbourhood deprivation	Average with low income, homeownership	Most disadvantaged
	RRR	RRR	RRR
Maternal education (ref: university degree +)			
No secondary school qualification	3.41***	3.20***	17.40***
	(0.95)	(0.86)	(4.46)
Secondary school qualification/NCEA	2.30***	2.18***	4.31***
	(0.28)	(0.24)	(0.61)
Diploma/Trade certificate	2.09***	2.16***	4.19***
	(0.22)	(0.21)	(0.54)
Maternal age (years)	0.94***	0.90***	0.88***
	(0.01)	(0.01)	(0.01)
Child ethnicity (ref: NZ European/Pākehā)			
Māori	2.50***	1.79***	6.10***
	(0.29)	(0.19)	(0.82)
Pacific	5.28***	1.67**	14.48***
	(0.86)	(0.31)	(2.53)
Asian	2.92***	1.92***	5.35***
	(0.45)	(0.27)	(0.95)
Other ethnicity	1.59+	1.64*	3.23***
	(0.41)	(0.33)	(0.88)
Maternal nativity (ref: born in NZ)			
Moved to NZ between 0-18 years old	0.92	0.97	1.28
	(0.14)	(0.14)	(0.21)
Moved to NZ after 18 years old	1.60***	1.94***	2.63***
	(0.21)	(0.22)	(0.40)
Mother has a disability (ref: no disability)	0.93	1.17	1.23
	(0.16)	(0.17)	(0.22)
Two-parent family (ref: single parent family)	0.49**	0.47***	0.19***
	(0.11)	(0.10)	(0.04)
Other adult household members (ref: no other members)	1.08	0.64***	0.90
	(0.12)	(0.07)	(0.10)
Lives in a rural area (ref: lives in an urban area)	0.31***	1.72***	0.44***
	(0.07)	(0.23)	(0.10)
District Health Board region (ref: Auckland/Waitemata)			
Counties Manukau	1.79***	0.96	1.66***
	(0.20)	(0.10)	(0.20)
Waikato	2.85***	1.55***	2.42***
	(0.34)	(0.16)	(0.33)
Constant	1.32	11.47***	4.73***
	(0.51)	(4.13)	(1.90)
Pseudo R^2	0.166	0.166	0.166
n	5,007	5,007	5,007

Note. *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$, + $p < 0.1$. RRR = Relative Risk Ratio. Standard errors in parentheses. Respondents in Auckland, Countries Manukau, and Waikato DHBs only at antenatal.

Table 1c. Multinomial regression predicting latent class at 9 months (ref: most advantaged)

	Average RRR	Low incomes, home ownership, with mobility RRR	Moderately disadvantaged, with high overcrowding RRR	Most disadvantaged, average overcrowding RRR
Maternal education (ref: university degree +)				
No secondary school qualification	3.16**	8.39***	51.10***	44.31***
	(1.20)	(3.19)	(21.60)	(19.70)
Secondary school qualification/NCEA	1.81***	2.58***	8.49***	6.18***
	(0.20)	(0.33)	(1.89)	(1.62)
Diploma/Trade certificate	1.72***	2.70***	5.73***	6.08***
	(0.16)	(0.30)	(1.22)	(1.47)
Maternal age (years)	0.94***	0.86***	0.91***	0.86***
	(0.01)	(0.01)	(0.01)	(0.01)
Child ethnicity (ref: NZ European/Pākehā)				
Māori	1.62***	2.30***	21.38***	5.27***
	(0.18)	(0.29)	(5.81)	(1.13)
Pacific	3.31***	3.40***	64.60***	10.26***
	(0.62)	(0.72)	(19.88)	(3.05)
Asian	1.89***	1.72***	6.24***	3.45***
	(0.25)	(0.28)	(2.03)	(1.07)
Other ethnicity	1.96**	2.59***	2.51	3.77**
	(0.42)	(0.63)	(1.66)	(1.71)
Maternal nativity (ref: born in NZ)				
Moved to NZ between 0-18 years old	0.94	0.88	1.49+	1.05
	(0.12)	(0.14)	(0.33)	(0.28)
Moved to NZ after 18 years old	1.10	1.97***	3.09***	2.36**
	(0.12)	(0.26)	(0.69)	(0.63)
Mother has a disability (ref: no disability)	1.40*	1.61**	1.61+	3.23***
	(0.21)	(0.28)	(0.43)	(0.80)
Two-parent family (ref: single parent family)	0.85	0.31***	0.31***	0.07***
	(0.22)	(0.08)	(0.10)	(0.02)
Change in family structure between waves (ref: no change)	0.99	0.79	0.80	0.54
	(0.34)	(0.28)	(0.32)	(0.22)
Other adult household members (ref: no other members)	1.22+	1.34*	2.31***	1.37
	(0.13)	(0.17)	(0.39)	(0.26)
Lives in a rural area (ref: lives in an urban area)	0.72*	1.11	0.21**	0.59+
	(0.10)	(0.18)	(0.10)	(0.19)
District Health Board region (ref: Auckland/Waitemata)				
Counties Manukau	1.48***	1.14	2.05***	1.14
	(0.14)	(0.13)	(0.34)	(0.23)
Waikato	2.48***	2.22***	1.81**	2.92***
	(0.25)	(0.27)	(0.39)	(0.64)
Rest of the North Island	0.95	6.57***	1.57	13.27***
	(0.41)	(2.35)	(1.29)	(6.40)
South Island	0.73	11.42***	10.00*	0.00
	(0.64)	(7.04)	(9.99)	(0.01)
Child female (ref: male)	1.06	1.03	0.92	1.04
	(0.08)	(0.09)	(0.13)	(0.16)
Age deviation from interview age (months)	0.96	0.98	0.99	1.06
	(0.04)	(0.05)	(0.08)	(0.09)
Constant	5.11***	53.92***	0.20*	7.86**
	(2.04)	(23.66)	(0.13)	(5.09)
Pseudo R^2	0.182	0.182	0.182	0.182
N	5,007	5,007	5,007	5,007

Note. *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$, + $p < 0.1$. RRR = Relative Risk Ratio. Standard errors in parentheses.

Table 1d. Multinomial regression predicting latent class at 2 years (ref: most advantaged)

	Average RRR	Overcrowding, neighbourhood deprivation RRR	Disadvantaged with average neighbourhood deprivation RRR	Most disadvantaged RRR
Maternal education (ref: university degree +)				
No secondary school qualification	2.66*	17.29***	13.41***	57.75***
	(1.05)	(7.20)	(5.59)	(26.97)
Secondary school qualification/NCEA	1.95***	4.88***	3.59***	11.11***
	(0.23)	(0.85)	(0.60)	(3.02)
Diploma/Trade certificate	1.53***	3.81***	2.86***	8.04***
	(0.14)	(0.58)	(0.41)	(2.06)
Maternal age (years)	0.91***	0.87***	0.85***	0.86***
	(0.01)	(0.01)	(0.01)	(0.01)
Child ethnicity (ref: NZ European/Pākehā)				
Māori	1.74***	6.93***	2.38***	8.54***
	(0.20)	(1.19)	(0.38)	(2.01)
Pacific	2.85***	20.36***	2.98***	26.05***
	(0.57)	(4.87)	(0.81)	(7.74)
Asian	1.96***	4.79***	3.72***	4.56***
	(0.28)	(1.06)	(0.75)	(1.44)
Other ethnicity	1.45+	2.17*	2.31**	5.61***
	(0.31)	(0.83)	(0.69)	(2.33)
Maternal nativity (ref: born in NZ)				
Moved to NZ between 0-18 years old	0.86	1.13	1.01	1.51
	(0.11)	(0.23)	(0.21)	(0.38)
Moved to NZ after 18 years old	1.36**	2.56***	2.38***	3.85***
	(0.15)	(0.47)	(0.42)	(0.94)
Mother has a disability (ref: no disability)	1.30+	1.24	1.60*	2.04**
	(0.19)	(0.28)	(0.33)	(0.53)
Two-parent family (ref: single parent family)	0.69	0.34***	0.11***	0.08***
	(0.17)	(0.09)	(0.03)	(0.02)
Change in family structure between waves (ref: no change)	1.94*	1.45	2.64**	2.11*
	(0.51)	(0.51)	(0.80)	(0.73)
Other adult household members (ref: no other members)	1.01	1.86***	0.97	1.04
	(0.11)	(0.27)	(0.15)	(0.19)
Lives in a rural area (ref: lives in an urban area)	1.30+	0.43**	1.92***	0.63
	(0.19)	(0.13)	(0.37)	(0.23)
District Health Board region (ref: Auckland/Waitemata)				
Counties Manukau	1.32**	1.94***	1.12	1.81**
	(0.13)	(0.29)	(0.17)	(0.35)
Waikato	1.86***	2.62***	2.65***	2.54***
	(0.19)	(0.44)	(0.42)	(0.58)
Rest of the North Island	2.10**	4.68***	4.45***	8.00***
	(0.53)	(1.71)	(1.44)	(3.27)
South Island	1.91+	1.26	4.57**	1.99
	(0.74)	(1.04)	(2.26)	(2.18)
Child female (ref: male)	1.14+	1.16	1.13	1.01
	(0.09)	(0.14)	(0.13)	(0.15)
Age deviation from interview age (months)	0.97	1.01	0.98	1.02
	(0.03)	(0.04)	(0.04)	(0.04)
Constant	26.75***	4.66**	90.78***	4.40*
	(10.69)	(2.41)	(45.73)	(2.77)
Pseudo R^2	0.185	0.185	0.185	0.185
N	5,007	5,007	5,007	5,007

Note. *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$, + $p < 0.1$. RRR = Relative Risk Ratio. Standard errors in parentheses.

Table 1e. Multinomial regression predicting latent class at 4.5 years (ref: most advantaged)

	Average RRR	Disad., overcrowding, neighbourhood deprivation RRR	Disadvantaged, low work engagement RRR
Maternal education (ref: university degree +)			
No secondary school qualification	3.94***	42.13***	27.26***
	(1.11)	(15.56)	(9.75)
Secondary school qualification/NCEA	2.51***	10.74***	6.39***
	(0.25)	(2.63)	(1.38)
Diploma/Trade certificate	1.74***	6.14***	5.43***
	(0.14)	(1.45)	(1.05)
Maternal age (years)	0.91***	0.90***	0.87***
	(0.01)	(0.01)	(0.01)
Child ethnicity (ref: NZ European/Pākehā)			
Māori	2.31***	11.95***	1.92***
	(0.22)	(2.73)	(0.34)
Pacific	3.75***	29.11***	2.40***
	(0.56)	(7.50)	(0.63)
Asian	1.86***	2.09*	1.61+
	(0.22)	(0.67)	(0.44)
Other ethnicity	1.25	3.07*	1.95+
	(0.23)	(1.35)	(0.70)
Maternal nativity (ref: born in NZ)			
Moved to NZ between 0-18 years old	1.23+	2.92***	1.02
	(0.15)	(0.63)	(0.26)
Moved to NZ after 18 years old	1.62***	4.09***	1.60*
	(0.16)	(0.90)	(0.38)
Mother has a disability (ref: no disability)	1.20	1.94**	2.12***
	(0.16)	(0.48)	(0.47)
Two-parent family (ref: single parent family)	0.38***	0.28***	0.02***
	(0.07)	(0.07)	(0.00)
Change in family structure between waves (ref: no change)	0.81	1.40	1.35
	(0.15)	(0.36)	(0.31)
Other adult household members (ref: no other members)	1.12	0.89	0.74
	(0.11)	(0.16)	(0.14)
Lives in a rural area (ref: lives in an urban area)	1.27*	0.46*	0.72
	(0.15)	(0.16)	(0.19)
District Health Board region (ref: Auckland/Waitemata)			
Counties Manukau	1.27**	2.54***	1.52*
	(0.11)	(0.49)	(0.31)
Waikato	2.21***	3.31***	3.51***
	(0.21)	(0.77)	(0.74)
Rest of the North Island	2.70***	7.31***	6.70***
	(0.47)	(2.49)	(2.11)
South Island	1.04	1.46	3.98**
	(0.30)	(0.94)	(1.98)
Child female (ref: male)	0.88+	0.76+	0.85
	(0.06)	(0.11)	(0.12)
Age deviation from interview age (months)	1.01	1.14**	1.07
	(0.03)	(0.05)	(0.05)
Constant	21.57***	0.23*	26.19***
	(7.11)	(0.14)	(14.21)
Pseudo R^2	0.231	0.231	0.231
N	5,007	5,007	5,007

Note. *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$, + $p < 0.1$. RRR = Relative Risk Ratio. Standard errors in parentheses.

Table 1f. Multinomial regression predicting latent class at 8 years (ref: most advantaged)

	Average RRR	Low home ownership, high mobility RRR	Most disadvantaged RRR
Maternal education (ref: university degree +)			
No secondary school qualification	1.26	2.50**	12.66***
	(0.28)	(0.73)	(3.06)
Secondary school qualification/NCEA	1.78***	2.42***	4.66***
	(0.17)	(0.36)	(0.76)
Diploma/Trade certificate	1.58***	2.09***	4.76***
	(0.13)	(0.28)	(0.72)
Maternal age (years)	0.95***	0.91***	0.92***
	(0.01)	(0.01)	(0.01)
Child ethnicity (ref: NZ European/Pākehā)			
Māori	1.61***	1.52**	4.95***
	(0.15)	(0.22)	(0.72)
Pacific	1.95***	1.51+	8.19***
	(0.27)	(0.34)	(1.48)
Asian	1.36*	1.91***	2.02***
	(0.17)	(0.37)	(0.43)
Other ethnicity	1.28	0.97	2.34**
	(0.24)	(0.32)	(0.70)
Maternal nativity (ref: born in NZ)			
Moved to NZ between 0-18 years old	1.07	0.96	1.27
	(0.13)	(0.19)	(0.23)
Moved to NZ after 18 years old	1.00	1.32+	2.06***
	(0.10)	(0.22)	(0.34)
Mother has a disability (ref: no disability)	1.08	1.58*	1.61**
	(0.14)	(0.30)	(0.29)
Two-parent family (ref: single parent family)	0.76+	0.23***	0.24***
	(0.12)	(0.04)	(0.05)
Change in family structure between waves (ref: no change)	1.27	1.56*	1.52*
	(0.22)	(0.32)	(0.31)
Other adult household members (ref: no other members)	1.20	0.64*	1.18
	(0.14)	(0.11)	(0.18)
Lives in a rural area (ref: lives in an urban area)	0.92	1.48*	0.54**
	(0.10)	(0.24)	(0.12)
District Health Board region (ref: Auckland/Waitemata)			
Counties Manukau	1.51***	1.13	1.83***
	(0.15)	(0.18)	(0.29)
Waikato	2.46***	1.53**	2.18***
	(0.25)	(0.25)	(0.38)
Rest of the North Island	2.13***	1.85**	2.23***
	(0.31)	(0.40)	(0.52)
South Island	1.58+	2.06*	1.71
	(0.39)	(0.69)	(0.71)
Child female (ref: male)	1.03	1.02	0.99
	(0.07)	(0.11)	(0.10)
Age deviation from interview age (months)	0.97***	0.99	1.04***
	(0.01)	(0.01)	(0.01)
Constant	2.05*	4.22**	0.60
	(0.62)	(1.86)	(0.26)
Pseudo R^2	0.140	0.140	0.140
N	5,007	5,007	5,007

Note. *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$, + $p < 0.1$. RRR = Relative Risk Ratio. Standard errors in parentheses.

Table 1g summarises the findings presented in Tables 1a through 1f from the multinomial regression analyses, displaying whether certain factors were statistically associated with being in the most advantaged trajectory (across the study period) or group (at each point in time) compared with likelihood of being in the most disadvantaged trajectory or group. Overall, the pattern of findings in terms of what factors are associated with more opportunities and/or less resources were strong and consistent across the waves. Children with mothers with less education, who were younger, and who were born overseas were more likely to be in more disadvantaged trajectories or point-in-time groups. Children identified as Pākehā only and who were in two-parent families had higher odds of being in trajectories and groups with the most resources. Children living in regions outside of Auckland were also less likely to be in the most advantaged groups.

Table 1g. Summary of factors predicting likelihood of being in the most advantaged trajectory and most advantaged point-in-time profile (vs. most disadvantaged)

Factor	Trajectories	Antenatal	9 months	2 years	4.5 years	8 years
Maternal education (ref: university degree +)						
No secondary school qualification	-	-	-	-	-	-
Secondary school qualification/NCEA	-	-	-	-	-	-
Diploma/Trade certificate	-	-	-	-	-	-
Maternal age (years)	+	+	+	+	+	+
Child ethnicity (ref: NZ European/Pākehā)						
Māori	-	-	-	-	-	-
Pacific	-	-	-	-	-	-
Asian	-	-	-	-	ns	-
Other ethnicity	-	-	-	-	ns	-
Maternal nativity (ref: born in NZ)						
Moved to NZ between 0-18 years old	ns	ns	ns	ns	ns	ns
Moved to NZ after 18 years old	-	-	-	-	-	-
Mother has a disability (ref: no disability)	-	ns	-	-	-	-
Two-parent family (ref: single parent family)	ns	+	+	+	+	+
Change in family structure between waves (ref: no change)	..	..	ns	-	ns	-
Other adult household members (ref: no other members)	ns	ns	ns	ns	ns	ns
Lives in a rural area (ref: lives in an urban area)	ns	+	ns	ns	ns	+
District Health Board region (ref: Auckland/Waitemata)						
Counties Manukau	-	-	ns	-	-	-
Waikato	-	-	-	-	-	-
Rest of the North Island	..	..	-	-	-	-
South Island	..	..	ns	ns	-	ns
Child female (ref: male)	ns	..	ns	ns	ns	ns
Age deviation from interview age (months)	..	..	ns	ns	ns	-

Note. +/- = increased/decreased likelihood of being in the advantaged group vs. disadvantaged group; ns = no statistical significant association; .. not included in the model. Factors used to predict trajectories only (i.e., proportion of waves spent in two-parent family, number of family structure changes over study period, proportion of waves spent living in households with other adults, proportion of waves spent living in a rural area) are not presented in this table.

Advantage/disadvantage exposure and child development and wellbeing

To explore whether these patterns of access to resources were associated with children's development and health, we conducted a series of OLS regression models, examining whether the trajectories and point-in-time groups (latent classes) identified in Aim 1 matter for children's socioemotional and cognitive development,[17] and their physical health when children were 9-months, 2-years, 4.5-years, and 8-years old. In addition, using OLS and logit regression, we examined whether clusters of advantage and disadvantage at antenatal were associated with mothers' reports of perceived support for their parenting once their baby arrived, levels of relationship conflict with their partners (if they had one at the time), their physical health, and whether they had symptoms that would indicate they were experiencing clinical depression.

The findings from the analyses are presented in Table 2a through Table 2f. For each outcome examined, the models were run twice. Once without controls, and a second time with the inclusion of controls such as those examined in Aim 2 (e.g., maternal education, maternal age, child ethnicity, family structure).[18] By doing so, we can understand the net effect of resources and the other factors that may be correlated with the level of available resources and the child development outcomes. We are also able to provide some insight into how much the association between the levels of resources, available during childhood, and the child development outcomes might be explained by other factors, such as maternal education.

