Timing and Duration of Neighbourhood Disadvantage: A Life Course Perspective on Health Behaviours

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Research background

Health behaviours are an important factor in shaping long-term health outcomes. Yet, these behaviours are not merely a matter of individual choice; they are also shaped by the social and physical environments in which people grow up and live. Increasingly, residential neighbourhoods are recognised as an influential context for the development of health-related behaviours across the life course. A large body of research indicates that growing up in a disadvantaged neighbourhood can have adverse effects on various aspects of child development, including educational, health, behavioural, and emotional outcomes (Brandén et al., 2023). The influence of the residential neighbourhood on individuals is largely determined by when and how long they live in that neighbourhood (Sharkey & Faber, 2014). Certain life periods, such as childhood or adolescence, are especially sensitive to neighbourhood effects as individuals rely more heavily on local social networks and services in their neighbourhood. Similarly, longer exposure to disadvantaged neighbourhoods tends to amplify negative outcomes.

However, studying neighbourhood effects on health behaviours over the life course is complex due to the lack of longitudinal data that capture both neighbourhood exposures and individual health outcomes. Most existing research has been cross-sectional (Jivraj et al., 2020), and longitudinal studies that focus on both timing and accumulation of exposure remain rare. In this article, we are using Swedish register data that allows us to study the trajectory of neighbourhood disadvantage from birth to young adulthood and see how it shapes health behaviours in adulthood. Specifically, we focus on how prolonged exposure compared to short exposure to a disadvantaged neighbourhood affects health behaviours. Moreover, we explore the sensitive periods during which the residential context is most important. To deal with selection issues in residential mobility and account for time-varying confounders, we will employ a marginal structural model with inverse probability of treatment weighting. Beyond estimating these effects, we will explore the mechanisms underlying these associations to understand whether physical or social factors play a stronger role. In doing so, we contribute to the literature by applying robust causal methods to rich longitudinal data and by focusing specifically on health behaviours, which are less commonly studied outcomes in neighbourhood effects research.

Data

We use Swedish population register data to study individuals who were born in Sweden in 1990 and who lived continuously in the country until 2023. After excluding individuals who have died, emigrated, were foreign-born, or had missing information, the final sample is 105,634 individuals.

To measure health behaviours, we use data from the Swedish National Inpatient Register, which records all inpatient hospital stays in Sweden. Because direct measures of individual health behaviours are unavailable in the registers, we use preventable hospitalisations as a proxy for health behaviour-related outcomes. These include hospitalisations that could have been potentially avoidable through lifestyle or medical prevention, such as those due to obesity (E66), substance-related disorders (ICD-10 F10-19), injuries and poisonings (ICD-10 S00-T98). In addition, we consider potentially avoidable hospitalisations that include both chronic and acute conditions. Individuals were coded as having experienced a preventable hospitalisation if they had at least one such admission between the ages of 26 and 33. In total, around 5% (N = 5,615) of the cohort have experienced a preventable hospitalisation during adulthood.

We use DeSO to define neighbourhoods. DeSO is a nationwide small-scale geographical classification implemented by Statistics Sweden and is designed to align with existing administrative boundaries, such as municipalities, and to reflect local patterns of housing, commuting, and access to public services. The DeSO classification divides the country into 6,160 distinct areas, each typically having between 700 and 3,000 residents. We define disadvantaged neighbourhoods as those within the top 20% of a composite deprivation index based on four indicators: low education, low income, unemployment, and receipt of social welfare for each year. We construct residential histories from birth to age 25. Table 1 indicates that 56% of individuals have been exposed to disadvantage for at least one year from birth to age 25, with the majority experiencing short-term disadvantage of up to five years. The average number of years lived in a disadvantaged neighbourhood is 3.9.

We identify four sensitive periods: early childhood (ages 0-5), early school years (6-10), adolescence (11-16), and early adulthood (17-25). We then assess whether an individual has ever lived in a disadvantaged neighbourhood during any of these key developmental stages or a combination thereof. Notably, 18% of individuals experienced disadvantage solely in adulthood, 7% only in early childhood, and less than 1% only during early school years or adolescence. Additionally, 10% have lived in disadvantage for at least one year across all sensitive periods.

