What is the Added Value of Preschool for Poor Children? Long-Term and Intergenerational Impacts and Interactions with an Infant Health Intervention ONLINE APPENDIX

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A Additional Results

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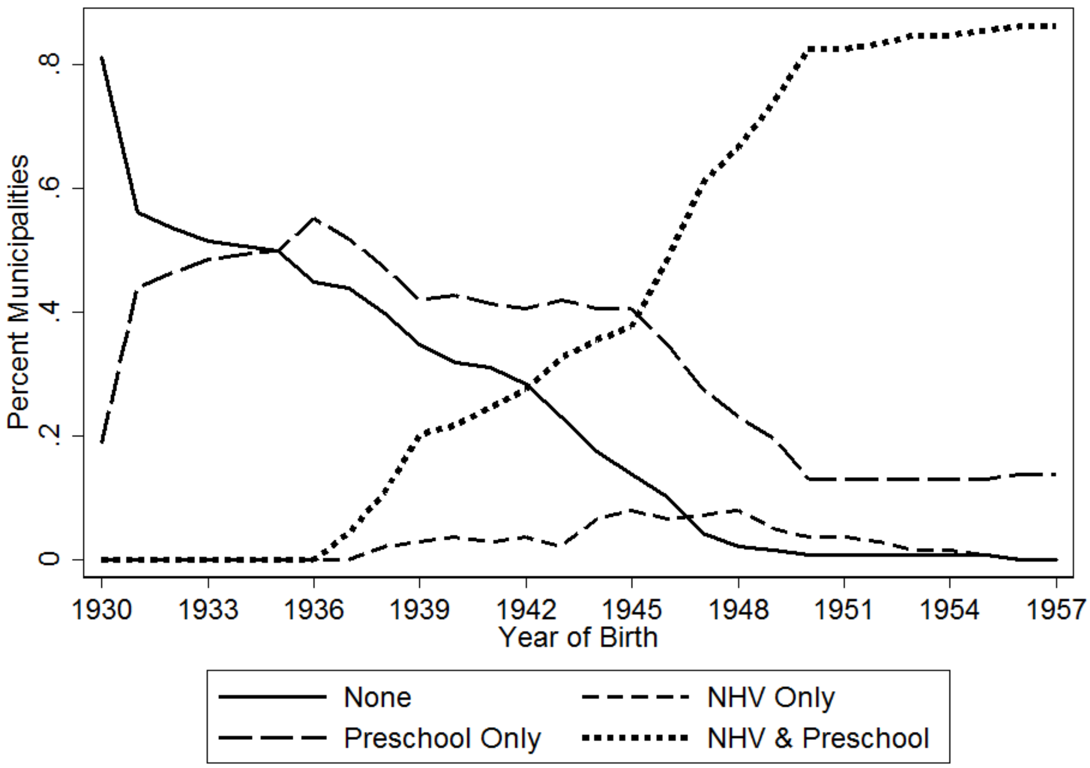
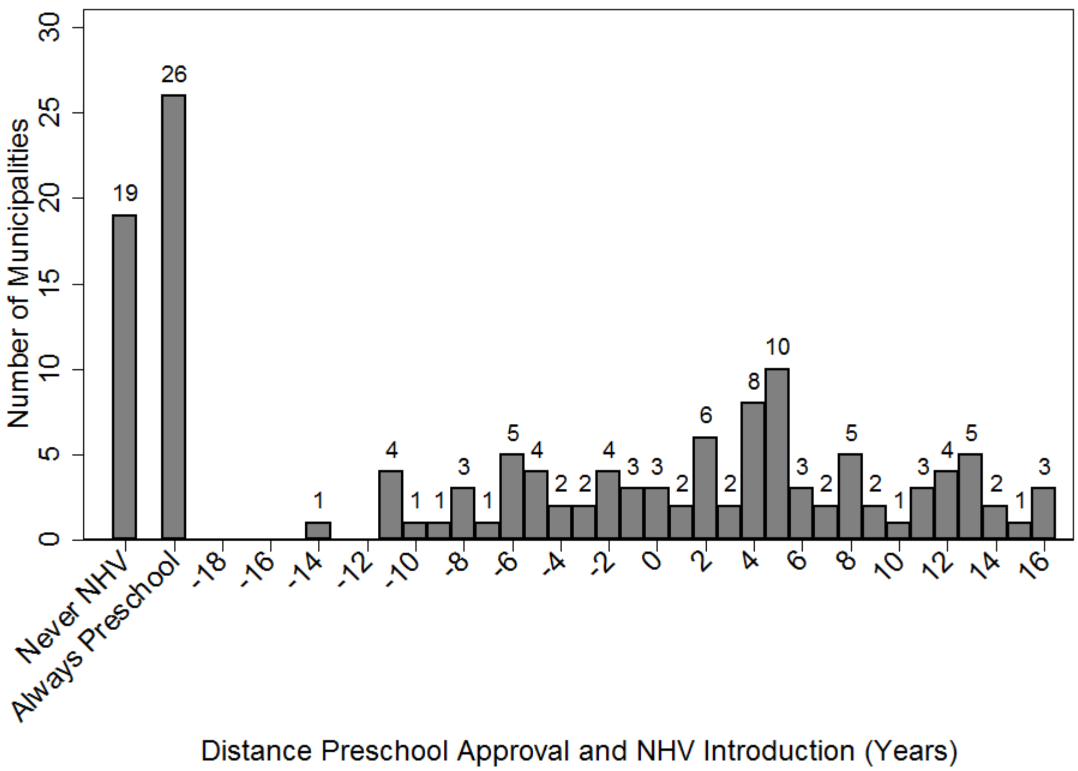
Figure A1: Variation in Preschool and NHV Availability by Year of Birth