A final note on interpreting the findings, and as a preview: in line with the prior literature, we find strong statistically-significant evidence that experiences of different levels of resources were associated with child development outcomes. In this way, an additional important piece of information for interpreting these findings is examining the effect size (i.e., denoted by the size of the coefficient in respect to the variability in the measure being examined across the study population). To help with interpretation, the coefficients are shaded to indicate what can be deemed a 'large,' 'moderate,' or 'small' effect size (as per Cohen, 1990), with darker shading denoting larger effect sizes. A coefficient value *not* being shaded does not mean that these trajectories or latent classes do not matter for child development. Indeed, there are many such instances where there still remains a statistically significant association. A focus on an effect size interpretation, however, is a useful tool for understanding the relative importance of certain characteristics or resource experiences for the outcome, and for comparisons across outcomes, and

[17] Cognitive outcomes were not available at the 8-year wave.

[18] Full model results which display the control variables and their coefficients can be found in the Appendix in Tables A9a through A9f.

hence, point to particular intervention/support points for policy and programmes that may have outsized impacts.

Trajectories of advantage/disadvantage across the life course and middle childhood outcomes

Beginning with the trajectories of advantage/disadvantage uncovered in Aim 1, Table 2a displays the associations between these trajectories and children's socioemotional development, measured by two variables tapping into internalising (e.g., psychological states correlated with depressive or anxiety disorders) and externalising (e.g., physical aggression, defiance) behaviours, and their physical health at the 8-year wave.[19] Overall, there were statistically significant differences between the most advantaged trajectory—always advantaged—and all other trajectories, whereby being in the most advantaged trajectory was associated with fewer internalising and externalising behaviours and better physical health. These statistical associations persisted across almost all measures and trajectories with the inclusion of covariates/controls in the models.

Table 2a. Trajectories: OLS regressions predicting child outcomes at 8 years

Outcome	Internalising behaviours (0-20 scale)		Externalising behaviours (0-20 scale)		Maternal-reported child health (1-5 scale)	
Controls included	X	✓	X	✓	X	✓
	Coeff.	Coeff.	Coeff.	Coeff.	Coeff.	Coeff.
Trajectory (ref: always advantaged)						
Average to advantaged by school entry	0.49***	0.34**	0.49***	0.34**	-0.14***	-0.10**
	(0.12)	(0.12)	(0.13)	(0.13)	(0.03)	(0.03)
Always average	0.96***	0.67***	0.80***	0.53***	-0.28***	-0.20***
	(0.11)	(0.12)	(0.12)	(0.13)	(0.03)	(0.03)
Average to disadvantaged	1.92***	1.38***	1.53***	1.03***	-0.42***	-0.30***
	(0.17)	(0.19)	(0.18)	(0.20)	(0.05)	(0.05)
Disadvantaged at antenatal to	1.28***	0.76**	0.71**	0.27	-0.42***	-0.26***
	(0.23)	(0.25)	(0.24)	(0.26)	(0.07)	(0.07)
Mostly disadvantaged	2.52***	1.79***	1.84***	1.13***	-0.56***	-0.36***
	(0.16)	(0.20)	(0.17)	(0.21)	(0.04)	(0.06)
Constant	2.16***	3.98***	4.27***	5.40***	4.47***	4.24***
	(0.11)	(0.41)	(0.12)	(0.44)	(0.03)	(0.12)
R^2	0.070	0.084	0.082	0.095	0.048	0.069
N	4,442	4,442	4,441	4,441	4,612	4,612

Note. *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$, + $p < 0.1$. Standard errors in parentheses. Total sample size does not equal analytical sample size of 5,007 due to missing values on the outcome variables. Controls include: maternal education, maternal age, child ethnicity, maternal nativity, maternal disability, family structure at antenatal, number of family structure changes over study period, proportion of waves in two-parent family, other adult household members at antenatal, proportion of waves with other adult household members, urbanicity, proportion of waves living in a rural area, district health board at antenatal, child sex, and age deviation from interview wave.

Colour coding denotes *effect size* based on levels proposed by Cohen (1990).

.80 of a standard deviation or higher (large effect size)

.50-.79 of a standard deviation (moderate to large effect size)

.20-.49 of a standard deviation (small to moderate effect size)

[19] Table A10 in the appendix displays estimates and statistical differences between all trajectories.

The disparities in the outcomes between the always advantaged trajectory and the other trajectories were somewhat linear—that is, there were smaller disparities between the always advantaged trajectory and the trajectories that either were always average or indicated some upward mobility (e.g., moving from an average to advantaged group across the early life course), and larger differences with those trajectories that were mostly disadvantaged or experienced downward mobility. For example, once controls were included in the models, there was a small-to-moderate effect size between the 'always average' trajectory and the most advantaged trajectory. This was a moderate-to-large effect size when comparing the 'mostly disadvantaged' trajectory to the most advantaged trajectory. Experiencing any time in a disadvantaged group at a point in time mattered for children's outcomes as evidenced by the upward and downward mobility trajectories still remaining significantly associated with poorer outcomes for children by age 8. Similarly, spending any time in the most advantaged group also appeared to dull disparities between being consistently in an 'average' group.

Looking across the outcomes, the effect sizes were marginally stronger when examining reports of internationalising behaviours, compared with externalising behaviours and physical health. For example, being in the mostly disadvantaged trajectory (vs. always advantaged trajectory) was associated with internalising behaviours that were 62% of a standard deviation higher than the sample mean—a moderate-to-large effect size. This dropped to 44% and 27% when examining physical health and externalising behaviours, respectively.

Exposure to advantage/disadvantage and maternal outcomes at antenatal[20]

Next we examine whether the point-in-time experiences of different latent class membership were associated with outcomes within that time period, beginning by examining mothers' outcomes at the antenatal wave (Table 2b). Overall, latent class membership was associated with maternal outcomes, xalbeit the strength of that relationship differed by latent class and outcome examined.

Among mothers with partners (including coresidential and those not coresidential), only those mothers in the 'most disadvantaged' group were significantly more likely to report higher levels, on average, of relationship conflict compared to the 'most advantaged' group, aligning the literature on the effect of lack of resources and toxic stress increasing the likelihood of family violence (Fahmy, Williamson, & Pantazis, 2016). With the inclusion of control variables, however, the effect size was small-to-moderate. A similar pattern emerged when examining parenting support whereby there was a statistical difference between the most advantaged group and the most disadvantaged group. The effect size, however, was small-to-moderate.

When examining mothers' reports of their own physical health there were statistically significant differences between the most advantaged group and all other groups. These differences attenuated with the inclusion of controls in the model, however there was still small-to-moderate difference in mothers' reported physical health for the 'average with low income, home ownership' group and those in the most disadvantaged group compared to the most advantaged group.

The strongest associations were with maternal depression. In the models including control variables, there remained large differences in the likelihood of experiencing clinical levels of depressive symptoms. Mothers in the most disadvantaged group were 80% more likely than mothers in the most advantaged group to report symptoms that would indicate clinical depression. Mothers in the 'average with low income, homeownership' group were 50% more likely than the most advantaged group to report clinical levels of depression. The inclusion of controls in the model attenuated the statistically significant difference in odds of depression between being in the 'high neighbourhood deprivation' group and the most advantaged group. These findings are particularly concerning given that pregnant women's depression and anxiety has been shown to increase the risk of a range of poorer child outcomes later, such as higher levels of socioemotional problems and delayed cognitive development (Glover, 2014).

[20] Full model results for Tables 2b-2f are presented in the appendix in Tables A11b-11f.

Table 2b. OLS and logit regression predicting maternal outcomes at antenatal

Outcome	Relationship conflict (1.0-7.0 scale)		Parenting support (1.0-6.0 scale)		Self-reported health (1-5 scale)		Maternal depression (0/1)	
Controls included	X	✓	X	✓	X	✓	X	✓
	Coeff.	Coeff.	Coeff.	Coeff.	Coeff.	Coeff.	OR	OR
Class (ref: most advantaged)								
High neighbourhood deprivation	0.11***	0.02	-0.03	-0.03	-0.37***	-0.16***	1.61**	1.07
	(0.03)	(0.03)	(0.04)	(0.04)	(0.04)	(0.04)	(0.25)	(0.18)
Average with low income, homeownership	0.11***	0.03	-0.13***	-0.14***	-0.36***	-0.21***	2.05***	1.54**
	(0.02)	(0.02)	(0.03)	(0.03)	(0.03)	(0.03)	(0.28)	(0.22)
Most disadvantaged	0.36***	0.17***	-0.39***	-0.36***	-0.69***	-0.31***	3.95***	1.81***
	(0.03)	(0.03)	(0.04)	(0.04)	(0.04)	(0.04)	(0.51)	(0.29)
Constant	1.40***	1.79***	4.13***	4.38***	3.99***	3.36***	0.07***	0.18***
	(0.01)	(0.08)	(0.02)	(0.10)	(0.02)	(0.10)	(0.01)	(0.07)
R^2 / Pseudo R^2	0.042	0.092	0.026	0.137	0.077	0.134	0.038	0.069
N	4,370	4,370	4,545	4,545	4,997	4,997	4,551	4,551

Note. *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$, + $p < 0.1$. Standard errors in parentheses. Total sample size does not equal analytical sample size of 5,007 due to missing values on the outcome variables. Controls included: maternal education, maternal age, child ethnicity, maternal nativity, maternal disability, family structure, other adult household members, urbanicity, district health board.

Colour coding denotes *effect size* based on levels proposed by Cohen (1990).

.80 of a standard deviation or higher (large effect size)

.50-.79 of a standard deviation (moderate to large effect size)

.20-.49 of a standard deviation (small to moderate effect size)

Point-in-time exposure to advantage/disadvantage and child outcomes

Turning to child outcomes, we examined whether the latent classes identified at each wave were associated with five outcomes across three developmental domains—socioemotional development, cognitive development, and physical health. The findings are presented in Tables 2c through 2f.

Beginning with the 9-month wave (Table 2c), across all outcomes except positive affectivity/surgency (e.g., positive emotions combined with using motor skills), there were statistical differences between the most advantaged group and other, less advantaged, latent classes. Infants in the most advantaged group were more likely to report lower levels of negative emotionality, have higher levels of early communication and language development, have better health, and fewer acute illnesses. The strength of these associations and which groups remained statistically different from the advantaged group differed across the outcomes.

The strongest associations appeared with negative emotionality (i.e., infant temperament characterised by frequent expression of sadness, frustration, fear, and discomfort). While the inclusion of controls in the model attenuated the size of the association, the infants in the most advantaged group still had statistically lower levels of negative emotionality. These differences included a negligible-to-small difference from infants in the 'average' group, a small-to-moderate difference with the 'low incomes, homeownership, with mobility' group, and moderate-to-large differences between the two most disadvantaged groups: 'moderately disadvantaged, with high overcrowding' and 'most disadvantaged, average overcrowding.'

Examining communication and early language development, much of the association with resource groups attenuated with the inclusion of controls in the model, with the only remaining statistical difference between the most advantaged group and those infants in the 'moderately disadvantaged, with high overcrowding' group. The effect size, however, was small.

A similar pattern emerged when examining counts of acute illnesses, with only being in the 'most disadvantaged, average crowding' group statistically associated with more frequent acute illnesses during infancy (compared with the most advantaged group)—a small-to-moderate effect size. The association between resource group and the maternal-report child health scale, however, was stronger and more consistent, with statistical differences between the most advantaged group and all other groups (net of controls) pointing to mothers in the most advantaged group reporting better health of their infants than mothers in less advantaged groups. These differences range from a negligible-to-small association for the 'average' and 'low incomes, homeownership, with mobility' groups, through to small-to-moderate associations for the two most disadvantaged groups.

These general patterns of results at the 9-month wave—for the most part—replicated at the 2-year wave (Table 2d). Children in the most advantaged group (vs. all other groups) had, on average, statistically lower levels of internalising and externalising behaviours, higher levels of verbal communication, and fewer instances of acute illnesses. Effect sizes varied across the outcomes and by resource group. For example, when examining internalising behaviours, there was a negligible-to-small difference between the 'average' group and most advantaged group, increasing to a small-to-moderate difference for the 'overcrowding, neighbourhood deprivation' and 'disadvantaged with average neighbourhood deprivation' groups, and a moderate-to-large difference for the most disadvantaged group. When examining externalising behaviours the effect size was negligible-to-small between the 'average' and most advantaged groups, however there were small-to-moderate differences between all other groups and the most advantaged. This pattern was similar when examining verbal communication. For acute illnesses, only those children in the 'disadvantaged with average neighbourhood deprivation' and 'most disadvantaged' groups had rates that were both higher than the most advantaged group and were a significant effect size (small-to-moderate).

Contrary to the 9-month results, however, there was only one statistical difference when examining maternal-reported child health: between children in the most advantaged group and those in the 'disadvantaged with average neighbourhood deprivation' group.

Table 2e presents the same series of results for the 4.5-year wave. Again, the general pattern of results were consistent, for the most part, with prior waves, whereby being in the most advantaged group was associated with lower levels of internalising and externalising behaviours, further developed early literacy skills, and better health. Effect sizes again point to stronger associations between the resource groups and internalising behaviours, compared with externalising behaviours and the cognitive development measure which tapped into early literacy skills.

Interestingly, there was some evidence of differences in effect size across the two most disadvantaged groups: 'disadvantaged, overcrowding, neighbourhood deprivation' and 'disadvantaged, low work engagement.' Recall these two groups shared similar levels of household income and rates of homeownership and residential mobility but differed on other key elements. Despite these similarities, those children in the 'disadvantaged, overcrowding, neighbourhood deprivation' group appeared to report higher levels of internalising behaviours and poorer health than those in the 'disadvantaged, low work engagement' group.

Turning to the health outcomes, there appeared to be no statistical differences across the latent classes in terms of reports of acute illnesses, perhaps reflecting near-universal age-graded transitions to preschool by this age, and subsequent illness exposure in these contexts, or an

artefact in the change in the measurement tool (moving from counts of illnesses experienced to counts of *types* of illnesses). There was just one statistically significant difference in mothers' reports of their children's physical health, with children in the 'disadvantaged, overcrowding, neighbourhood deprivation' group having, on average, poorer health compared to the most disadvantaged group (a small-to-moderate effect size).

Finally, Table 2f presents the findings from the 8-year wave.[21] Similar to prior waves, there were consistent differences in outcomes between children in the most advantaged group and children in all other groups reflecting lower levels of internalising and externalising behaviours and better health of children in the most advantaged group. For both internalising and externalising behaviours, with the inclusion of controls in the model the difference between the most advantaged group and the 'average' group would be considered a negligible-to-small effect size, and a small-to-moderate difference when comparing the two most disadvantaged groups—'low home ownership, high mobility' and 'most disadvantaged'—to the 'most advantaged' group. The size of the disparity was similar across all three groups (i.e., small-to-moderate) in comparison to the most advantaged group when examining maternal-reported child health. While there were two significant differences in the acute illness count ('average' and 'low home ownership, high mobility' groups versus the most advantaged group), the effect size was negligible.

[21] Cognitive outcomes were not available to external users at the time this report was written.

Table 2c. OLS regression predicting child outcomes at 9 months

Outcome	Positive affectivity/surgency (1.0-7.0 scale)		Negative emotionality (1.0-7.0 scale)		Communication and early language development (0.0-2.0 scale)		Maternal-reported child health (1-5 scale)		Acute illnesses (1-10 scale)	
Controls included	X	✓	X	✓	X	✓	X	✓	X	✓
	Coeff.	Coeff.	Coeff.	Coeff.	Coeff.	Coeff.	Coeff.	Coeff.	Coeff.	Coeff.
Class (ref: most advantaged)										
Average	0.04	-0.00	0.14***	0.08*	0.05***	0.00	-0.11***	-0.07*	0.02	-0.02
	(0.03)	(0.03)	(0.04)	(0.04)	(0.01)	(0.01)	(0.03)	(0.03)	(0.03)	(0.04)
Low income, home ownership, with mobility	0.09**	0.02	0.34***	0.23***	0.10***	0.02	-0.15***	-0.09**	0.14***	0.05
	(0.03)	(0.03)	(0.04)	(0.05)	(0.01)	(0.01)	(0.03)	(0.04)	(0.04)	(0.04)
Moderately disadvantaged, with high overcrowding	0.14**	0.01	0.66***	0.43***	0.22***	0.06**	-0.22***	-0.15**	0.33***	0.12+
	(0.04)	(0.05)	(0.06)	(0.07)	(0.02)	(0.02)	(0.05)	(0.05)	(0.06)	(0.06)
Most disadvantaged, average overcrowding	0.17***	0.08	0.62***	0.48***	0.15***	0.02	-0.23***	-0.15*	0.53***	0.31***
	(0.05)	(0.06)	(0.07)	(0.08)	(0.02)	(0.02)	(0.05)	(0.06)	(0.07)	(0.07)
Constant	5.23***	5.27***	3.11***	3.37***	0.47***	0.62***	4.52***	4.34***	0.75***	0.95***
	(0.02)	(0.09)	(0.03)	(0.13)	(0.01)	(0.04)	(0.02)	(0.10)	(0.03)	(0.12)
R^2	0.005	0.044	0.037	0.066	0.040	0.220	0.008	0.021	0.020	0.067
N	5,003	5,003	4,994	4,994	4,744	4,744	5,006	5,006	5,000	5,000

Note. *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$, + $p < 0.1$. Standard errors in parentheses. Total sample size does not equal analytical sample size of 5,007 due to missing values on the outcome variables. Controls included: maternal education, maternal age, child ethnicity, maternal nativity, maternal disability, family structure, family structure change, other adult household members, urbanicity, district health board, child sex, child born at a low birthweight, and age deviation from interview wave.

Colour coding denotes *effect size* based on levels proposed by Cohen (1990).

.80 of a standard deviation or higher (large effect size)

.50-.79 of a standard deviation (moderate to large effect size)

.20-.49 of a standard deviation (small to moderate effect size)

Table 2d. OLS regression predicting child outcomes at 2 years

Outcome	Internalising behaviours (1-20 scale)		Externalising behaviours (1-20 scale)		Verbal communication (0-100 scale)		Maternal-reported child health (1-5 scale)		Acute illnesses (1-11 scale)	
Controls included	X	✓	X	✓	X	✓	X	✓	X	✓
	Coeff.	Coeff.	Coeff.	Coeff.	Coeff.	Coeff.	Coeff.	Coeff.	Coeff.	Coeff.
Class (ref: most advantaged)										
Average	0.66***	0.33***	0.73***	0.31**	-6.33***	-4.25***	-0.08*	-0.05	-0.10+	-0.12*
	(0.09)	(0.09)	(0.12)	(0.12)	(0.87)	(0.89)	(0.03)	(0.03)	(0.06)	(0.06)
Overcrowding, neighbourhood deprivation	1.89***	0.87***	1.96***	0.73***	-16.61***	-11.19***	-0.07+	-0.04	-0.20*	-0.26**
	(0.13)	(0.14)	(0.17)	(0.18)	(1.24)	(1.38)	(0.04)	(0.05)	(0.08)	(0.09)
Disadvantaged with average neighbourhood deprivation	1.47***	0.82***	1.62***	0.71***	-12.15***	-8.39***	-0.17***	-0.10*	-0.37***	-0.44***
	(0.12)	(0.14)	(0.16)	(0.18)	(1.24)	(1.35)	(0.04)	(0.05)	(0.08)	(0.09)
Most disadvantaged	2.59***	1.48***	2.78***	1.26***	-18.45***	-13.12***	-0.10+	-0.05	-0.23*	-0.40***
	(0.16)	(0.18)	(0.21)	(0.24)	(1.58)	(1.77)	(0.05)	(0.06)	(0.10)	(0.11)
Constant	2.97***	3.55***	6.44***	8.71***	53.31***	66.68***	4.37***	4.08***	1.95***	2.42***
	(0.08)	(0.29)	(0.10)	(0.39)	(0.78)	(2.87)	(0.03)	(0.10)	(0.05)	(0.18)
R^2	0.093	0.146	0.061	0.104	0.081	0.133	0.005	0.016	0.013	0.061
N	5,002	5,002	5,002	5,002	5,007	5,007	5,006	5,006	4,988	4,988

Note. *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$, + $p < 0.1$. Standard errors in parentheses. Total sample size does not equal analytical sample size of 5,007 due to missing values on the outcome variables. Controls included: maternal education, maternal age, child ethnicity, maternal nativity, maternal disability, family structure, family structure change, other adult household members, urbanicity, district health board, child sex, child born at a low birthweight, and age deviation from interview wave.