Table 1. Duration of exposure to disadvantaged neighbourhoods

Exposure measure	Total (N, %)
Never lived in a disadvantaged DeSO (0–25 years)	46,311 (44%)
Lived in disadvantaged DeSO 1–5 years	34,496 (33%)
Lived in disadvantaged DeSO 6–10 years	10,722 (10%)
Lived in disadvantaged DeSO 11–25 years	14,105 (13%)
Mean total years in disadvantaged DeSO	3.9
Total	105,634

Preliminary results

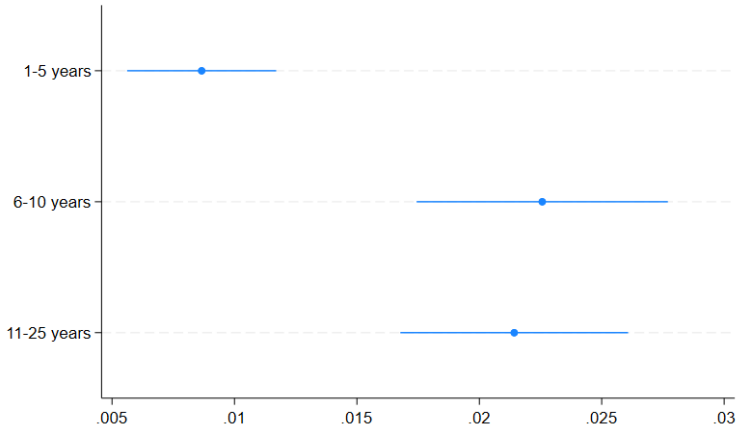

Figure 1. Average marginal effects (AMEs) coefficients for cumulative exposure to disadvantaged neighbourhoods predicting preventable hospitalisations. *Notes: gender and parental migration background are added as controls. The reference category is no disadvantage.*

Figure 1 presents average marginal effect coefficients of preventable hospitalisations by cumulative years of exposure to neighbourhood disadvantage, based on a logistic regression model controlling for gender and parental migration background. The results indicate that exposure to disadvantaged neighbourhoods is associated with a higher likelihood of hospitalisation for preventable causes. Individuals exposed for 1-5 years have a lower likelihood of experiencing hospitalisation compared to those exposed for 6-10 years and 11-25 years. Interestingly, there is no difference between being exposed for 6-10 or 11-25 years, suggesting that the effect of disadvantage is not linear.

Turning to sensitive periods (Figure 2), we observe that individuals who faced disadvantage solely during any of these periods - early childhood, adolescence, or early adulthood - are more likely to experience preventable hospitalisations in adulthood compared to those who never experienced disadvantage. In contrast, disadvantage during the early school years does not appear to have a significant effect. Additionally, experiencing disadvantage across two or more sensitive periods increases the likelihood of preventable hospitalisation compared to experiencing it during just one period. However, when comparing these sensitive periods, no single period or combination emerges as particularly more influential in predicting hospitalisation in adulthood.

In the further developments of the article, we will use a marginal structural model with inverse probability of treatment weighting to account for time-varying confounders. Furthermore, we will explore the mechanisms linking the neighbourhood environment to health behaviours in adulthood. We will assess through which pathways neighbourhood disadvantage affects adult health behaviours: via structural access to healthcare resources or social/societal mechanisms. We will measure structural access by living in proximity to healthcare facilities, and social mechanisms by the neighbourhood's ethnic composition, and residential stability.

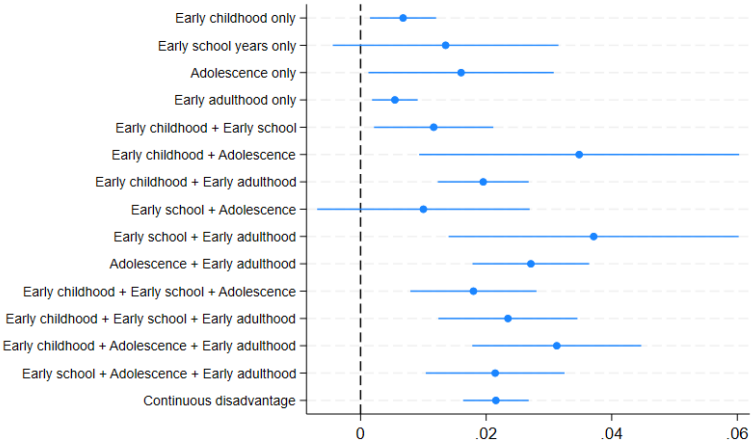

Figure 2. Average marginal effects (AMEs) coefficients for sensitive periods predicting preventable hospitalisations. *Notes: gender and parental migration background are added as controls. The reference category is no disadvantage.*

References

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