

Parental Cancer Diagnosis and Children's Educational Outcomes

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1. Introduction and Motivation

Children's educational trajectories are shaped not only by their individual abilities and school environments but also by the stability and resources of their families. When a parent falls seriously ill, family life is disrupted in ways that may hinder children's ability to thrive at school. Parental illness can lead to income loss, reduced time for supervision and support, psychological distress, and changes in household structure or routines. These mechanisms—both pecuniary and non-pecuniary—can affect the child's cognitive, emotional, and educational development (Aaskoven et al., 2022; Currie & Almond, 2011). Understanding how such shocks influence human capital accumulation is central to demographic research on the intergenerational transmission of inequality and to policies seeking to mitigate long-term disadvantages arising from unforeseen family health events.

Existing research has focused largely on the consequences of parental death (Adda et al., 2011; Case & Ardington, 2006; Høeg et al., 2019), while serious but non-fatal illnesses—though potentially equally disruptive—remain underexplored. Severe diseases such as cancer are particularly suitable for causal investigation: diagnoses are sudden, their timing largely exogenous to children's schooling, and their onset precisely dated using medical registers. Cancer diagnoses thus provide a rare opportunity to study how unexpected parental health shocks spill over into children's educational lives and shape their life-course trajectories.

Recent evidence from Denmark demonstrates that the effects of parental cancer are both substantial and persistent. Aaskoven, Kjær and Gyrd-Hansen (2022) find that children exposed to a parental cancer diagnosis experience lower grade point averages and reduced upper-secondary completion rates, with stronger effects when mothers are affected, when cancers have poor prognoses, and when diagnoses occur during adolescence. The authors emphasize two channels through which parental illness affects children: a pecuniary one, involving income loss or reduced employment, and a psychosocial one, involving stress and diminished parental attention.

Other studies provide complementary evidence across contexts. Bratti and Mendola (2014) show that worsening maternal health lowers school enrollment in Bosnia and Herzegovina, while paternal health changes have weaker effects. Bortes, Strandh and Nilsson (2020) document increased early school leaving in Sweden among children of parents with

psychiatric illnesses. Using Danish administrative registers, Jørgensen, Urhoj and Nybo Andersen (2018) find lower grades and attainment among those exposed to parental cancer during childhood or adolescence. Similar patterns appear in low- and middle-income settings, where parental health shocks reduce schooling through income loss and reduced parental involvement (Alam, 2015; Dhanaraj, 2016; Mendolia et al., 2019).

Despite these contributions, several gaps remain. Most studies rely on self-reported or hospitalization data that lack precise timing of illness onset and focus on single outcomes rather than full educational sequences. Little is known about how effects vary by parental role, cancer type and severity, or institutional context. This paper addresses these gaps by studying how parental cancer diagnoses affect the educational trajectories of children in Austria. Cancer represents a particularly well-defined and exogenous family shock, while the Austrian context—with early tracking, a strong vocational training sector, and a stratified welfare state—offers an important contrast to Scandinavia. By leveraging population-wide administrative microdata covering all students in Austria from 2006/07 onwards, the project traces how parental illness influences progression from compulsory schooling through upper-secondary completion and into post-school transitions.

2. Data

The study uses a newly constructed dataset linking Austria's population-wide education registers to administrative information on health, employment, and family background. The core data stem from school and higher education registers, which record annual information on enrollment, performance, grade progression, school type, and completion outcomes since 2006/07, allowing reconstruction of complete educational careers for entire cohorts.

The analyses include all student cohorts from 2006/07 to 2022/23, providing population-wide coverage of approximately 1.4 million students. These longitudinal records make it possible to follow individuals from primary entry at around age six through upper-secondary education and, for the earliest cohorts, into early adulthood, capturing transitions into higher education and the labor market. Educational trajectories are complemented by information on siblings linked via parental identifiers, enabling within-family analyses that strengthen causal interpretation.

These education records are linked to multiple administrative sources. Social insurance and employment registers trace parents' and children's labor-market status, earnings, and employment sector from 2010 to 2023. Census-based population registers provide demographic and household characteristics, including composition, main language, country of birth, municipality of residence, and parental education. School-level contextual data identify the type and location of institutions and their socioeconomic composition. The resulting dataset offers an exceptionally comprehensive view of educational careers and their social and institutional environments.