Colour coding denotes *effect size* based on levels proposed by Cohen (1990).

.80 of a standard deviation or higher (large effect size)

.50-.79 of a standard deviation (moderate to large effect size)

.20-.49 of a standard deviation (small to moderate effect size)

Table 2e. OLS regression predicting child outcomes at 4.5 years

Outcome	Internalising behaviours (0-20 scale)		Externalising behaviours (0-18 scale)		Early literacy skills (0-69 scale)		Maternal-reported child health (1-5 scale)		Acute illnesses (0-3 scale)	
Controls included	X	✓	X	✓	X	✓	X	✓	X	✓
	Coeff.	Coeff.	Coeff.	Coeff.	Coeff.	Coeff.	Coeff.	Coeff.	Coeff.	Coeff.
Class (ref: most advantaged)										
Average	0.88***	0.38***	0.74***	0.25*	-0.16***	-0.08*	-0.12***	-0.04	-0.05+	0.00
	(0.08)	(0.08)	(0.09)	(0.10)	(0.03)	(0.03)	(0.02)	(0.03)	(0.02)	(0.03)
Disadvantaged, overcrowding, neighbourhood deprivation	2.95***	1.74***	2.13***	1.00***	-0.64***	-0.39***	-0.26***	-0.16**	-0.12**	-0.04
	(0.15)	(0.17)	(0.18)	(0.20)	(0.06)	(0.07)	(0.05)	(0.05)	(0.05)	(0.05)
Disadvantaged, low work engagement	1.89***	1.09***	2.11***	1.17***	-0.43***	-0.20**	-0.25***	-0.10+	0.07	0.05
	(0.14)	-0.16	(0.16)	(0.19)	(0.06)	(0.07)	(0.04)	(0.05)	(0.04)	(0.05)
Constant	2.57***	4.00***	5.23***	6.46***	0.08**	0.13	4.40***	3.97***	0.73***	0.86***
	(0.07)	(0.30)	(0.08)	(0.35)	(0.03)	(0.12)	(0.02)	(0.10)	(0.02)	(0.10)
R^2	0.100	0.165	0.068	0.107	0.034	0.105	0.014	0.043	0.004	0.035
N	5,004	5004	5,004	5,004	4,630	4,630	5,005	5,005	5,004	5,004

Note. *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$, + $p < 0.1$. Standard errors in parentheses. Total sample size does not equal analytical sample size of 5,007 due to missing values on the outcome variables. Controls included: maternal education, maternal age, child ethnicity, maternal nativity, maternal disability, family structure, family structure change, other adult household members, urbanicity, district health board, child sex, child born at a low birthweight, and age deviation from interview wave.

Colour coding denotes *effect size* based on levels proposed by Cohen (1990).

.80 of a standard deviation or higher (large effect size)

.50-.79 of a standard deviation (moderate to large effect size)

.20-.49 of a standard deviation (small to moderate effect size)

Table 2f. OLS regression predicting child outcomes at 8 years

Outcome	Internalising behaviours (0-20 scale)		Externalising behaviours (0-20 scale)		Maternal-reported child health (1-5 scale)		Acute illnesses (0-3 scale)	
Controls included	X	✓	X	✓	X	✓	X	✓
	Coeff.	Coeff.	Coeff.	Coeff.	Coeff.	Coeff.	Coeff.	Coeff.
Class (ref: most advantaged)								
Average	0.68***	0.39***	0.54***	0.32**	-0.23***	-0.17***	0.04+	0.05*
	(0.10)	(0.10)	(0.10)	(0.11)	(0.03)	(0.03)	(0.02)	(0.02)
Low home ownership, high mobility	1.36***	0.94***	0.90***	0.60***	-0.28***	-0.22***	0.07*	0.09*
	(0.15)	(0.16)	(0.16)	(0.17)	(0.04)	(0.04)	(0.03)	(0.04)
Most disadvantaged	1.96***	1.28***	1.61***	1.11***	-0.51***	-0.37***	0.02	0.03
	(0.13)	(0.16)	(0.14)	(0.17)	(0.04)	(0.04)	(0.03)	(0.04)
Constant	2.37***	3.97***	4.46***	5.16***	4.42***	4.29***	0.41***	0.33***
	(0.10)	(0.36)	(0.10)	(0.38)	(0.03)	(0.10)	(0.02)	(0.08)
R^2	0.056	0.079	0.079	0.094	0.049	0.072	0.003	0.018
N	4,442	4,442	4,441	4,441	4,612	4,612	4,561	4,561

Note. *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$, + $p < 0.1$. Standard errors in parentheses. Total sample size does not equal analytical sample size of 5,007 due to missing values on the outcome variables. Controls included: maternal education, maternal age, child ethnicity, maternal nativity, maternal disability, family structure, family structure change, other adult household members, urbanicity, district health board, child sex, child born at a low birthweight, and age deviation from interview wave.

Colour coding denotes *effect size* based on levels proposed by Cohen (1990).

.80 of a standard deviation or higher (large effect size)

.50-.79 of a standard deviation (moderate to large effect size)

.20-.49 of a standard deviation (small to moderate effect size)

Overall, and in line with prior research, these findings provide evidence of associations between the clustering of resources, such as income and quality housing, and maternal and child outcomes. Table 2g summarises the findings from Tables 2a through 2f, displaying the differences in the association between experience in the most disadvantaged trajectory and resource groups versus experiences in the most advantaged trajectory and resource groups.k

Across the child outcomes, these resources were more strongly tied to internalising behaviours and externalising behaviours than cognitive development and health outcomes, and that the size of the effects were strongest during the toddler (2 years) and preschool (4.5 years) periods, and when examining cumulative experience in disadvantaged resource groups across the early life course.

Table 2g. Summary of trajectories/latent class profiles predicting child outcomes: most disadvantaged trajectory and most disadvantaged point-in-time profile (vs. most advantaged)

	Trajectories	9 months	2 years	4.5 years	8 years
More internalising behaviours	+	ns	+	+	+
More externalising behaviours	+	+	+	+	+
Lower levels of cognitive development	..	-	-	-	..
Poorer general health	-	-	ns	ns	-
More acute illnesses	..	+	+	ns	ns

Summary based on models including controls. +/- = positive/negative association with outcome (compared to most advantaged group); ns = no statistical association; .. not modelled.
Internalising behaviours measured with positive affectivity at 9-months. Externalising behaviours measured as negative emotionality at 9-months.

Large effect size
Moderate-to-large effect size
Small-to-moderate effect size

Discussion

A large body of evidence is increasingly pointing to early childhood as a critical policy support and intervention point, one where children's lifelong health and wellbeing trajectories are put in motion and can extend into adulthood and, in turn, reinforce the intergenerational transmission of wellbeing outcomes. Moreover, research has also identified policy investments aimed at young children have long-term fiscal benefits (Heckman, 2006). Waiting until a child starts school, then, misses an important opportunity to provide effective support for families. Just as crucially, however, early childhood represents a period of significant economic and social change and instability for families and whānau as they adjust to a new set of expenses and family stressors—as well as newfound joy. Given that young children spend a larger proportion of their time with family and in the family home than at older ages when they enter formal schooling, understanding the resources—or lack thereof—that families have to manage this period, invest in their children's healthy development, and relieve their stress, is essential for whānau-centred, evidence-backed policy aimed at supporting this crucial developmental period.

This study aimed to better understand the dynamics of resouces available to children during early childhood in Aotearoa New Zealand in several ways. First, using the most contemporary longitudinal data representing our diverse child population, we examined how, and the extent to which, resources, such as household income, having enough money for basic necessities, not moving often, and living in neighbourhoods without concentrated poverty, clustered together—or not—to accrue advantages for some children and not for others. We examined these patterns not just at one point in time, but over the early life course. This approach recognises that critical resources for families may come and go with external shocks, such as parent's job loss or relationship breakup, or loss of a tenancy, and that these experiences could be persistent or short lived. Second, and to better explore how these patterns potentially drive and exacerbate existing inequities in children's health and development, we examined which children had access to more advantaged, resource-rich homes, with an understanding that these experiences are likely not shared equally across society. Third, and finally, we examined whether the clustering of resources mattered for children's health and wellbeing, comparing across different types of outcomes that are known to be predictive of long-term wellbeing trajectories, such as socioemotional and cognitive development, and at different time points. We did so to understand how resources may promote healthy development but also to identify critical age-graded periods where differences in resources were wider and, hence, can enhance opportunities in Aotearoa New Zealand to achieve equitable outcomes for child wellbeing through targeted support.

Several important findings emerged.

The infant years and declining resources

First, inequality in the clustering of resources across the early life course was largest at the antenatal and 8-year waves. The arrival of a baby and the preschool years tended to decrease the gap in resources between those children in the most and least advantaged groups. This narrowing of the gap, however, was driven primarily by a decline in the proportion of children in the resource-rich advantaged groups, rather than by specifically improving circumstances for the children with the least resources. Infancy and the preschool years represent a period where parenting is most time-intensive and can be most disruptive in terms of the resources children and families need to survive and thrive, such as having a steady and liveable income. On the other hand, this finding also might suggest that some of the more advantaged families, in terms of their existing resources, may have decided to forgo income and work in exchange for more time with their babies, meaning modest declines in income represent a time boon for babies with existing advantages. This study used data from 2009/2010 through 2018. Since these data were collected, the New Zealand government has implemented two policies (i.e., Best Start and additional paid parental leave), among several other tax credit and income assistance changes as part of the Families Package, directly aimed at alleviating financial pressure on families when a baby arrives. Based on our findings that resources dip during these early years, these policies are necessary and important steps towards supporting this critical developmental period for children. Further research should examine whether these policies have made a difference for families during these crucial years, particularly those families already living in disadvantage who do not have as many other resources, such as housing assets and savings, to draw from temporarily, and for whom—given their lower levels of paid work engagement—will not have benefited as much from the policy changes enacted in the late 2010s.

There were clear advantaged and disadvantaged groups at each time point examined. Some children had more resources across all elements. such as living in families with higher than average incomes, living in a home their family owned, and in communities where others around them also had better-than-average resources. Inequities between the advantaged and disadvantaged groups, however, appeared to be driven particularly by the extremely low resources among children in the most disadvantaged groups. This finding suggests that policies targeted at supporting those families with less resources across several elements may be most effective in ameliorating resource inequities and their consequences. This finding requires those systems across the domains of income support, housing, employment and whānau support to work collectively so that the multiple influences of wellbeing can be recognised and readily accessed early, without discrimination. Furthermore, the disparities in resources between the advantaged group and those children in the “average” groups were statistically large. Although there were not statistically large differences in child outcomes

between the advantaged and average groups, these findings may still point to the ways high-socioeconomic families accrue resources that provide their children opportunities later in life that result in broader population-level inequities. Therefore, following study children through schooling and into adulthood in longitudinal studies, such as GUiNZ, is important for understanding the transmission of advantages. Moreover, a better understanding of how high-socioeconomic families leverage those resources in ways that go on to create inequities, and how our institutional and system settings which are meant to level the playing field for children actually enhance and exacerbate inequitable access, is an important next step.

Climbing out of disadvantage is harder than falling into it

Although children's access to resources changes across the early life course, there was greater stability for those children born into more advantaged or 'average' groups. Over half the sample were in trajectories of experiences that could be classified as being stable in the "always advantaged" or "always average" groups. Close to 10% of children, however, were persistently or mostly in the most disadvantaged group, characterised by low incomes, material hardship, high mobility rental homes, homes without individual space for everyone, and living in communities where those around them also had fewer resources. Among the rest of the sample, characterised by mobility in and out of advantaged, mid-tier, or disadvantaged resource groups, twice as many children experienced downward mobility (towards disadvantage) than upward mobility. In short, it appeared much harder for families to claw out of disadvantage than it was to fall into.

These findings have two important implications for policy. First, knowing that disadvantage can be persistent and can be identified in the antenatal period, resource supports to pregnant mothers prior to the arrival of their babies, and programmes that focus on pre-conception, such as those that foster youth wellbeing and youth health equity, have the potential to shape their children's access to resources across the early life course. Second, while policy safety nets, such as cash assistance through sole parent support, exist to catch families when they fall, these findings suggest that the opportunities for climbing out of disadvantage are scarcer. Our findings highlight that any experience in contexts where resources are scarce matters for child development. Housing, and income and employment support policies, such as emergency housing, Job Seeker, Sole Parent Support, and WINZ emergency grants, are important for those in the most dire circumstances, however policies that maximise protective factors and prevent the fall in the first place are likely an additional efficient policy approach for supporting families in the long term.

Resources are distributed unevenly and this unequal distribution compounds inequities

Who has access to more or less resources is not random. In line with the existing literature, children with mothers with university degrees, who identified with the dominant ethnicity (i.e., NZ European/Pākehā), whose mothers were born in Aotearoa New Zealand or moved here during childhood, and lived in North and Central Auckland (e.g., not South Auckland or Waikato) were more likely to belong to groups that had more resources. From a wellbeing inequity perspective for our population, then, there is complex interplay between structural factors, the resources measured, and the history of Aotearoa New Zealand. As described in the background section of this paper, the life course approach taken in these analyses recognizes the ongoing intergenerational impacts of colonial oppression on health and wellbeing for Māori (e.g., Reid, Taylor-Moore, & Varona, 2014; Pool, 2019; Ware, Breheny, & Forster, 2017; Wirihana & Smith, 2014), and the ongoing experience of inequitable access to the determinants of wellbeing for other communities such as those families experiencing persistent disadvantage in this report. The lack of access to resources for some is compounded, limiting families' opportunities for escaping multiple disadvantages, and reinforcing the transmission of advantage and disadvantage into later life experiences. As an example, having fewer financial and community-level resources while also navigating institutions and societal expectations that are both implicitly and overtly racist, likely compounds the impact of having fewer resources for children and their families. As another, in Aotearoa New Zealand's political economy, having higher formal educational achievement not only increases the likelihood of having a higher paying job, but also a job with more secure and flexible working conditions to balance parenting, a paid parental leave policy that is line with salary levels, and increased odds of wider family support including a partner also with a higher paying and flexible job (given trends in which those with more human capital, such as higher education and better jobs, are more likely to partner with those with those same resources).

The resources we examined in this study were selected due to their ability to be more policy-malleable. At the more micro-level, these findings point to additional groups for whom policy supports could be specifically targeted: younger mothers, migrant mothers, mothers with disabilities, and families in poorer regions. It is clear from the findings, however, that there are broader structural factors—such as the legacy of colonialism that may appear less or not at all policy malleable, that, in part, account for persistent ethnic differences in resources and outcomes. Policies at the structural level must occur to redress the inequities that have resulted from these ecological contexts. Policy solutions that align with Te Tiriti o Waitangi, and that are Māori designed and led, and well-resourced, are essential for shifting societal views and ensuring policies aimed at families and communities are effective.

Despite many of the findings surrounding who and who does not have access to resources unsurprising, the significance—or lack thereof—of some factors was less intuitive. For example, in many cases, having other adult household members (i.e., parent(s) and other adult members) was protective of being in less advantaged groups, despite creating household or family structures that go against the perceived nuclear family norm. Instead of multi-generational households being a sign of disadvantage, these patterns could signal families who have resources to accommodate these types of living arrangements. Revisiting policies that structure participation or support around factors that may be resource or resilience promoting are important for avoiding unintended consequences. For example, benefit receipt that might be penalised if there are other adults in the home, which might disincentivise parents tapping into the resource buffer.

These resources matter for all children's development but more support aimed at the most disadvantaged children will likely have the most impact

Unsurprisingly, and again in line with the literature, access to resources—both at a point-in-time and cumulatively across the life course—was associated with children's socioemotional and cognitive development, and their health, with disparities in developmental outcomes widest between the most and least advantaged groups. These associations were stronger when examining the trajectories of experiences versus point-in-time correlations, with moderate-to-large effect sizes across socioemotional behaviours and an indicator of their physical health. This finding points to the cumulative nature of access and exposure to resources across the early life course. Moreover, at least some time spent not in the most disadvantaged groups appeared to provide some buffer to the potentially negative exposure of disadvantage across multiple domains.

Examining the point-in-time associations, resources were more strongly tied to internalising behaviours (e.g., children's emotional state, often tied to symptoms of depression and anxiety) and externalising behaviours (e.g., anger, physical aggression, defiance) than cognitive development or health. Moreover, the effect sizes were largest at the 2-year and 4.5-year waves. Part of this effect may reflect differences in early childhood education attendance in the preschool years, that equivalise with formal schooling by age 5 (Ministry of Education, 2021).

Overall, these results provide evidence for the importance of these resources in influencing children's early developmental outcomes. Moreover, they point to critical time periods—such as the toddler and preschool years—where children may be more susceptible to the impact of their environmental surroundings, being more engaged with their context than when they were infants, for example, and less buffered by environments outside the home such as when they age into formal schooling. In summary, the findings provide support for interventions prior to the formal

schooling years, whereby preschool support can better help children to develop socioemotional and cognitive skills that prepare them for formal schooling.

From a policy perspective, these findings argue that policies aimed at the early life course should be enhanced and extended throughout early childhood, with targeted support to those children in families with the least resources. These services should be comprehensive across all the elements of disadvantage, non-discriminatory, and appropriate for the communities most impacted. Currently services for this age group tend to be situated within a system silo (such as health, early childhood education, or housing). A comprehensive package that can recognise and support need early, through culturally safe means, is crucial in the context of disadvantage across a range of different developmentally-important resources.

Future directions and limitations

The aim of this study was to shed a light on how resources that we know promote children's development cluster and are distributed across the early life course and the population. Indeed, describing these trends is an important first step to identifying both the nature and scope of this policy 'problem.' These patterns we identified, however, are correlational and not necessarily causal, with other unmeasured or unobservable factors potentially explaining some of these associations. Despite this caveat, however, prior research using randomised control trials and statistical methods aimed at isolating causal connections is in line with many of the findings presented here, such as that increasing income and stable affordable housing promotes child development. Future research can leverage the longitudinal features of GUiNZ and, with appropriate statistical methods, examine the extent the associations uncovered in this study are likely causal, such as whether changes in income are associated with changes in externalising behaviours, or whether parents moving into employment enhances their children's health.

Moreover, while we examined whether having more or less of these resources mattered differentially for child developmental outcomes, it could also be that these resources matter more for children that are more disadvantaged in other ways that are not as supported by our societal context. For example, while we identified that having a mother with a university degree was associated with a greater likelihood of also being in an environment that was more resource rich, it could be that even without having as many of these resources, children of these mothers still experience similar developmental trajectories because having a university degree means mothers have access to other transferable developmental promoting skills (Prickett & Augustine, 2016), such as elements of human and social capital from tertiary study, including the ability to negotiate, navigate, and advocate for services and supports required. Future research should examine whether

resources have an outsized impact on child outcomes for children who do not have other potentially protective factors, such as maternal education.

While this study used latent class analysis to identify patterns of how resources clustered together to understand how children's access to resources change or remained stable across the early life course, an alternative, policy important way of understanding these trends would be to also examine what each of these resource domains means, net of each other, for children's development. That is, are the associations we uncovered between, for example, being in the group that was disadvantaged across all resources and their poorer socioemotional development, due to multiple and/or persistent disadvantage, or was there an element within that 'packaged' experience was driving the findings, such as the combination of very low incomes and high material hardship. The findings from this study provided preliminary evidence of these potential disparate effects. Future research should 'unpack' this box to further refine and identify critical points for policy support.

Finally, arguments for early investment for longer-term fiscal return rely on research that tracks children well into the future, requiring high-quality longitudinal data. Aotearoa New Zealand has a legacy of producing these long-term studies (e.g., The Dunedin Study, the Christchurch Study), however, as the population diversifies, contexts changes, and ecological shocks happen (e.g., pandemics, recessions, natural disasters, climate change), new data are needed if they are to be fit for identifying policy problems and assessing impact. Indeed, the COVID-19 pandemic is a prime example of how generations move through periods under different sets of opportunities and constraints. New Zealand lacks a comprehensive, mandated longitudinal panel data collection strategy, with the last Statistics New Zealand longitudinal survey (the Survey of Family, Income and Employment) ending in 2010. New Zealand needs a longitudinal data collection strategy that invests in the existing flagship longitudinal studies, while also preparing for the next birth cohort study on a consistent basis. Doing so is imperative for evidence-backed policy responses aimed at supporting the wellbeing of future generations and making sure there is a fair chance for all.

References

Aminzadeh, K. Denny, S., Utter, J., Milfont, T. L. Ameratunga, S., Teevale, T., & Clark, T. (2013). Neighbourhood social capital and adolescent self-reported wellbeing in New Zealand: A multilevel analysis. *Social Science & Medicine, 84,* 13-21.

Borell, B. A. E., Gregory, A. S., McCreanor, T. N., Jensen, V. G. L., & Barnes, H. E. M. (2009). "It's Hard at the Top but It's a Whole Lot Easier than Being at the Bottom:" The Role of Privilege in Understanding Disparities in Aotearoa/New Zealand. *Race/Ethnicity: Multidisciplinary Global Contexts*, *3*(1), 29–50.

Boston, J., & Chapple, S. (2014). *Child poverty in New Zealand.* Wellington, New Zealand: Bridget Williams Books Limited.

Bowie, C., Pearson, A. L., Campbell, M., & Barnett, R. (2014). Househod crowding associated with childhood otitis media hospitalisations in New Zealand. *Australian and New Zealand Journal of Public Health, 38*(3), 211-215.

Bronfenbrenner, U. (1992). Ecological systems theory. In R. Vasta (Ed.), *Six theories of child development: Revised formulations and current issues* (pp. 187–249). London, UK: Jessica Kingsley Publishers.

Cable, N., & Sacker, A. (2020). Validating overcrowding measures using the UK Household Longitudinal Study. *Social Science & Medicine – Population Health, 8,* 100714.

Cleary, P. D. (1997). Subjective and objective measures of health. *Journal of Health Services Research and Policy, 2*(1), 3-4.

Cohen, J. (1990). Things I have learned (so far). *American Psychologist, 45*(12), 1304-1312.

Collins, L. M., & Lanza, S. T. (2009). *Latent class and latent trajectory analysis: With application in the social, behavioral, and health sciences.* New York, NY: John Wiley & Sons.

Durie, M. (1998). *Whaiora: Māori health development.* Oxford, UK: Oxford University Press.

Evans, G. W., & Schamber, M. A. (2009). Childhood poverty, chronic stress, and adult working memory. *Proceedings of the National Academy of Sciences, 106*(16), 6545-6549.

Exeter, D., Schackleton, N., Browne, M., Zhao, J., Lee, A., & Crengle, S. (2019). Different domains of deprivation and their relationship with obesity in New Zealand 4-year-old children. *Pediatric Obesity, 14*(8), e12520.

Gibb, S. J., Fergusson, D. M., & Horwood, L. J. (2012). Childhood family income and life outcomes in adulthood: Findings from a 30-year longitudinal study in New Zealand. *Social Science & Medicine, 74*(12), 1979-1986.

Glover, V. (2014). Maternal depression, anxiety and stress during pregnancy and child outcome; what needs to be done. *Best Practice & Research Clinical Obstetrics & Gynaecology, 28*(1), 25-35.

Graham, H., & Power, C. (2004). Childhood disadvantage and health inequalities: a framework for policy based on lifecourse research. *Child: Care, Health and Development, 30*(6), 671-678.

Fahmy, E., Williamson, E., & Pantazis, C. (2016). *Evidence and policy review: Domestic violence and poverty.* York, UK: Joseph Rowntree Foundation.

Haas, S. (2008). Trajectories of functional health: The 'long arm' of childhood health and socioeconomic factors. *Social Science & Medicine, 66*(4), 849-861.

Hayward, M. D., & Gorman, B. K. (2004). The long arm of childhood: The influence of early-life social conditions on men's mortality. *Demography, 41,* 87-107.

Heckman, J. (2006). Skill formation and the economics of investing in disadvantaged children. *Science, 312,* 1900-1902.

Hertzman, C., & Power, C. (2003). Health and human development: Understandings from life course research. *Developmental Neuropsychology, 24*(2-3), 719-744.

Jones, D. E., Greenberg, M., & Crowley, M. (2015). Early socio-emotional functioning and public health: The relationship between kindergarten social competence and future wellness. *American Journal of Public Health, 105*(11), 2283-2290.

Lewis, J. B. (2011). poLCA: An R Package for Polytomous Variable Latent Class Analysis. *Journal of Statistical Software, 42*(10), 1-29.

Ministry of Education. (2021). Education Indicators: Early Learning Participation. Wellington, New Zealand: Ministry of Education. Accessed May 15th, 2022: https://www.educationcounts.govt.nz/__data/assets/pdf_file/0003/208713/Early-Learning-Participation-Oct-2021-Indicator-Report.pdf

Moffit, T. E., Arseneault, L., Belsky, D., & Caspi, A. (2011). A gradient of childhood self-control predicts health, wealth, and public safety. *Proceedings of the National Academies of Science, 108*(7), 2693-2698.

Morton, S. M. B., Ramke, J., Kinloch, J., Grant, C. C., Atatoa Carr, P., Leeson, H., Lee, A. C. L., & Robinson, E. (2015). Growing Up in New Zealand cohort alignment with all New Zealand births. *Australian and New Zealand Journal of Public Health, 39*(1), 82-87.

Muller, D., Santos-Fernandez, E., McCarthy, J., Carr, H., & Signal, T. L. (2022). Who meets early childhood sleep guidelines in Aotearoa New Zealand? A cross-sectional and longitudinal analysis. *SLEEP Advances, 3*(1), zpac008.

Nathan, K., Robertson, O., Atatoa Carr, P., Howden-Chapman, P., & Pierse, N. (2019). Residential mobility and socioemotional and behavioural difficulties in a preschool population cohort of New Zealand children. *Journal of Epidemiology and Community Health, 73,* 947-953.

Oliver, J., Foster, T., Kvalsvig, A., Williamson, D. A., Baker, M. G., & Pierse, N. (2018). Risk of rehospitalisation and death for vulnerable New Zealand children. *Archives of Disease in Childhood, 103,* 327-334.

Pihama, L., Reynolds, P., Smith, C., Reid, J., Smith, L.T., & Te Nana, R. (2014). Positioning historical trauma theory within Aotearoa New Zealand. *AlterNative, 10*(3), 248-262

Pool, I. (2019). Death rates and life expectancy – Effects of colonisation on Māori. *Te Ara – the Encyclopedia of New Zealand.* Accessed May 3rd, 2022: http://www.TeAra.govt.nz/en/death-rates-and-life-expectancy/page-4

Prickett, K. C., & Augustine, J. M. (2016). Maternal education and investments in children's health. *Journal of Marriage and Family, 78*(1)*,* 7-25.

Pulotu-Endemann (2001). Fonofale: A model of health. Accessed March 5th, 2022:

https://www.nelsontasmankindergartens.com/uploads/1/4/4/2/14426744/fonofalemodelexplanation.pdf

Reid, J., Taylor-Moore, K., & Varona, G. (2014). Towards a social-structural model for understanding current disparities in Māori health and wellbeing. *Journal of Loss and Trauma, 19*(6), 514-536.

Ritschard, G., & Studer, M. (2018). *Sequence analysis and related approaches.* Springer Nature.

Russell, J., Grant, C. C., & Morton, S. (2020). Multimorbidity in early childhood and socioeconomic disadvantage: Findings from a large New Zealand child cohort. *Academic Pediatrics, 20*(5), 619-627.

Salmond, C. E., & Crampton, P. (2012). Development of the New Zealand's deprivation index (NZDep) and its uptake as a national policy tool. *Canadian Journal of Public Health, 9*(103 S2), S7-S11.

Talamaivao, N., Harris, R., Cormack, D., Paine, S., & King, P. (2020). Racism and health in Aotearoa New Zealand: a systematic review of quantitative studies. *The New Zealand Medical Journal, 133*(1521), 55-68.

Theodore, R., Ratima, M., Edwards, W., Sporle, A., Te Morenga, L., Kiro, C., & Ruakere, H. (2019). How a lifecourse approach can promote long-term health and wellbeing outcomes for Māori. *Journal of Indigenous Wellbeing, 4*(1), 15-25.

Walsh, M. C., Joyce, S., Maloney, T., & Vaithianathan, R. (2020). Exploring the protective factors of children and families identified at highest risk of adverse childhood experiences by a predictive risk model: An analysis of the Growing Up in New Zealand cohort. *Children and Youth Services Review, 108*, 104556.

Ware, F., Breheny, M., & Forster, M. (2017). The politics of government 'support' in Aotearoa/New Zealand: Reinforcing and reproducing the poor citizenship of young Māori parents. *Critical Social Policy, 37*(4), 499-519.

Wirihana, R., & Smith, C. (2014). Historical trauma, healing and well-being in Māori communities. *MAI Journal, 3*(3), 197-210.

Appendix

Table A1. Antenatal characteristics of analytical sample versus missing sample

	Analytical sample		Missing sample	
	n	% / Mean	n	% / Mean
Domains of advantage/disadvantage				
Household income (1-7 scale)	4,024	4.99	1,207	3.88*
		(1.51)		(1.67)
Household income				
$20,000 or less	99	2.46	121	10.02*
$20,001 - $30,000	158	3.93	133	11.02*
$30,001 - $50,000	468	11.63	263	21.79*
$50,001 - $70,000	621	15.43	240	19.88*
$70,001 - $100,000	986	24.50	227	18.81*
$100,001 - $150,000	1,014	25.20	148	12.26*
Own home they live in	2,304	50.65	432	26.88*
Overcrowded	687	15.05	640	39.51*
Parent engaged in work	3,886	84.88	976	59.69*
Neighbourhood deprivation (1-10 scale)	5,005	5.58	1,845	7.27*
		(2.86)		(2.74)
Maternal educational attainment				
No secondary school qualification	232	4.64	257	14.00*
Secondary school qualification/NCEA	1,033	20.67	594	32.35*
Diploma/Trade certificate	1,489	29.80	606	33.01*
University degree or higher	2,243	44.89	379	20.64*
Maternal age at antenatal (years)	5,007	30.83	1,845	28.02*
		(5.54)		(6.19)
Maternal nativity				
Born in NZ	3,433	68.56	976	52.99*
Moved to NZ between 0-18 years old	482	9.63	261	14.17*
Moved to NZ after 18 years old	1,092	21.81	605	32.84*
Maternal disability (vs. no disability)	394	8.60	134	10.33
Child ethnicity (prioritised)				
NZ European	2,519	50.31	262	17.99*
Māori	1,103	22.03	440	30.22*
Pacific	528	10.55	423	29.05*
Asian	686	13.70	274	18.82*
Other ethnicity	171	3.42	57	3.91
Two-parent household (vs. single parent)	4,546	92.91	1,463	83.31*
Other adult household members (vs. no other adults)	1,262	25.22	858	46.58*
Number of siblings at antenatal	4,572	1.07	1,633	1.38*
		(1.24)		(1.57)
Rural area (vs. urban area)	411	8.21	62	3.36*
District Health Board region				
Auckland/Waitemata	1,865	37.25	576	31.22*
Counties Manukau	1,621	32.37	894	48.46*
Waikato	1,521	30.38	375	20.33*
Child female (vs. male)	2,446	48.85	873	47.45
Child born at low birthweight	236	4.72	96	5.24
Outcomes				
Relationship conflict (1.0-7.0 scale)	4,370	1.50	1,472	1.72*
		(0.59)		(0.81)
Expected parenting support (1.0-6.0 scale)	4,545	4.03	1,616	3.82*
		(0.87)		(1.00)
Self-reported maternal health (1-5 scale)	4,997	3.73	1,841	3.38*
		(0.93)		(1.00)
Meets clinical cut-off for depression	472	10.37	296	18.22*
N	5,007		1,846	

* T-tests and Chi^2 tests indicating statistically different from analytical sample at at least $p < .05$.

Table A2. Antenatal characteristics of analytical sample versus New Zealand Census 2013 figures

	Analytical sample		Census 2013: Auckland, Counties Manukau, Waikato		Census 2013: New Zealand		
	n	% / Mean	n	% / Mean	n	% /	Note on Census data
Child ethnicity							
NZ European/Other ethnicity	2,690	54.00	6,990	35.23	29,030	48.17	
Māori	1,103	22.03	5,050	25.45	16,590	27.53	
Pacific	528	10.55	3,680	18.55	6,070	10.07	
Asian	686	13.70	4,110	20.72	8,570	14.22	Census: Children aged less than 1 years (2013)
Child sex							
Female	2,446	48.85	9,690	48.84	29,370	48.74	Census: Children aged less than 1 years
Male	2,561	51.15	10,150	51.16	30,890	51.26	(2013)
District Health Board region							
Auckland/Waitemata	1,865	37.25	6,230	31.40			Census: Children aged less than 1 years
Counties Manukau	1,621	32.37	8,240	41.53			(2013)
Waikato	1,521	30.38	5,370	27.07			
Maternal/Women educational attainment							
No secondary school qualification	232	4.64	15,900	9.56	51,192	10.17	Census: Educational attainment among
Secondary school qualification/NCEA	1,033	20.67	65,967	39.64	206,796	41.07	all women aged between 20-39 years
Diploma/Trade certificate	1,489	29.80	24,645	14.81	77,394	15.37	(2013)
University degree or higher	2,243	44.89	59,910	36.00	168,168	33.40	
Median maternal age at antenatal (years)	5,007	31.00			..	29.90	StatsNZ: median age of mother at time of birth, among births registered to NZ resident mothers (2010)
Maternal/Women nativity							
Born in NZ	3,433	68.56	98,166	56.99	351,450	67.79	
Not born in NZ	1,574	31.44	74,121	43.02	166,962	32.21	Census: Nativity among all women aged between 20-39 years (2013)
Child n	5,007		19,840		60,270		

Comparisons between GUiNZ and Census statistics should be done with caution. In particular, the publicly-available Census data are not able to precisely match the GUiNZ statistics for maternal education attainment and nativity because education and nativity information was only available on women, generally, not mothers or mothers of infants, specifically.

Table A3. Domains of advantage/disadvantage measurement

Domains	Measurements	Antenatal	9 months	2 years	4.5 years	8 years
Financial resources	Household income	Continuous scale ranging from 1 = less than $20,000 per annum through 7 = $150,000 or more per annum				
	Material hardship	Not measured	Sum of six items with binary outcomes (*1* = yes; *0* = no) about hardship in the past 12 months. Example "In the last we months, have you personally put up with feeling cold to save money on heat."	Four-point scale response where *1* = very satisfied/satisfied through *4* = very dissatisfied to the question "Generally, how satisfied are you with your current material standard of living?"	Sum of six items with binary outcomes (*1* = yes; *0* = no) about hardship in the past 12 months. Example "In the last we months, have you personally put up with feeling cold to save money on heat."	Count of five items where response is either "Sometimes" or "Often", in response to questions, such as: "We eat less because of a lack of money."
Housing	Home ownership	Whether someone (including respondent) living in the home is the owner or shares ownership of the home, where *1* = yes and *0* = no.				
	Residential mobility	Not measured	Scale ranging from *0* = no moves through *4* = four or more moves capturing number of moves since last interview wave.			
	Overcrowded	A combination of number of people (minus partners) in the home and number of bedrooms, where *1* = more people than bedrooms and *0* = number of bedrooms is equal or less than number of people in the home.				
Parental work	Parent(s) employed for pay	Mother and/or coresidential partner is employed, full or part time, where *1* = yes and *0* = no.	Mother and/or coresidential partner is employed, full or part time, where *1* = yes and *0* = no.	Mother and/or coresidential partner is employed, full or part time, where *1* = yes and *0* = no.	Mother is employed, full or part time, and/or another adult in the house receives income from work, where *1* = yes and *0* = no.	Mother and/or coresidential partner is employed, full or part time, where *1* = yes and *0* = no.
Neighbourhood context	Neighbourhood deprivation	NZDEP measure ranging from *1* = lowest deprivation decile through *10* = highest deprivation decile.				