Information on parental cancer diagnoses comes from the Austrian Cancer Register, which records all malignant neoplasms diagnosed since 1983 based on mandatory hospital reporting. Each record includes the date of diagnosis, tumor site, morphology, stage, and mortality follow-up. The register’s population coverage and precise timing make it ideally suited for analyzing the onset and severity of parental illness. By linking these data to education records through parental identifiers, we identify all children whose mother or father was diagnosed with cancer during childhood or adolescence and classify events by timing, affected parent, and severity.

3. Empirical Strategy

The analysis exploits the quasi-random timing of parental cancer diagnoses as an exogenous shock to the family environment. We estimate event-study models comparing children’s outcomes before and after diagnosis:

$$Y_{it} = \sum_k \beta_k D_{i,t+k} + \alpha_i + \gamma_t + \varepsilon_{it}$$

where k indicates years relative to diagnosis, α_i are child fixed effects controlling for all time-invariant family characteristics, and γ_t capture cohort or calendar-year effects. The coefficients β_k trace deviations from each child’s pre-diagnosis trajectory, allowing for dynamic treatment effects that evolve over time.

The analysis considers a sequence of outcomes describing educational and early labor-market trajectories. Short- to medium-term indicators include performance, grade repetition, track changes, and transitions between school types. Longer-term outcomes capture completion of upper-secondary education, on-time versus delayed completion, and entry into apprenticeship or higher education. Because the observation window extends into individuals’ mid-twenties, we also examine post-school transitions—such as employment, unemployment, higher education, or NEET status—as well as labor-market outcomes such as earnings, to assess whether parental illness has persistent effects on integration and economic stability. To ensure comparability across outcomes that are observed only at specific milestones, we complement the event-study analysis with timing-alignment models that link each parental diagnosis to the relevant educational stage at risk. For outcomes that are not observed longitudinally, we further complement the event-study analysis with timing-alignment models linking each parental diagnosis to the relevant educational stage at risk.

To strengthen causal inference, we exploit within-family variation by comparing siblings who were at different ages when a parent was diagnosed with cancer—those exposed to parental illness during schooling versus those whose schooling occurred before or after diagnosis. The dataset contains complete schooling and demographic histories for all siblings linked to students across cohorts, enabling comparisons within the same family and holding constant shared characteristics. This design allows testing whether exposure during critical stages—

such as transitions from primary to lower or from lower to upper secondary—has particularly large consequences for subsequent educational and labor-market trajectories.

We also conduct mediation analyses to examine whether observed effects operate through income or employment disruptions, comparing baseline and mediation-adjusted estimates to assess the relative importance of pecuniary versus psychosocial pathways. Additional heterogeneity analyses distinguish by parental role (mother/father), cancer characteristics, and child age at exposure.

Anticipation effects are tested by examining pre-diagnosis trends up to two years before diagnosis. Concurrent shocks—such as job loss, divorce, or migration—are included as time-varying covariates. Standard errors are clustered at the family level, and robustness checks explore alternative exposure definitions and event windows.

4. Contribution and Expected Insights

This study provides new evidence on how serious parental illness affects children's educational and early labor-market trajectories, situating these processes within a demographic life-course perspective on family events and intergenerational inequality. By linking population-wide education, employment, and health registers at the individual and family level, it offers an exceptionally detailed view of human-capital formation under conditions of family disruption.

The analysis extends previous research—largely concentrated in Nordic countries—by examining these processes in Austria, a setting characterized by early tracking, a dual vocational system, and a stratified welfare state. This institutional contrast allows new insights into how education systems and social policies moderate the effects of family adversity and shape the transmission of advantage across generations.

Methodologically, the study combines event-study models with sibling fixed-effects designs to identify the consequences of parental cancer diagnoses based on within-family and over-time variation. Tracing complete educational and early employment trajectories distinguishes short-term disruptions from longer-term effects on completion, training, and labor-market integration.

Together, these features provide a comprehensive and causally credible picture of how major family health shocks shape children's life-course outcomes and the intergenerational transmission of opportunity. The findings will help identify educational stages and family contexts where targeted support may be most effective, offering evidence relevant for demographic research on family processes and for policies aimed at reducing the long-term social and economic consequences of parental illness.

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