Table A4. Outcomes measurements across waves

Wellbeing domain	Construct	Tool or scale	Question example	Scale	Coding	Final values	Cronbach's Alpha
Antenatal							
Parenting support	Parenting expected support	Parenting and Social Support Scale - Family and friends	How helpful do you expect your partner to be when your baby is born?	Not available (1) through Extremely helpful (6)	Averaged across six items	1.0-6.0	0.72
Family wellbeing	Relationship conflict	Warmth and Hostility Scale (from Iowa Family Interaction Rating Scale)	How often do you push and shove each other when argument?	All the time (1) through Never (7)	Reverse coded and averaged across six items, with higher values indicating more conflict	1.0-7.0	0.80
Maternal health	Maternal depression	Edinburgh postnatal Depression Scale	In the last 7 days I have been able to laugh and see the funny side of things	As much as I always could (0) through Not at all (3)	Responses summed, with clinical depression cut-off at 13 or higher	1/0	0.85
	Maternal self-reported health	Global health scale	Thinking about before you became pregnant, in general would you say your health was...	Poor (1) through excellent (5)	Raw scale	1-5	n/a
9 months							
Cognitive development	Communication and early language development	MacArthur CDI: Words and Gestures	Does baby extend his/her arm to show you something he/she is holding?	Not yet (0) through Often (2)	Responses averaged across 12 items	0.0-2.0	0.75
Socioemotional development	Negative emotionality	Infant Behaviour Questionnaire-Revised (IBQ-R)	When tired, how often did your baby show distress?	Never (1) through Always (7)	Responses averaged across 13 items.	1.0-7.0	0.83
	Positive affectivity/ surgency	Infant Behaviour Questionnaire-Revised (IBQ-R)	When tossed around playfully how often did the baby laugh?	Never (1) through Always (7)	Responses averaged across 12 items	1.0-7.0	0.69
Health	Maternal-reported child health	Global health scale	In general how would you say baby's current health is?	Poor (1) through excellent (5)	Raw scale	1-5	n/a
	Acute illnesses	Count of acute illnesses, created by study researchers	How many times has your baby had gastroenteritis since they were born?	Never (0) through 10+ times (4)	Responses summed for counts of experiences of gastroenteritis, chest infections or other	0-10	n/a

					respiratory illnesses, and ear infections.		
2 years							
Cognitive development	Verbal communication	MacArthur CDI short form	Child can say meow in (specific) language	No (0) or Yes (1)	Responses summed across 100 items. Scored as 'yes' if parent responds children can say word in any language.	0-100	0.98
Socioemotional development	Internalising behaviours	Strengths and Difficulties Questionnaire (SDQ)	(Over the past six months, child) rather solitary, tends to play alone	Not true (0) through Certainly true (2)	Responses summed across 10 items	0-20	0.62
	Externalising behaviours	Strengths and Difficulties Questionnaire (SDQ)	(Over the past six months, child is) restless, overactive, cannot stay still for long	Not true (0) through Certainly true (2)	Responses summed across 10 items	0-20	0.73
Health	Maternal-reported child health	Global health scale	In general how would you say child's current health is?	Poor (1) through excellent (5)	Raw scale	1-5	n/a
	Acute illnesses	Count of acute illnesses, created by study researchers	How many times has your child had gastroenteritis since the last interview?	Never (0) through 10+ times (4)	Responses summed for counts of experiences of gastroenteritis, chest infections or other respiratory illnesses, and ear infections.	0-11	n/a
4.5 years							
Cognitive development	Early literacy skills	Dynamic Indicators of Basic Early Literacy Skills (DIBELS) letter naming fluency test	"Point to each letter and tell me the name of that letter"	Scale from 0-69	Scale standardised across the sample to represent deviation from sample mean	-0.8 - 5.76	n/a
Socioemotional development	Internalising behaviours	Strengths and Difficulties Questionnaire (SDQ)	(Child is) rather solitary, tends to play alone	Normal (0) through 2 (abnormal)	Responses summed across 10 items	0-20	0.70
	Externalising behaviours	Strengths and Difficulties Questionnaire (SDQ)	(child) is restless, overactive, cannot stay still for long	Normal (0) through 2 (abnormal)	Responses summed across 9 items	0-18	0.73
Health	Maternal-reported child health	Global health scale	In general how would you say child's current health is?	Poor (1) through excellent (5)	Raw scale	1-5	n/a

	Acute illnesses	Count of type of acute illnesses, created by study researchers	Has (child) had an ear infection in the last 12 months?	No (0) or Yes (1)	Responses summed for counts of experiences of gastroenteritis, chest infections or other respiratory illnesses, and ear infections.	0-3	n/a
8 years							
Cognitive development	Not available						
Socioemotional development	Internalising behaviours	Strengths and Difficulties Questionnaire (SDQ)	(Over the past six months, child) rather solitary, tends to play alone	Not true (0) through Certainly true (2)	Responses summed across 10 items	0-20	0.74
	Externalising behaviours	Strengths and Difficulties Questionnaire (SDQ)	(Over the past six months, child is) restless, overactive, cannot stay still for long	Not true (0) through Certainly true (2)	Responses summed across 10 items	0-20	0.80
Health	Maternal-reported child health	Global health scale	In general how would you say child's current health is?	Poor (1) through excellent (5)	Raw scale	1-5	n/a
	Acute illnesses	Count of type of acute illnesses, created by study researchers	Has (child) had an ear infection in the last 12 months?	No (0) or Yes (1)	Responses summed for counts of experiences of gastroenteritis, chest infections or other respiratory illnesses, and ear infections.	0-3	n/a

More information on tools used can be found in the *Growing Up in New Zealand* External Data Release 2020: Data User Guide at: https://www.growingup.co.nz/sites/growingup.co.nz/files/documents/DCW8%20Data%20User%20Guide%20Final%20September%202020.pdf

Table A5. Latent class analysis model fit statistics

	Class solution	AIC	BIC	LL
Antenatal	2	49437	49679	-24682
	3	49294	49659	-24591
	4	49238	49727	-24544
	5	49210	49823	-24511
	6	49218	49954	-24496
	7	49234	50094	-24485
	8	49238	50222	-24468
9 months	2	72512	72883	-36199
	3	72095	72656	-35962
	4	71915	72664	-35842
	5	71807	72746	-35760
	6	71781	72909	-35718
	7	71774	73091	-35685
	8	71797	73300	-35666
2 years	2	67619	67964	-33756
	3	67324	67845	-33582
	4	67228	67925	-33507
	5	67161	68034	-33446
	6	67129	68178	-33403
	7	67139	68364	-33381
	8	67132	68534	-33351
4.5 years	2	72321	72692	-36103
	3	71695	72256	-35762
	4	71588	72338	-35679
	5	71522	72461	-35617
	6	71448	72576	-35551
	7	71439	72756	-35517
	8	71431	72937	-35485
8 years	2	63147	63505	-31518
	3	62626	63167	-31230
	4	62504	63228	-31141
	5	62440	63346	-31081
	6	62408	63497	-31037
	7	62404	63675	-31007
	8	62424	63878	-30989

Note. AIC = Akaike Information Criterion; BIC = Bayesian Information Criterion; LL = Log Likelihood. Grey shading indicates final class number selection.

Table A6. Social sequence analysis model fit statistics

Class solution	PBC	HG	HGSD	HC	ASW	ASWW	CHSQ
2	0.560	0.758	0.702	0.161	0.458	0.460	4349
3	0.668	0.891	0.835	0.073	0.446	0.446	5306
4	0.623	0.921	0.867	0.070	0.427	0.428	5525
5	0.626	0.948	0.898	0.067	0.410	0.411	4993
6	0.630	0.961	0.913	0.059	0.427	0.428	4720
7	0.611	0.968	0.921	0.043	0.412	0.412	4466
8	0.550	0.954	0.900	0.041	0.387	0.388	4172
9	0.547	0.959	0.907	0.035	0.393	0.394	3991
10	0.497	0.948	0.894	0.036	0.401	0.402	3893

Note. PBC = Point Biserial Correlation; HG = Hubert's Gamma; HGSD = Hubert's Somers' D; ASW = Average Silhouette Width; ASWW = Average Silhouette Width (weighted); CHSQ = Calinksi-Harabasz index; HC = Hubert's C. Grey shading indicates final class number selection.

Table A7. Experience in advantaged, average, and disadvantaged groups by sequence type

	Antenatal	9 months	2 years	4.5 years	8 years	Ever in advantaged group	Every in average group	Ever in disadvantaged group	Number of changes in group status
	%	%	%	%	%	%	%	%	Mean
Always advantaged (n = 1249; 25.0%)						100.0	40.2	4.0	0.78
Advantaged	96.5	88.4	83.4	93.8	90.4				(0.97)
Average	2.7	11.6	16.0	5.9	7.4				
Disadvantaged	0.8	0.0	0.6	0.3	2.2				
Average to advantaged by school entry (n = 1156; 23.1%)						100.0	100.0	18.9	2.17
Advantaged	62.5	21.6	5.6	61.8	66.6				(0.77)
Average	36.9	77.9	85.7	36.2	25.2				
Disadvantaged	0.6	0.4	8.7	2.1	8.2				
Always average (n = 1490; 29.8%)						35.0	100.0	34.6	0.96
Advantaged	15.7	2.9	2.4	0.0	15.5				(0.88)
Average	75.0	91.7	90.8	97.4	68.1				
Disadvantaged	9.3	5.4	6.8	2.6	16.4				
Average to disadvantaged (n = 401; 8.0%)						33.4	96.8	100.0	2.28
Advantaged	23.4	8.5	5.7	5.0	6.5				(0.94)
Average	65.3	73.3	33.2	27.4	17.2				
Disadvantaged	11.2	18.2	61.1	67.6	76.3				
Disadvantaged at antenatal to average (n = 223; 4.5%)						48.0	100.0	100.0	2.25
Advantaged	1.8	0.9	0.0	10.8	41.7				(0.93)
Average	0.0	53.4	63.2	80.7	58.3				
Disadvantaged	98.2	45.7	36.8	8.5	0.0				
Mostly disadvantaged (n = 488; 9.8%)						9.4	67.2	100.0	1.54
Advantaged	0.0	0.0	0.0	0.4	9.0				(1.21)
Average	7.4	20.3	28.3	23.2	3.9				
Disadvantaged	92.6	79.7	71.7	76.4	87.1				

Table A8. Domain descriptive statistics by latent class and child age

Antenatal		Most advantaged	High neighbourhood deprivation	Average with low income, homeownership	Most disadvantaged	
				z-score means		
Financial resources	Household income (1-7 scale)	0.77	-0.14	-0.56	-1.46	
	Material hardship (0-6 scale)	n/a	n/a	n/a	n/a	
Housing	Home ownership (0/1)	0.49	0.28	-0.65	-0.70	
	Residential mobility (0-4 scale)	n/a	n/a	n/a	n/a	
	Overcrowding (0/1)	-0.32	0.30	-0.27	0.90	
Parental work	Parent employed (0/1)	0.35	0.41	0.06	-1.38	
Neighbourhood context	Neighbourhood deprivation (1-10 scale)	-0.60	0.99	-0.26	0.96	
	n	2,260	812	1,064	871	
	% of sample	45.14	16.22	21.25	17.40	

9 months		Most advantaged	Average	Low income, home ownership, with mobility	Moderately disadvantaged, with high overcrowding	Most disadvantaged, average overcrowding
				z-score means		
Financial resources	Household income (1-7 scale)	1.04	-0.01	-0.76	-0.86	-1.85
	Material hardship (0-6 scale)	-0.62	-0.07	0.21	0.93	1.70
Housing	Home ownership (0/1)	0.48	0.40	-0.84	-0.69	-0.94
	Residential mobility (0-4 scale)	-0.18	-0.34	0.69	-0.14	0.82
	Overcrowding (0/1)	-0.37	-0.03	-0.25	2.31	-0.21
Parental work	Parent employed (0/1)	0.27	0.30	-0.25	-0.81	-1.49
Neighbourhood context	Neighbourhood deprivation (1-10 scale)	-0.76	0.16	0.08	1.23	0.85
	n	1,433	1,860	1,065	389	260
	% of sample	28.62	37.15	21.27	7.77	5.19

2 years		Most advantaged	Average	Overcrowding, neighbourhood deprivation	Disadvantaged with average neighbourhood deprivation	Most disadvantaged
				z-score means		
Financial resources	Household income (1-7 scale)	1.12	0.09	-0.59	-1.28	-1.69
	Material hardship (0-6 scale)	-0.45	-0.01	0.08	0.58	0.56
	Home ownership (0/1)	0.64	0.11	-0.53	-0.67	-1.01
Housing	Residential mobility (0-4 scale)	-0.20	-0.01	0.00	0.28	0.30
	Overcrowding (0/1)	-0.34	-0.26	1.71	-0.39	0.86
Parental work	Parent employed (0/1)	0.33	0.27	-0.11	-0.70	-1.82
Neighbourhood context	Neighbourhood deprivation (1-10 scale)	-0.86	0.00	1.06	0.07	1.16
	n	1,165	2,376	580	584	302
	% of sample	23.27	47.45	11.58	11.66	6.03

4.5 years		Most advantaged	Average	Disadvantaged, overcrowding, neighbourhood deprivation	Disadvantaged, low work engagement
			z-score means		
Financial resources	Household income (1-7 scale)	0.81	-0.30	-1.38	-1.65
	Material hardship (0-6 scale)	-0.49	-0.05	1.80	1.22
	Home ownership (0/1)	0.59	-0.19	-0.96	-0.97
Housing	Residential mobility (0-4 scale)	-0.22	0.00	0.32	0.83
	Overcrowding (0/1)	-0.48	0.29	1.41	-0.55
Parental work	Parent employed (0/1)	0.21	0.21	-0.72	-1.76
Neighbourhood context	Neighbourhood deprivation (1-10 scale)	-0.70	0.31	1.37	0.60
	n	1,931	2,361	325	390
	% of sample	38.57	47.15	6.49	7.79

		Most advantaged	Average	Low home ownership, high mobility	Most disadvantaged

8 years		*z-score means*			
Financial resources	Household income (1-7 scale)	0.77	-0.15	-0.90	-1.64
	Material hardship (0-6 scale)	-0.57	-0.04	0.42	1.53
Housing	Home ownership (0/1)	0.26	0.30	-1.07	-0.84
	Residential mobility (0-4 scale)	-0.24	-0.15	0.97	0.43
	Overcrowding (0/1)	-0.39	0.10	-0.27	1.15
Parental work	Parent employed (0/1)	0.20	0.21	-0.05	-1.13
Neighbourhood context	Neighbourhood deprivation (1-10 scale)	-0.72	0.45	-0.21	1.16
	n	2,293	1,615	447	652
	% of sample	45.80	32.25	8.93	13.02

Note. n/a = not applicable because not measured at this wave. Standardized within-wave calculated z-scores are presented, indicating how many standard deviations above or below the sample mean the average within latent class is.
Antenatal: Classes 2 + 3 combined as "average" group for the social sequence analysis.
9 months: Classes 2 + 3 combined as "average" groups and 4 + 5 combined as "disadvantaged" group for the social sequence analysis.
2 years: Classes 2 + 3 combined as "average" group and 4 + 5 combined as "disadvantaged" group for the social sequence analysis.
4.5 years: Classes 3 + 4 combined as "disadvantaged" group for the social sequence analysis.
8 years: Classes 3 + 4 combined as "disadvantaged" group for the social sequence analysis.

Colour coding denotes *effect size* based on effect size levels proposed by Cohen (1990).

.80+ = Very advantaged (large effect size)
.50-.79 = Advantaged (moderate to large effect size)
-.50- -.79 = Disadvantaged (moderate to large effect size)
- -.80 = Very disadvantaged (large effect size)

Table A9a. Sample characteristics by trajectory

		Total	Always advantaged	Average to adv. by school	Always average	Average to disadv.	Disadv. at antenatal to average	Mostly disadv.
	n	% / Mean	% / Mean	% / Mean	% / Mean	% / Mean	% / Mean	% / Mean
Maternal educational attainment								
No secondary school qualification	232	4.64	0.48	1.47	3.02	10.25	8.56	21.53
Secondary school qualification/NCEA	1,033	20.67	10.01	15.84	25.47	29.25	30.18	33.54
Diploma/Trade certificate	1,489	29.80	19.54	27.97	33.80	38.75	36.04	38.10
University degree or higher	2,243	44.89	68.98	54.72	37.70	21.75	25.23	6.83
Maternal age at antenatal (years)	5,007	30.83	33.90	31.63	29.85	28.93	28.06	26.89
		(5.54)	(3.79)	(4.75)	(5.32)	(6.20)	(5.78)	(6.42)
Maternal nativity								
Born in NZ	3,433	68.56	72.22	67.04	67.65	70.82	58.74	68.24
Moved to NZ between 0-18 years old	482	9.63	9.69	7.96	9.33	9.23	14.80	12.30
Moved to NZ after 18 years old	1,092	21.81	18.09	25.00	23.02	19.95	26.46	19.47
Maternal disability								
No	4,188	91.40	92.82	92.25	92.02	85.80	93.26	87.42
Yes	394	8.60	7.18	7.75	7.98	14.20	6.74	12.58
Child ethnicity (prioritised)								
NZ European	2,519	50.31	74.62	57.18	44.30	41.65	17.49	12.30
Māori	1,103	22.03	10.33	17.21	24.83	29.93	34.53	42.62
Pacific	528	10.55	2.64	5.97	11.28	11.47	22.42	33.20
Asian	686	13.70	9.69	15.05	16.31	12.72	22.87	9.43
Other ethnicity	171	3.42	2.72	4.58	3.29	4.24	2.69	2.46
Family structure at antenatal								
Single-parent household	347	7.09	0.81	2.49	4.51	17.05	13.27	31.84
Two-parent household	4,546	92.91	99.19	97.51	95.49	82.95	86.73	68.16
Proportion of waves spent in two-parent family (0.0-1.0 scale)	3,915	0.91	0.98	0.96	0.94	0.69	0.87	0.64
		(0.22)	(0.10)	(0.14)	(0.18)	(0.34)	(0.24)	(0.38)
Number of family structure changes over study period	4,708	0.49	0.25	0.42	0.38	0.96	1.02	1.14
		(0.85)	(0.58)	(0.79)	(0.76)	(1.00)	(1.10)	(1.07)

Adult household members at antenatal								
No other adult household members	3,741	74.78	88.47	78.18	74.77	63.50	54.05	50.31
Other adult household members	1,262	25.22	11.53	21.82	25.23	36.50	45.95	49.69
Proportion of waves spent living in households	4,191	0.21	0.10	0.17	0.22	0.32	0.39	0.42
		(0.31)	(0.22)	(0.28)	(0.32)	(0.34)	(0.37)	(0.35)
Number of siblings at antenatal	4,572	1.07	0.88	0.80	1.11	1.14	1.50	1.83
		(1.24)	(0.96)	(0.95)	(1.23)	(0.27)	(1.59)	(0.35)
Urbanicity at antenatal								
Urban area	4,596	91.79	93.76	90.92	89.53	88.28	97.76	95.90
Rural area	411	8.21	6.24	9.08	10.47	11.72	2.24	4.10
Proportion of waves spent living in a rural area (0.0-1.0 scale)	4,412	0.10	0.08	0.12	0.12	0.13	0.04	0.05
		(0.26)	(0.25)	(0.28)	(0.29)	(0.27)	(0.14)	(0.16)
District Health Board region								
Auckland/Waitemata	1,865	37.25	56.53	39.19	28.12	27.43	30.94	22.13
Counties Manukau	1,621	32.37	23.38	30.02	33.69	35.91	44.39	48.57
Waikato	1,521	30.38	20.10	30.80	38.19	36.66	24.66	29.30
Child sex								
Male	2,561	51.15	52.12	50.35	51.34	50.12	45.74	53.38
Female	2,446	48.85	47.88	49.65	48.66	49.88	54.26	46.72
Child birthweight								
Not born at low birthweight	4,768	95.28	95.67	95.67	95.16	92.50	95.52	95.70
Born at low birthweight	236	4.72	4.24	4.33	4.84	7.50	4.48	4.30
Outcomes								
Internalising behaviours (0-20 scale)	4,442	3.12	2.29	2.77	3.24	4.21	3.57	4.82
		(2.88)	(2.52)	(2.59)	(2.90)	(2.96)	(3.05)	(3.27)
Externalising behaviours (0-20 scale)	4,441	4.20	3.55	4.00	4.33	5.04	4.13	5.39
		(3.06)	(2.87)	(3.05)	(2.98)	(3.17)	(3.04)	(3.21)
Global health scale (1-5 scale)	4,612	4.28	4.50	4.36	4.22	4.08	4.09	3.93
		(0.81)	(0.70)	(0.75)	(0.83)	(0.88)	(0.89)	(0.91)
n	5,007		1,249	1,156	1,490	401	223	488
% of sample		100.00	24.95	23.09	29.76	8.01	4.45	9.75

Note. Ss = n or % not presented due to cell size less than 10 and/or percent less than 1.

Table A9b. Antenatal wave characteristics by latent class profile

	Total		Most advantaged	High neighbourhood deprivation	Average with low income, high hardship	Most disadvantaged
	n	% / Mean	% / Mean	% / Mean	% / Mean	% / Mean
Maternal educational attainment						
No secondary school qualification	232	4.64	1.24	4.19	3.67	15.14
Secondary school qualification/NCEA	1,033	20.67	13.64	26.02	23.42	30.64
Diploma/Trade certificate	1,489	29.80	22.45	34.65	34.52	38.61
University degree or higher	2,243	44.89	62.67	35.14	38.38	15.61
Maternal age at antenatal (years)	5,007	30.83	32.87	30.11	29.75	27.54
		(5.54)	(4.41)	(5.26)	(5.59)	(6.20)
Maternal nativity						
Born in NZ	3,433	68.56	71.99	65.89	67.01	64.06
Moved to NZ between 0-18 years old	482	9.63	10.27	10.59	9.02	13.78
Moved to NZ after 18 years old	1,092	21.81	17.74	23.52	23.97	22.16
Maternal disability						
No	4,188	91.40	91.84	92.54	90.59	90.19
Yes	394	8.60	8.16	7.46	9.41	9.81
Child ethnicity (prioritised)						
NZ European	2,519	50.31	68.10	36.21	51.13	16.30
Māori	1,103	22.03	13.98	26.60	23.12	37.31
Pacific	528	10.55	4.38	16.26	5.73	27.10
Asian	686	13.70	10.31	18.10	15.41	16.30
Other ethnicity	171	3.42	3.23	2.83	4.61	2.99
Family structure						
Single-parent household	347	7.09	1.91	6.98	6.16	22.12
Two-parent household	4,546	92.91	98.09	93.02	93.84	77.88
Adult household members						
No other adult household members	3,741	74.78	82.82	66.87	79.70	55.24
Other adult household members	1,262	25.22	17.18	33.13	20.30	44.76
Number of siblings at antenatal	4,572	1.07	0.82	1.25	0.98	1.67
		(1.24)	(0.94)	(1.37)	(1.13)	(1.64)
Urbanicity						

Urban area	4,596	91.79	91.77	96.80	84.21	96.44
Rural area	411	8.21	8.23	3.20	15.79	3.56
District Health Board region						
Auckland/Waitemata	1,865	37.25	47.79	26.48	33.36	24.68
Counties Manukau	1,621	32.37	26.68	39.16	27.82	46.38
Waikato	1,521	30.38	25.53	34.36	38.82	28.93
Rest of North Island	0	0.00	0.00	0.00	0.00	0.00
South Island	0	0.00	0.00	0.00	0.00	0.00
Child sex						
Male	2,561	51.15	51.46	52.83	51.13	48.79
Female	2,446	48.85	48.54	41.17	48.87	51.21
Child birthweight						
Not born at low birthweight	4,768	95.28	95.13	95.07	95.01	96.21
Born at low birthweight	236	4.72	4.87	4.93	4.99	3.79
Outcomes						
Relationship conflict (1.0-7.0 scale)	4,370	1.50	1.40	1.51	1.51	1.76
		(0.59)	(0.47)	(0.61)	(0.60)	(0.79)
Expected parenting support (1.0-6.0 scale)	4,545	4.03	4.13	4.10	3.99	3.74
		(0.87)	(0.81)	(0.88)	(0.86)	(0.95)
Self-reported maternal health (1-5 scale)	4,997	3.73	3.99	3.62	3.63	3.30
		(0.93)	(0.84)	(0.95)	(0.90)	(0.98)
Maternal depression						
Not meeting clinical cut-off	4,079	89.63	93.88	90.50	88.23	79.53
Meeting clinical cut-off	472	10.37	6.12	9.50	11.77	20.47
n	5,007		2,260	812	1,064	871
% of sample		100.00	45.14	16.22	21.25	17.40

Note. Ss = n or % not presented due to cell size less than 10 and/or percent less than 1.

Table A9c. 9-month wave characteristics by latent class profile

	n	Total % / Mean	Most advantaged % / Mean	Average, but moderately low home ownership % / Mean	Low income, home ownership, with mobility % / Mean	Moderately disadv., with high overcrowding % / Mean	Most disadv., average overcrowding % / Mean
Maternal educational attainment							
No secondary school qualification	232	4.64	ss	2.21	6.02	16.88	20.46
Secondary school qualification/NCEA	1,033	20.67	12.00	20.10	24.81	39.22	28.19
Diploma/Trade certificate	1,489	29.80	20.31	30.28	37.59	34.03	40.54
University degree or higher	2,243	44.89	67.06	47.41	31.58	9.87	10.81
Maternal age at antenatal (years)	5,007	30.83	33.41	31.25	28.53	28.23	26.82
		(5.54)	(4.25)	(4.88)	(5.78)	(6.27)	(6.32)
Maternal nativity							
Born in NZ	3,433	68.56	70.06	68.76	68.17	60.15	73.08
Moved to NZ between 0-18 years old	482	9.63	10.33	10.54	9.11	16.71	10.77
Moved to NZ after 18 years old	1,092	21.81	19.61	20.70	22.72	23.14	16.15
Maternal disability							
No	4,188	91.40	93.50	91.49	90.49	92.42	81.59
Yes	394	8.60	6.50	8.51	9.51	7.58	18.41
Child ethnicity (prioritised)							
NZ European	2,519	50.31	71.11	52.26	42.82	4.88	20.38
Māori	1,103	22.03	12.00	19.57	28.36	38.3	44.62
Pacific	528	10.55	3.00	8.71	9.39	44.47	19.23
Asian	686	13.70	11.17	15.70	14.74	11.57	12.31
Other ethnicity	171	3.42	2.72	3.76	4.69	ss	ss
Family structure							
Single-parent household	481	10.67	3.71	4.98	16.45	24.48	57.55
Two-parent household	4,029	89.33	96.29	95.02	83.55	75.52	42.45
Family structure change between waves							
No change	4,253	95.57	98.02	97.34	92.80	90.11	84.16
Change	197	4.43	1.98	2.66	7.20	9.89	15.84
Adult household members							
No other adult household members	3,553	75.32	87.44	78.85	68.48	43.44	54.47
Other adult household members	1,164	24.68	12.56	21.15	31.52	56.56	45.53
Number of siblings	5,007	1.02	0.82	0.98	0.80	2.51	1.07

		(1.09)	(0.82)	(1.02)	(0.92)	(1.42)	(1.11)
Urbanicity							
Urban area	4,573	91.33	91.56	91.51	87.42	98.71	93.85
Rural area	434	8.67	8.44	8.49	12.58	ss	6.15
District Health Board region							
Auckland/Waitemata	1,826	36.47	52.41	33.06	28.73	23.39	24.23
Counties Manukau	1,604	32.04	25.19	31.99	30.23	60.93	34.23
Waikato	1,468	29.32	21.21	34.30	35.31	14.65	35.77
Rest of North Island	84	1.68	ss	0.54	4.13	ss	5.77
South Island	25	0.50	ss	0.11	1.60	ss	0.00
Child sex							
Male	2,561	51.15	52.20	50.48	50.23	53.73	50.00
Female	2,446	48.85	47.80	49.52	49.77	46.27	50.00
Child birthweight							
Not born at low birthweight	4,768	95.28	95.74	95.91	94.37	94.60	93.08
Born at low birthweight	236	4.72	4.26	4.09	5.63	5.40	6.92
Age deviation from wave age (months)	5,007	0.35	0.33	0.31	0.35	0.49	0.52
		(0.84)	(0.78)	(0.80)	(0.84)	(1.04)	(1.08)
Outcomes							
Positive affectivity/surgency (1.0-7.0 scale)	5,003	5.26	5.21	5.24	5.29	5.36	5.39
		(0.76)	(0.77)	(0.76)	(0.75)	(0.79)	(0.74)
Negative emotionality (1.0-7.0 scale)	4,994	3.37	3.16	3.31	3.50	3.83	3.80
		(1.10)	(1.03)	(1.07)	(1.11)	(1.11)	(1.20)
Orientating and regulatory capacity (1.0-7.0 scale)	5,002	5.09	5.08	5.09	5.07	5.14	5.11
		(0.77)	(0.76)	(0.77)	(0.79)	(0.79)	(0.84)
Communication and early language development (0.0-2.0 scale)	4,744	0.61	0.54	0.58	0.64	0.78	0.72
		(0.35)	(0.32)	(0.34)	(0.35)	(0.39)	(0.39)
Global health scale (1-5 scale)	5,006	4.46	4.56	4.45	4.41	4.33	4.33
		(0.79)	(0.74)	(0.80)	(0.81)	(0.83)	(0.85)
Acute illnesses (0-10 scale)	5,000	0.77	0.68	0.70	0.81	1.02	1.22
		(0.99)	(0.88)	(0.91)	(1.04)	(1.15)	(1.45)
n	5,007		1,165	2,376	580	584	302
% of sample		100	23.27	47.45	11.58	11.66	6.03

Note. Ss = n or % not presented due to cell size less than 10 and/or percent less than 1.

Table A9d. 2-year wave characteristics by latent class profile

	Total		Most advantaged	Average	Overcrowding, neighbourhood deprivation	Disadv. with average neighbourhood deprivation	Most disadv.
	n	% / Mean	% / Mean	% / Mean	% / Mean	% / Mean	% / Mean
Maternal educational attainment							
No secondary school qualification	232	4.64	ss	2.19	10.21	9.28	19.67
Secondary school qualification/NCEA	1,033	20.67	10.64	19.86	32.18	26.12	33.33
Diploma/Trade certificate	1,489	29.80	21.12	28.75	38.58	37.80	39.33
University degree or higher	2,243	44.89	67.55	49.20	19.03	26.80	7.67
Maternal age at antenatal (years)	5,007	30.83	33.74	31.11	28.36	28.08	27.46
		(5.54)	(3.94)	(5.03)	(5.87)	(6.06)	(6.49)
Maternal nativity							
Born in NZ	3,433	68.56	71.76	69.49	61.90	67.12	64.57
Moved to NZ between 0-18 years old	482	9.63	10.56	9.64	13.79	9.93	14.57
Moved to NZ after 18 years old	1,092	21.81	17.68	20.88	24.31	22.95	20.86
Maternal disability							
No	4,188	91.40	92.97	91.50	92.95	88.47	87.23
Yes	394	8.60	703.00	8.50	7.05	11.53	12.77
Child ethnicity (prioritised)							
NZ European	2,519	50.31	72.96	54.97	15.69	40.41	11.92
Māori	1,103	22.03	11.67	19.95	35.17	29.28	39.07
Pacific	528	10.55	3.00	7.20	30.34	7.19	34.44
Asian	686	13.70	9.27	14.23	16.90	18.84	10.60
Other ethnicity	171	3.42	3.09	3.66	1.90	4.28	3.97
Family structure							
Single-parent household	457	9.83	1.94	3.95	13.52	30.21	49.58
Two-parent household	4,190	90.17	98.06	96.05	86.48	69.79	50.42
Family structure change between waves							
No change	4,175	94.50	98.20	95.54	95.16	85.13	84.69
Change	243	5.50	1.80	4.46	4.84	14.87	15.31
Adult household members							
No other adult household members	3,826	76.67	87.04	80.94	53.04	70.84	59.12
Other adult household members	1,164	23.33	12.96	19.06	46.96	29.16	40.88

Number of siblings	4,979	1.05	0.91	0.88	1.72	0.99	1.70
		(1.16)	(0.91)	(0.96)	(1.60)	(1.20)	(1.66)
Urbanicity							
Urban area	4,472	90.58	92.60	88.69	97.21	84.55	96.33
Rural area	465	9.42	7.40	11.31	2.79	15.45	3.67
District Health Board region							
Auckland/Waitemata	1,727	34.95	51.46	33.55	23.69	25.09	22.33
Counties Manukau	1,586	32.09	24.35	30.58	49.30	27.68	49.33
Waikato	1,412	28.57	21.26	31.53	23.34	39.79	22.33
Rest of North Island	165	3.34	2.07	3.14	3.31	5.54	5.67
South Island	52	1.05	ss	1.20	ss	1.90	ss
Child sex							
Male	2,561	51.15	53.65	50.17	50.17	50.00	53.31
Female	2,446	48.85	46.35	49.83	49.83	50.00	46.69
Child birthweight							
Not born at low birthweight	4,768	95.28	95.79	95.20	95.52	94.68	94.70
Born at low birthweight	236	4.72	4.21	4.80	4.48	5.32	5.30
Age deviation from wave age (months)	5,007	0.07	-0.07	-0.04	0.42	0.15	0.60
		(1.59)	(1.18)	(1.51)	(2.01)	(1.73)	(2.15)
Outcomes							
Internalising behaviours (0-20 scale)	5,002	3.77	2.90	3.56	4.85	4.39	5.57
		(2.57)	(2.19)	(2.36)	(2.84)	(2.61)	(3.04)
Externalising behaviours (0-20 scale)	5,002	7.21	6.27	6.99	8.27	7.90	9.12
		(3.34)	(3.09)	(3.24)	(3.42)	(3.46)	(3.29)
Verbal communication (0-100 scale)	5,007	49.73	56.70	50.72	41.34	45.30	39.59
		(25.40)	(24.26)	(25.16)	(22.93)	(27.06)	(23.48)
Global health scale (1-5 scale)	5,006	4.33	4.40	4.33	4.33	4.23	4.30
		(0.83)	(0.81)	(0.82)	(0.83)	(0.89)	(0.89)
Acute illnesses (0-11 scale)	4,988	1.70	1.83	1.71	1.63	1.46	1.62
		(1.55)	(1.49)	(1.57)	(1.64)	(1.42)	(1.66)
n	5,007		1,165	2,376	580	584	302
% of sample		100.00	23.27	47.45	11.58	11.66	6.03

Note. Ss = n or % not presented due to cell size less than 10 and/or percent less than 1.

Table A9e. 4.5-year wave characteristics by latent class profile

	Total		Most advantaged	Average	Disadvantaged, overcrowding, neighbourhood deprivation	Disadvantaged, low work engagement
	n	% / Mean	% / Mean	% / Mean	% / Mean	% / Mean
Maternal educational attainment						
No secondary school qualification	232	4.64	0.88	4.03	18.32	15.72
Secondary school qualification/NCEA	1,033	20.67	11.55	24.73	38.51	26.55
Diploma/Trade certificate	1,489	29.80	23.37	32.07	35.09	43.56
University degree or higher	2,243	44.89	64.20	39.16	8.07	14.18
Maternal age at antenatal (years)	5,007	30.83	33.13	29.86	28.09	27.59
		(5.54)	(4.24)	(5.50)	(5.92)	(6.65)
Maternal nativity						
Born in NZ	3,433	68.56	70.64	66.50	58.77	78.97
Moved to NZ between 0-18 years old	482	9.63	9.48	9.61	18.46	7.18
Moved to NZ after 18 years old	1,092	21.81	19.89	23.89	22.77	13.85
Maternal disability						
No	4,188	91.40	92.54	91.96	89.24	84.12
Yes	394	8.60	7.46	8.04	10.76	15.88
Child ethnicity (prioritised)						
NZ European	2,519	50.31	68.25	43.20	9.85	38.21
Māori	1,103	22.03	12.27	25.16	36.69	36.67
Pacific	528	10.55	3.83	11.82	40.62	11.03
Asian	686	13.70	12.01	16.60	7.38	9.74
Other ethnicity	171	3.42	3.63	3.22	2.46	4.36
Family structure						
Single-parent household	538	10.75	3.06	7.84	15.38	62.56
Two-parent household	4,467	89.25	96.94	92.16	84.62	37.44
Family structure change between waves						
No change	4,298	92.53	96.73	93.79	83.15	69.77
Change	347	4.47	3.27	6.21	16.85	30.23
Adult household members						
No other adult household members	4,036	81.63	88.07	79.23	71.29	72.07
Other adult household members	908	18.37	11.93	20.77	28.71	27.93

Number of siblings	4,425	1.60	1.37	1.66	2.70	1.42
		(0.95)	(0.66)	(0.95)	(1.41)	(0.96)
Urbanicity						
Urban area	4,341	89.58	90.54	87.28	96.52	92.57
Rural area	505	10.42	9.46	12.72	3.48	7.43
District Health Board region						
Auckland/Waitemata	1,569	32.38	45.22	26.25	15.51	17.77
Counties Manukau	1,579	32.58	27.55	33.57	56.33	32.36
Waikato	1,361	28.09	21.75	32.90	20.25	38.20
Rest of North Island	262	5.41	3.71	6.03	6.65	9.28
South Island	75	1.55	1.78	1.25	1.27	2.39
Child sex						
Male	2,561	51.15	50.08	51.80	53.85	50.26
Female	2,446	48.85	49.92	48.20	43.15	49.74
Child birthweight						
Not born at low birthweight	4,768	95.28	96.17	94.79	96.31	93.08
Born at low birthweight	236	4.72	3.83	5.21	3.69	6.92
Age deviation from wave age (months)	5,007	-0.21	-0.37	-0.22	0.42	0.09
		(1.33)	(1.00)	(1.38)	(1.83)	(1.76)
Outcomes						
Internalising behaviours (0-20 scale)	5,004	3.31	2.54	3.44	5.59	4.48
		(2.66)	(2.16)	(2.62)	(3.16)	(3.01)
Externalising behaviours (0-18 scale)	5,004	5.52	4.85	5.62	7.04	6.99
		(3.04)	(2.86)	(2.99)	(2.98)	(3.22)
Early literacy skills (-0.80 - 5.76 scale)	4,630	0.00	0.14	-0.02	-0.48	-0.28
		(1.00)	(1.02)	(1..01)	(0.64)	(0.85)
Global health scale (1-5 scale)	5,005	4.34	4.43	4.31	4.18	4.18
		(0.79)	(0.73)	(0.81)	(0.89)	(0.80)
Acute illnesses (0-3 scale)	5,004	0.69	0.71	0.67	0.60	0.78
		(0.79)	(0.79)	(0.79)	(0.77)	(0.83)
n	5,007		1,931	2,361	325	390
% of sample		100.00	38.57	47.15	6.49	7.79

Note. Ss = n or % not presented due to cell size less than 10 and/or percent less than 1.

Table A9f. 8-year wave characteristics by latent class profile

	Total		Most advantaged	Average	Low home ownership, high mobility	Most disadvantaged
	n	% / Mean	% / Mean	% / Mean	% / Mean	% / Mean
Maternal educational attainment						
No secondary school qualification	232	4.64	1.88	3.04	5.59	17.8
Secondary school qualification/NCEA	1,033	20.67	14.45	23.87	26.85	30.50
Diploma/Trade certificate	1,489	29.80	23.79	32.67	35.57	39.94
University degree or higher	2,243	44.89	59.89	40.42	31.99	11.76
Maternal age at antenatal (years)	5,007	30.83	32.44	30.24	29.08	27.82
		(5.54)	(4.68)	(5.44)	(5.95)	(6.32)
Maternal nativity						
Born in NZ	3,433	68.56	67.51	70.15	68.90	68.10
Moved to NZ between 0-18 years old	482	9.63	9.29	9.85	8.72	10.89
Moved to NZ after 18 years old	1,092	21.81	23.20	20.00	22.37	21.01
Maternal disability						
No	4,188	91.40	92.41	92.13	88.08	88.29
Yes	394	8.60	7.59	7.87	11.92	11.71
Child ethnicity (prioritised)						
NZ European	2,519	50.31	62.36	47.43	46.76	17.48
Māori	1,103	22.03	14.39	24.89	24.83	39.88
Pacific	528	10.55	5.80	10.40	8.28	29.14
Asian	686	13.70	13.78	13.87	17.23	10.58
Other ethnicity	171	3.42	3.66	3.41	2.91	2.91
Family structure						
Single-parent household	590	13.26	4.28	11.34	28.71	35.48
Two-parent household	3,859	86.74	95.72	88.66	71.29	64.52
Family structure change between waves						
No change	4,020	90.38	96.05	90.93	80.42	78.27
Change	428	9.62	3.95	9.07	19.58	21.73
Adult household members						
No other adult household members	3,713	83.46	90.31	81.42	84.94	66.38
Other adult household members	736	16.54	9.69	18.58	15.06	33.62

Number of siblings	5,007	1.39	1.10	1.58	1.37	1.98
		(1.13)	(0.88)	(1.11)	(1.04)	(1.61)
Urbanicity						
Urban area	3,906	87.40	86.97	86.60	82.34	94.52
Rural area	563	12.60	13.03	13.40	17.66	5.48
District Health Board region						
Auckland/Waitemata	1,357	30.32	41.53	22.92	26.15	18.91
Counties Manukau	1,320	29.50	25.01	29.23	28.21	44.78
Waikato	1,293	28.89	23.54	35.79	30.50	25.70
Rest of North Island	400	8.94	7.52	9.93	11.47	8.79
South Island	105	2.35	2.40	2.12	3.67	1.82
Child sex						
Male	2,561	51.15	51.85	50.59	49.89	50.92
Female	2,446	48.85	48.15	49.41	50.11	49.08
Child birthweight						
Not born at low birthweight	4,768	95.28	95.50	95.42	93.95	95.09
Born at low birthweight	236	4.72	4.50	4.58	6.05	4.91
Age deviation from wave age (months)	5,007	7.09	7.24	6.53	6.98	8.04
		(4.99)	(4.95)	(5.00)	(5.00)	(4.98)
Outcomes						
Global health scale (1-5 scale)	4,612	4.28	4.45	4.23	4.17	3.94
		(0.81)	(0.71)	(0.82)	(0.85)	(0.93)
Acute illnesses (0-3 scale)	4,561	0.40	0.38	0.42	0.45	0.39
		(0.64)	(0.62)	(0.65)	(0.68)	(0.64)
Internalising behaviours (0-20 scale)	4,442	3.12	2.50	3.16	3.85	4.48
		(2.88)	(2.60)	(2.87)	(2.98)	(3.13)
Externalising behaviours (0-20 scale)	4,441	4.20	3.72	4.25	4.59	5.30
		(3.06)	(2.94)	(3.00)	(3.15)	(3.18)
n	5,007		2,293	1,615	447	652
% of sample		100.00	45.80	32.25	8.93	13.02

Note. Ss = n or % not presented due to cell size less than 10 and/or percent less than 1.

Table A10. Trajectories: OLS regressions predicting child outcomes at 8 years: Coefficient comparisons among trajectories

Reference group:	Always advantaged	Average to advantaged by school entry	Always average	Average to disadvantaged	Disadvantaged at antenatal to average	Mostly disadvantaged
Internalising behaviours (0-20 scale)						
Always advantaged	..	-0.34**	-0.67***	-1.38***	-0.76**	-1.79***
Average to advantaged by school entry	0.34**	..	-0.33**	-1.05***	-0.43+	-1.45***
Always average	0.67***	0.33**	..	-0.71***	-0.10	-1.12***
Average to disadvantaged	1.38***	1.05***	0.71***	..	0.62*	-0.41+
Disadvantaged at antenatal to average	0.76**	0.43+	0.10	-0.62*	..	-1.03***
Mostly disadvantaged	1.79***	1.45***	1.12***	0.41+	1.03***	..
Externalising behaviours (0-20 scale)						
Always advantaged	..	-0.34**	-0.53***	-1.03***	-0.27	-1.13***
Average to advantaged by school entry	0.34**	..	-0.18	-0.68***	0.08	-0.79***
Always average	0.53***	0.18	..	-0.50**	0.26	-0.61**
Average to disadvantaged	1.03***	0.68***	0.50**	..	0.76**	-0.11
Disadvantaged at antenatal to average	0.27	-0.08	-0.26	-0.76**	..	-0.87**
Mostly disadvantaged	1.13***	0.79***	0.61**	0.11	0.87**	..
Maternal-reported child health (1-5 scale)						
Always advantaged	..	0.10**	0.20***	0.30***	0.26***	0.36***
Average to advantaged by school entry	-0.10**	..	0.10**	0.20***	0.16*	0.26***
Always average	-0.20***	-0.10**	..	0.10*	0.05	0.16**
Average to disadvantaged	-0.30***	-0.20***	-0.10*	..	-0.05	0.06
Disadvantaged at antenatal to average	-0.26***	-0.16*	-0.05	0.05	..	0.11
Mostly disadvantaged	-0.36***	-0.26***	-0.16**	-0.06	-0.11	..

Note. *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$, + $p < 0.1$. Controls include: maternal education, maternal age, child ethnicity, maternal nativity, maternal disability, family structure at antenatal, number of family structure changes over study period, proportion of waves in two-parent family, other adult household members at antenatal, proportion of waves with other adult household members, urbanicity, proportion of waves living in a rural area, district health board at antenatal, child sex, and age deviation from interview wave.

Table A11a. Trajectories: OLS regressions predicting child outcomes at 8 years

	Internalising behaviours (0-20 scale)		Externalising behaviours (0-20 scale)		Maternal-reported child health (1-5 scale)	
	(1)	(2)	(1)	(2)	(1)	(2)
	Coeff.	Coeff.	Coeff.	Coeff.	Coeff.	Coeff.
Trajectory (ref: always advantaged)						
Average to advantaged by school entry	0.49***	0.34**	0.49***	0.34**	-0.14***	-0.10**
	(0.12)	(0.12)	(0.13)	(0.13)	(0.03)	(0.03)
Always average	0.96***	0.67***	0.80***	0.53***	-0.28***	-0.20***
	(0.11)	(0.12)	(0.12)	(0.13)	(0.03)	(0.03)
Average to disadvantaged	1.92***	1.38***	1.53***	1.03***	-0.42***	-0.30***
	(0.17)	(0.19)	(0.18)	(0.20)	(0.05)	(0.05)
Disadvantaged at antenatal to average	1.28***	0.76**	0.71**	0.27	-0.42***	-0.26***
	(0.23)	(0.25)	(0.24)	(0.26)	(0.07)	(0.07)
Mostly disadvantaged	2.52***	1.79***	1.84***	1.13***	-0.56***	-0.36***
	(0.16)	(0.20)	(0.17)	(0.21)	(0.04)	(0.06)
Maternal education (ref: university degree +)						
No secondary school qualification		0.03		0.38		0.01
		(0.23)		(0.24)		(0.06)
Secondary school qualification/NCEA		0.16		0.40**		0.06+
		(0.12)		(0.13)		(0.03)
Diploma/Trade certificate		0.12		0.38***		0.00
		(0.11)		(0.11)		(0.03)
Maternal age (years)		-0.04***		-0.02*		0.00+
		(0.01)		(0.01)		(0.00)
Child ethnicity (ref: NZ European/Pākehā)						
Māori		0.04		0.16		-0.10**
		(0.12)		(0.12)		(0.03)
Pacific		0.07		-0.10		-0.23***

	(0.17)	(0.18)	(0.05)
Asian	-0.03	-0.29+	-0.26***
	(0.16)	(0.17)	(0.04)
Other ethnicity	-0.03	-0.00	-0.05
	(0.24)	(0.25)	(0.07)
Maternal nativity (ref: born in NZ)			
Moved to NZ between 0-18 years old	0.06	-0.12	0.06
	(0.15)	(0.15)	(0.04)
Moved to NZ after 18 years old	0.08	0.29*	0.02
	(0.13)	(0.13)	(0.04)
Mother has a disability (ref: no disability)	0.38*	0.38*	-0.05
	(0.15)	(0.16)	(0.04)
Two-parent family at antenatal (ref: single parent family)	0.22	-0.18	0.02
	(0.33)	(0.35)	(0.09)
Number of family structure changes over study period	-0.07	-0.05	0.01
	(0.08)	(0.08)	(0.02)
Proportion of waves spent in two-parent family (0.0-1.0 scale)	-0.91*	-0.38	0.12
	(0.42)	(0.45)	(0.12)
Other adult household members at antenatal (ref: no other members)	-0.30	-0.17	0.04
	(0.21)	(0.22)	(0.06)
Proportion of waves spent living in households with other adult members (0.0-1.0 scale)	0.62*	0.48	-0.10
	(0.31)	(0.32)	(0.08)
Lived in a rural area at antenatal (ref: lives in an urban area)	-0.12	0.09	0.03
	(0.31)	(0.33)	(0.09)
Proportion of waves spent living in a rural area (0.0-1.0 scale)	-0.02	-0.23	0.04
	(0.34)	(0.36)	(0.10)
District Health Board region at antenatal (ref: Auckland/Waitemata)			

Counties Manukau		0.11		0.05		-0.06+
		(0.11)		(0.11)		(0.03)
Waikato		0.07		-0.03		-0.03
		(0.11)		(0.12)		(0.03)
Child female (ref: male)	-0.05	-0.06	-1.35***	-1.36***	0.08***	0.08***
	(0.08)	(0.08)	(0.09)	(0.09)	(0.02)	(0.02)
Age deviation from interview age at 8 years (months)	0.02*	0.02*	-0.01	-0.01	-0.00	-0.00
	(0.01)	(0.01)	(0.01)	(0.01)	(0.00)	(0.00)
Constant	2.16***	3.98***	4.27***	5.40***	4.47***	4.24***
	(0.11)	(0.41)	(0.12)	(0.44)	(0.03)	(0.12)
R^2	0.070	0.084	0.082	0.095	0.048	0.069
n	4,442	4,442	4,441	4,441	4,612	4,612

Note. *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$, + $p < 0.1$. Standard errors in parentheses. Total sample size does not equal analytical sample size of 5,007 due to missing values on the outcome variables.

Table A11b. Antenatal: OLS and logit regressions predicting maternal outcomes

	Relationship conflict (1.0-7.0 scale)		Parenting support (1.0-6.0 scale)		Self-reported health (1-5 scale)		Maternal depression (0/1)	
	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)
	Coeff.	Coeff.	Coeff.	Coeff.	Coeff.	Coeff.	OR	OR
Class (ref: most advantaged)								
High neighbourhood deprivation	0.11***	0.02	-0.03	-0.03	-0.37***	-0.16***	1.61**	1.07
	(0.03)	(0.03)	(0.04)	(0.04)	(0.04)	(0.04)	(0.25)	(0.18)
Average with low income, homeownership	0.11***	0.03	-0.13***	-0.14***	-0.36***	-0.21***	2.05***	1.54**
	(0.02)	(0.02)	(0.03)	(0.03)	(0.03)	(0.03)	(0.28)	(0.22)
Most disadvantaged	0.36***	0.17***	-0.39***	-0.36***	-0.69***	-0.31***	3.95***	1.81***
	(0.03)	(0.03)	(0.04)	(0.04)	(0.04)	(0.04)	(0.51)	(0.29)
Maternal education (ref: university degree +)								
No secondary school qualification		0.14**		-0.17**		-0.26***		1.63*
		(0.05)		(0.07)		(0.07)		(0.36)
Secondary school qualification/NCEA		0.07**		-0.09**		-0.11**		1.35*
		(0.02)		(0.03)		(0.04)		(0.20)
Diploma/Trade certificate		0.09***		-0.02		-0.13***		1.39*
		(0.02)		(0.03)		(0.03)		(0.19)
Maternal age (years)		-		-0.03***		0.02***		0.97**
		(0.00)		(0.00)		(0.00)		(0.01)
Child ethnicity (ref: NZ European/Pākehā)								
Māori		0.18***		0.06+		-0.20***		1.33*
		(0.02)		(0.03)		(0.03)		(0.18)
Pacific		0.22***		0.19***		-0.23***		1.81***
		(0.03)		(0.05)		(0.05)		(0.31)
Asian		0.01		-0.10*		-0.26***		1.15
		(0.03)		(0.04)		(0.05)		(0.22)
Other ethnicity		-0.06		-0.20**		-0.01		1.40
		(0.05)		(0.07)		(0.07)		(0.38)
Maternal nativity (ref: born in NZ)								
Moved to NZ between 0-18 years old		-0.02		-0.07+		-0.01		1.14
		(0.03)		(0.04)		(0.04)		(0.19)
Moved to NZ after 18 years old		-0.07**		-0.41***		0.01		1.24
		(0.03)		(0.04)		(0.04)		(0.19)
Mother has a disability (ref: no disability)		0.05+		-0.05		-0.23***		1.83***
		(0.03)		(0.04)		(0.05)		(0.28)

Two-parent family (ref: single parent family)		-0.04		0.75***		0.15**		0.63**
		(0.05)		(0.05)		(0.05)		(0.10)
Other adult household members								
(ref: no other members)		-0.03		0.03		-0.07*		1.17
		(0.02)		(0.03)		(0.03)		(0.14)
Lives in a rural area								
(ref: lives in an urban area)		0.03		0.01		0.10*		0.89
		(0.03)		(0.05)		(0.05)		(0.18)
District Health Board region								
(ref: Auckland/Waitemata)								
Counties Manukau		-0.02		-0.05+		-0.11***		1.25+
		(0.02)		(0.03)		(0.03)		(0.16)
Waikato		-0.02		-0.03		-0.07*		1.00
		(0.02)		(0.03)		(0.03)		(0.14)
Constant	1.40***	1.79***	4.13***	4.38***	3.99***	3.36***	0.07***	0.18***
	(0.01)	(0.08)	(0.02)	(0.10)	(0.02)	(0.10)	(0.01)	(0.07)
R^2 / Pseudo R^2	0.042	0.092	0.026	0.137	0.077	0.134	0.038	0.069
n	4,370	4,370	4,545	4,545	4,997	4,997	4,551	4,551

Note. *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$, + $p < 0.1$. Standard errors in parentheses. Total sample size does not equal analytical sample size of 5,007 due to missing values on the outcome variables.

Table A11c. 9 months: OLS regressions predicting child outcomes

	Positive affectivity/surgency (1.0-7.0 scale)		Negative emotionality (1.0-7.0 scale)		Orientating and regulatory capacity (1.0-7.0 scale)		Communication and early language development (0.0-2.0 scale)		Maternal-reported child health (1-5 scale)		Acute illnesses (1-10 scale)	
	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)
	Coeff.	Coeff.	Coeff.	Coeff.	Coeff.	Coeff.	Coeff.	Coeff.	Coeff.	Coeff.	Coeff.	Coeff.
Class (ref: most advantaged)												
Average	0.04	-0.00	0.14***	0.08*	0.01	0.02	0.05***	0.00	-0.11***	-0.07*	0.02	-0.02
	(0.03)	(0.03)	(0.04)	(0.04)	(0.03)	(0.03)	(0.01)	(0.01)	(0.03)	(0.03)	(0.03)	(0.04)
Low incomes, home ownership, with mobility	0.09**	0.02	0.34***	0.23***	-0.02	0.02	0.10***	0.02	-0.15***	-0.09**	0.14***	0.05
	(0.03)	(0.03)	(0.04)	(0.05)	(0.03)	(0.03)	(0.01)	(0.01)	(0.03)	(0.04)	(0.04)	(0.04)
Moderately disadvantaged, with high overcrowding	0.14**	0.01	0.66***	0.43***	0.06	0.04	0.22***	0.06**	-0.22***	-0.15**	0.33***	0.12+
	(0.04)	(0.05)	(0.06)	(0.07)	(0.04)	(0.05)	(0.02)	(0.02)	(0.05)	(0.05)	(0.06)	(0.06)
Most disadvantaged, average overcrowding	0.17***	0.08	0.62***	0.48***	0.03	0.07	0.15***	0.02	-0.23***	-0.15*	0.53***	0.31***
	(0.05)	(0.06)	(0.07)	(0.08)	(0.05)	(0.06)	(0.02)	(0.02)	(0.05)	(0.06)	(0.07)	(0.07)
Maternal education (ref: university degree +)												
No secondary school qualification		-0.00		-0.03		0.02		0.07**		0.10+		0.06
		(0.06)		(0.08)		(0.06)		(0.02)		(0.06)		(0.07)
Secondary school qualification/NCEA		-0.04		-0.04		-0.01		0.03*		0.03		0.04
		(0.03)		(0.04)		(0.03)		(0.01)		(0.03)		(0.04)
Diploma/Trade certificate		0.06*		-0.04		0.05+		0.05***		0.03		0.06+
		(0.03)		(0.04)		(0.03)		(0.01)		(0.03)		(0.03)
Maternal age (years)		-0.00		-0.01***		0.01***		-0.01***		0.01*		-0.00
		(0.00)		(0.00)		(0.00)		(0.00)		(0.00)		(0.00)
Child ethnicity												

(ref: NZ European/Pākehā)						
Māori	0.11***	0.19***	0.01	0.07***	-0.11***	0.24***
	(0.03)	(0.04)	(0.03)	(0.01)	(0.03)	(0.04)
Pacific	0.15***	0.26***	0.09*	0.08***	-0.07+	0.20***
	(0.04)	(0.06)	(0.04)	(0.02)	(0.04)	(0.05)
Asian	0.12**	0.32***	0.07	0.07***	-0.08+	-0.25***
	(0.04)	(0.06)	(0.04)	(0.02)	(0.04)	(0.05)
Other ethnicity	0.16**	0.12	0.04	0.05+	-0.03	0.02
	(0.06)	(0.09)	(0.06)	(0.03)	(0.06)	(0.08)
Maternal nativity (ref: born in NZ)						
Moved to NZ between 0-18 years old	0.08*	0.10*	0.10**	0.01	0.04	-0.06
	(0.04)	(0.05)	(0.04)	(0.02)	(0.04)	(0.05)
Moved to NZ after 18 years old	0.12***	0.09*	0.04	0.04**	0.00	-0.08+
	(0.03)	(0.05)	(0.03)	(0.01)	(0.03)	(0.04)
Mother has a disability (ref: no disability)	0.01	-0.05	0.02	0.01	0.02	0.02
	(0.04)	(0.06)	(0.04)	(0.02)	(0.04)	(0.05)
Two-parent family (ref: single parent family)	-0.01	0.06	0.01	-0.03	0.05	-0.11+
	(0.05)	(0.07)	(0.05)	(0.02)	(0.05)	(0.06)
Change in family structure between waves (ref: no)	-0.04	0.13	-0.02	-0.01	0.06	-0.01
	(0.06)	(0.09)	(0.07)	(0.03)	(0.07)	(0.09)
Other adult household members (ref: no other members)	0.01	0.04	0.02	0.05***	0.03	-0.00
	(0.03)	(0.04)	(0.03)	(0.01)	(0.03)	(0.04)
Lives in a rural area (ref: lives in an urban area)	0.05	-0.01	-0.05	0.01	0.02	-0.10*
	(0.04)	(0.06)	(0.04)	(0.02)	(0.04)	(0.05)
District Health Board region (ref: Auckland/Waitemata)						

Counties Manukau		0.07*		0.00		0.03		0.08***		-0.06*		-0.01
		(0.03)		(0.04)		(0.03)		(0.01)		(0.03)		(0.03)
Waikato		0.02		-0.02		-0.03		0.01		-0.11***		0.03
		(0.03)		(0.04)		(0.03)		(0.01)		(0.03)		(0.04)
Rest of the North Island		-0.04		-0.27*		0.04		-0.02		0.13		0.02
		(0.09)		(0.12)		(0.09)		(0.04)		(0.09)		(0.11)
South Island		0.00		0.41+		-0.19		-0.06		-0.14		-0.04
		(0.15)		(0.22)		(0.16)		(0.06)		(0.16)		(0.20)
Child female (ref: male)	-0.11***	-0.11***	0.05	0.04	0.04+	0.04*	0.05***	0.05***	0.07**	0.08***	-0.19***	-0.18***
	(0.02)	(0.02)	(0.03)	(0.03)	(0.02)	(0.02)	(0.01)	(0.01)	(0.02)	(0.02)	(0.03)	(0.03)
Child born at low birthweight (ref: not low birthweight)		-0.25***		-0.01		-0.09+		-0.18***		-0.08		0.11+
		(0.05)		(0.07)		(0.05)		(0.02)		(0.05)		(0.06)
Age deviation from interview age (months)	0.10***	0.09***	0.08***	0.07***	0.02	0.01	0.14***	0.13***	-0.01	-0.01	0.06***	0.06***
	(0.01)	(0.01)	(0.02)	(0.02)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)	(0.02)
Constant	5.23***	5.27***	3.11***	3.37***	5.05***	4.64***	0.47***	0.62***	4.52***	4.34***	0.75***	0.95***
	(0.02)	(0.09)	(0.03)	(0.13)	(0.02)	(0.10)	(0.01)	(0.04)	(0.02)	(0.10)	(0.03)	(0.12)
R^2	0.005	0.044	0.037	0.066	0.001	0.016	0.040	0.220	0.008	0.021	0.020	0.067
n	5,003	5,003	4,994	4,994	5,002	5,002	4,744	4,744	5,006	5,006	5,000	5,000

Note. *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$, + $p < 0.1$. Standard errors in parentheses. Total sample size does not equal analytical sample size of 5,007 due to missing values on the outcome variables.

Table A11d. 2 years: OLS regressions predicting child outcomes

	Internalising behaviours (1-20 scale)		Externalising behaviours (1-20 scale)		Verbal communication (0-100 scale)		Maternal-reported child health (1-5 scale)		Acute illnesses (1-11 scale)	
	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)
	Coeff.	Coeff.	Coeff.	Coeff.	Coeff.	Coeff.	Coeff.	Coeff.	Coeff.	Coeff.
Class (ref: most advantaged)										
Average	0.66***	0.33***	0.73***	0.31**	-6.33***	-4.25***	-0.08*	-0.05	-0.10+	-0.12*
	(0.09)	(0.09)	(0.12)	(0.12)	(0.87)	(0.89)	(0.03)	(0.03)	(0.06)	(0.06)
Overcrowding, neighbourhood deprivation	1.89***	0.87***	1.96***	0.73***	-16.61***	-11.19***	-0.07+	-0.04	-0.20*	-0.26**
	(0.13)	(0.14)	(0.17)	(0.18)	(1.24)	(1.38)	(0.04)	(0.05)	(0.08)	(0.09)
Disadvantaged with average neighbourhood deprivation	1.47***	0.82***	1.62***	0.71***	-12.15***	-8.39***	-0.17***	-0.10*	-0.37***	-0.44***
	(0.12)	(0.14)	(0.16)	(0.18)	(1.24)	(1.35)	(0.04)	(0.05)	(0.08)	(0.09)
Most disadvantaged	2.59***	1.48***	2.78***	1.26***	-18.45***	-13.12***	-0.10+	-0.05	-0.23*	-0.40***
	(0.16)	(0.18)	(0.21)	(0.24)	(1.58)	(1.77)	(0.05)	(0.06)	(0.10)	(0.11)
Maternal education (ref: university degree +)										
No secondary school qualification		1.06***		1.07***		-7.01***		0.11+		-0.13
		(0.18)		(0.24)		(1.78)		(0.06)		(0.11)
Secondary school qualification/NCEA		0.41***		0.51***		-4.70***		0.09**		-0.09
		(0.10)		(0.13)		(0.97)		(0.03)		(0.06)
Diploma/Trade certificate		0.33***		0.51***		-3.85***		0.06*		0.02
		(0.09)		(0.11)		(0.85)		(0.03)		(0.05)
Maternal age (years)		-0.03***		-0.07***		-0.21**		0.01**		-0.01*
		(0.01)		(0.01)		(0.07)		(0.00)		(0.00)
Child ethnicity (ref: NZ European/Pākehā)										
Māori		0.47***		0.58***		-3.57***		-0.10**		0.23***
		(0.09)		(0.13)		(0.94)		(0.03)		(0.06)
Pacific		1.04***		1.02***		-3.41**		0.03		0.02

	(0.13)	(0.18)	(1.32)	(0.05)	(0.08)
Asian	0.85***	0.08	-8.84***	-0.07+	-0.60***
	(0.12)	(0.17)	(1.23)	(0.04)	(0.08)
Other ethnicity	0.02	0.22	-2.53	0.05	0.00
	(0.19)	(0.26)	(1.91)	(0.07)	(0.12)
Maternal nativity (ref: born in NZ)					
Moved to NZ between 0-18 years old	0.16	0.22	-3.14**	0.05	-0.09
	(0.12)	(0.16)	(1.17)	(0.04)	(0.07)
Moved to NZ after 18 years old	0.38***	0.11	-6.75***	-0.04	-0.25***
	(0.10)	(0.14)	(1.03)	(0.04)	(0.07)
Mother has a disability (ref: no disability)	0.00	-0.01	-1.73	-0.05	0.12
	(0.13)	(0.17)	(1.25)	(0.04)	(0.08)
Two-parent family (ref: single parent family)	0.12	-0.26	0.21	0.04	-0.11
	(0.14)	(0.18)	(1.36)	(0.05)	(0.09)
Change in family structure between waves (ref: no)	0.13	-0.08	2.92+	-0.09	0.20+
	(0.17)	(0.22)	(1.64)	(0.06)	(0.11)
Other adult household members (ref: no other members)	0.20*	0.10	-1.78*	0.02	0.05
	(0.09)	(0.12)	(0.88)	(0.03)	(0.06)
Lives in a rural area (ref: lives in an urban area)	-0.13	-0.26	-0.37	0.02	-0.10
	(0.12)	(0.16)	(1.23)	(0.04)	(0.08)
District Health Board region (ref: Auckland/Waitemata)					
Counties Manukau	0.26**	0.19+	-3.28***	-0.00	-0.03
	(0.09)	(0.12)	(0.87)	(0.03)	(0.06)
Waikato	0.09	0.15	-3.53***	-0.04	0.03
	(0.09)	(0.13)	(0.94)	(0.03)	(0.06)
Rest of the North Island	-0.06	-0.07	-0.68	0.07	0.02
	(0.20)	(0.26)	(1.98)	(0.07)	(0.13)

South Island		-0.07		0.37		-7.69*		-0.06		0.20
		(0.34)		(0.45)		(3.38)		(0.12)		(0.21)
Child female (ref: male)	-0.14+	-0.14*	-0.34***	-0.35***	7.66***	7.83***	0.06**	0.06**	-0.26***	-0.25***
	(0.07)	(0.07)	(0.09)	(0.09)	(0.69)	(0.67)	(0.02)	(0.02)	(0.04)	(0.04)
Child born at low birthweight (ref: not low birthweight)		-0.00		0.50*		-9.64***		-0.14*		0.37***
		(0.16)		(0.21)		(1.59)		(0.06)		(0.10)
Age deviation from interview age (months)	0.12***	0.07**	0.10***	0.06*	1.94***	2.29***	-0.00	-0.00	0.04**	0.05***
	(0.02)	(0.02)	(0.03)	(0.03)	(0.22)	(0.22)	(0.01)	(0.01)	(0.01)	(0.01)
Constant	2.97***	3.55***	6.44***	8.71***	53.31***	66.68***	4.37***	4.08***	1.95***	2.42***
	(0.08)	(0.29)	(0.10)	(0.39)	(0.78)	(2.87)	(0.03)	(0.10)	(0.05)	(0.18)
R^2	0.093	0.146	0.061	0.104	0.081	0.133	0.005	0.016	0.013	0.061
n	5,002	5,002	5,002	5,002	5,007	5,007	5,006	5,006	4,988	4,988

Note. *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$, + $p < 0.1$. Standard errors in parentheses. Total sample size does not equal analytical sample size of 5,007 due to missing values on the outcome variables.

Table A11e. 4.5 years: OLS regressions predicting child outcomes

	Internalising behaviours (0-20 scale)		Externalising behaviours (0-18 scale)		Early literacy skills (0-69 scale)		Maternal-reported child health (1-5 scale)		Acute illnesses (0-3 scale)	
	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)
	Coeff.	Coeff.	Coeff.	Coeff.	Coeff.	Coeff.	Coeff.	Coeff.	Coeff.	Coeff.
Class (ref: most advantaged)										
Average	0.88***	0.38***	0.74***	0.25*	-0.16***	-0.08*	-0.12***	-0.04	-0.05+	0.00
	(0.08)	(0.08)	(0.09)	(0.10)	(0.03)	(0.03)	(0.02)	(0.03)	(0.02)	(0.03)
Disadvantaged, overcrowding, neighbourhood deprivation	2.95***	1.74***	2.13***	1.00***	-0.64***	-0.39***	-0.26***	-0.16**	-0.12**	-0.04
	(0.15)	(0.17)	(0.18)	(0.20)	(0.06)	(0.07)	(0.05)	(0.05)	(0.05)	(0.05)
Disadvantaged, low work engagement	1.89***	1.09***	2.11***	1.17***	-0.43***	-0.20**	-0.25***	-0.10+	0.07	0.05
	(0.14)	-0.16	(0.16)	(0.19)	(0.06)	(0.07)	(0.04)	(0.05)	(0.04)	(0.05)
Maternal education (ref: university degree +)										
No secondary school qualification		0.66***		0.89***		-0.39***		-0.01		-0.13*
		(0.18)		(0.22)		(0.08)		(0.06)		(0.06)
Secondary school qualification/NCEA		0.17+		0.68***		-0.20***		0.05		-0.09**
		(0.10)		(0.12)		(0.04)		(0.03)		(0.03)
Diploma/Trade certificate		0.17*		0.60***		-0.21***		0.01		-0.02
		(0.09)		(0.10)		-0.03		(0.03)		(0.03)
Maternal age (years)		-0.06***		-0.05***		-0.00		0.01***		0.00
		(0.01)		(0.01)		(0.00)		(0.00)		(0.00)
Child ethnicity (ref: NZ European/Pākehā)										
Māori		0.47***		0.44***		-0.18***		-0.06+		-0.07*
		(0.10)		(0.11)		(0.04)		(0.03)		(0.03)
Pacific		1.35***		0.67***		-0.12*		-0.06		-0.11**
		(0.13)		(0.16)		(0.05)		(0.04)		(0.04)
Asian		0.56***		-0.05		0.54***		-0.30***		-0.27***
		(0.13)		(0.15)		(0.05)		(0.04)		(0.04)

Other ethnicity		0.17		0.11		0.12		-0.07	-0.03
		(0.20)		(0.23)		(0.08)		(0.06)	(0.06)
Maternal nativity (ref: born in NZ)									
Moved to NZ between 0-18 years old		0.18		-0.01		0.00		0.09*	-0.01
		(0.12)		(0.15)		(0.05)		(0.04)	(0.04)
Moved to NZ after 18 years old		0.48***		0.24+		0.00		-0.02	-0.15***
		(0.10)		(0.12)		(0.04)		(0.03)	(0.03)
Mother has a disability (ref: no disability)		0.20		0.23		0.04		-0.03	0.08*
		(0.13)		(0.15)		(0.05)		(0.04)	(0.04)
Two-parent family (ref: single parent family)		-0.11		-0.13		0.06		0.07	-0.07
		(0.14)		(0.16)		(0.06)		(0.04)	(0.04)
Change in family structure between waves (ref: no)		0.16		0.16		0.02		-0.02	0.04
		(0.15)		(0.18)		(0.06)		(0.05)	(0.05)
Other adult household members (ref: no other members)		0.28**		0.28*		-0.01		0.00	-0.02
		(0.10)		(0.11)		(0.04)		(0.03)	(0.03)
Lives in a rural area (ref: lives in an urban area)		-0.13		0.07		-0.12*		0.05	-0.05
		(0.12)		(0.14)		(0.05)		(0.04)	(0.04)
District Health Board region (ref: Auckland/Waitemata)									
Counties Manukau		0.30**		0.23*		0.02		-0.07*	0.01
		(0.09)		(0.11)		(0.04)		(0.03)	(0.03)
Waikato		0.03		0.02		-0.07+		-0.12***	0.02
		(0.10)		(0.12)		(0.04)		(0.03)	(0.03)
Rest of the North Island		0.06		-0.03		-0.09		-0.06	-0.03
		(0.17)		(0.20)		(0.07)		(0.05)	(0.05)
South Island		0.06		-0.08		-0.01		-0.14	0.01
		(0.29)		(0.34)		(0.12)		(0.09)	(0.09)
Child female (ref: male)	0.03	-0.00	-0.73***	-0.77***	0.14***	0.15***	0.06**	0.07**	-0.03	-0.03

	(0.07)	(0.07)	(0.08)	(0.08)	(0.03)	(0.03)	(0.02)	(0.02)	(0.02)	(0.02)
Child born at low birthweight (ref: not low birthweight)		0.23		0.33+		-0.15*		-0.07		0.13*
		(0.16)		(0.19)		(0.07)		(0.05)		(0.05)
Age deviation from interview age (months)	0.12***	0.06*	0.05	-0.01	0.03**	0.04***	0.00	0.01	0.01+	0.02*
	(0.03)	(0.03)	(0.03)	(0.03)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Constant	2.57***	4.00***	5.23***	6.46***	0.08**	0.13	4.40***	3.97***	0.73***	0.86***
	(0.07)	(0.30)	(0.08)	(0.35)	(0.03)	(0.12)	(0.02)	(0.10)	(0.02)	(0.10)
R^2	0.100	0.165	0.068	0.107	0.034	0.105	0.014	0.043	0.004	0.035
n	5,004	5004	5,004	5,004	4,630	4,630	5,005	5,005	5,004	5,004

Note. *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$, + $p < 0.1$. Standard errors in parentheses. Total sample size does not equal analytical sample size of 5,007 due to missing values on the outcome variables.

Table A11f. 8 years: OLS regressions predicting child outcomes

	Internalising behaviours (0-20 scale)		Externalising behaviours (0-20 scale)		Maternal-reported child health (1-5 scale)		Acute illnesses (0-3 scale)	
	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)
	Coeff.	Coeff.	Coeff.	Coeff.	Coeff.	Coeff.	Coeff.	Coeff.
Class (ref: most advantaged)								
Average	0.68***	0.39***	0.54***	0.32**	-0.23***	-0.17***	0.04+	0.05*
	(0.10)	(0.10)	(0.10)	(0.11)	(0.03)	(0.03)	(0.02)	(0.02)
Low home ownership, high mobility	1.36***	0.94***	0.90***	0.60***	-0.28***	-0.22***	0.07*	0.09*
	(0.15)	(0.16)	(0.16)	(0.17)	(0.04)	(0.04)	(0.03)	(0.04)
Most disadvantaged	1.96***	1.28***	1.61***	1.11***	-0.51***	-0.37***	0.02	0.03
	(0.13)	(0.16)	(0.14)	(0.17)	(0.04)	(0.04)	(0.03)	(0.04)
Maternal education (ref: university degree +)								
No secondary school qualification		0.15		0.36		0.01		-0.02
		(0.23)		(0.24)		(0.06)		(0.05)
Secondary school qualification/NCEA		0.21+		0.40**		0.06+		-0.01
		(0.12)		(0.13)		(0.03)		(0.03)
Diploma/Trade certificate		0.17		0.38***		0.00		0.02
		(0.10)		(0.11)		(0.03)		(0.02)
Maternal age (years)		-0.05***		-0.03***		0.01**		0.00
		(0.01)		(0.01)		(0.00)		(0.00)
Child ethnicity (ref: NZ European/Pākehā)								
Māori		0.11		0.20		-0.11***		0.01
		(0.11)		(0.12)		(0.03)		(0.03)
Pacific		0.12		-0.08		-0.23***		0.00
		(0.17)		(0.18)		(0.05)		(0.04)
Asian		-0.03		-0.26		-0.26***		-0.13***
		(0.16)		(0.17)		(0.04)		(0.04)
Other ethnicity		0.05		0.05		-0.06		-0.07

		(0.24)		(0.25)		(0.07)		(0.05)
Maternal nativity (ref: born in NZ)								
Moved to NZ between 0-18 years old		0.09		-0.11		0.06		-0.04
		(0.15)		(0.15)		(0.04)		(0.03)
Moved to NZ after 18 years old		0.09		0.28*		0.02		-0.09**
		(0.13)		(0.13)		(0.04)		(0.03)
Mother has a disability (ref: no disability)		0.46**		0.44**		-0.06		0.04
		(0.15)		(0.16)		(0.04)		(0.03)
Two-parent family (ref: single parent family)		-0.22		-0.01		-0.01		0.00
		(0.15)		(0.16)		(0.04)		(0.03)
Change in family structure between waves (ref: no)		0.22		0.07		-0.03		0.00
		(0.17)		(0.17)		(0.05)		(0.04)
Other adult household members (ref: no other members)		0.50***		0.20		-0.07*		-0.00
		(0.12)		(0.13)		(0.03)		(0.03)
Lives in a rural area (ref: lives in an urban area)		-0.03		0.05		0.02		0.02
		(0.13)		(0.14)		(0.04)		(0.03)
District Health Board region (ref: Auckland/Waitemata)								
Counties Manukau		0.20+		0.21+		-0.07*		0.01
		(0.12)		(0.12)		(0.03)		(0.03)
Waikato		0.16		0.12		-0.06+		0.01
		(0.12)		(0.13)		(0.03)		(0.03)
Rest of the North Island		0.01		-0.04		0.04		0.03
		(0.17)		(0.18)		(0.05)		(0.04)
South Island		0.03		-0.11		0.16+		-0.04
		(0.29)		(0.30)		(0.08)		(0.06)
Child female (ref: male)	-0.06	-0.07	-1.36***	-1.37***	0.08***	0.08***	-0.03	-0.02
	(0.08)	(0.08)	(0.09)	(0.09)	(0.02)	(0.02)	(0.02)	(0.02)

Child born at low birthweight (ref: not low birthweight)		0.09		0.32		-0.03		0.06
		(0.20)		(0.21)		(0.06)		(0.05)
Age deviation from interview age (months)	0.02**	0.02*	-0.01	-0.02+	-0.00	-0.00	-0.00+	-0.00*
	(0.01)	(0.01)	(0.01)	(0.01)	(0.00)	(0.00)	(0.00)	(0.00)
Constant	2.37***	3.97***	4.46***	5.16***	4.42***	4.29***	0.41***	0.33***
	(0.10)	(0.36)	(0.10)	(0.38)	(0.03)	(0.10)	(0.02)	(0.08)
R^2	0.056	0.079	0.079	0.094	0.049	0.072	0.003	0.018
n	4,442	4,442	4,441	4,441	4,612	4,612	4,561	4,561

Note. *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$, + $p < 0.1$. Standard errors in parentheses. Total sample size does not equal analytical sample size of 5,007 due to missing values on the outcome variables.