Notes: This graph shows for each cohort the percentage of municipalities that had: (1) no preschool at age 3 and no NHV at birth in solid black line; (2) preschool at age 3 but no NHV at birth in long dashed line; (3) NHV at birth but no preschool at age 3 in short dashed line; and (4) preschool at age 3 and NHV at birth in dotted line. The sample is limited to the 138 municipalities that ever had an approved preschool by 1960.

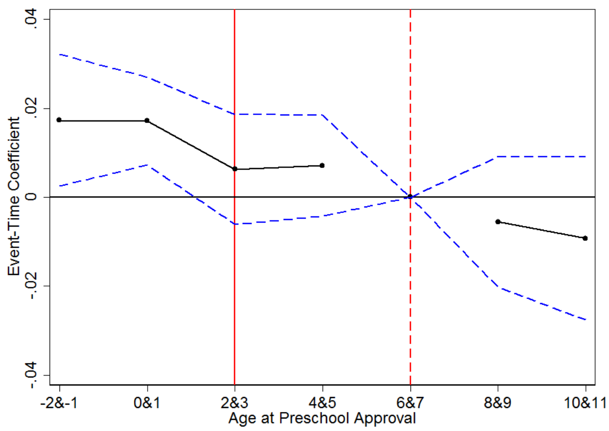
Figure A2: Difference in Years Between Preschool and NHV Availability



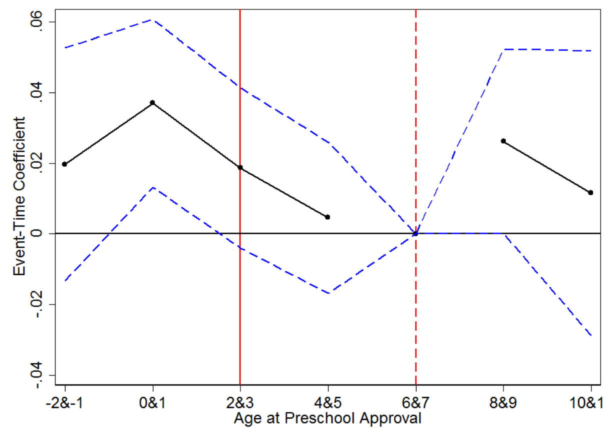
Notes: This figure shows a histogram of the difference in years between the year in which a cohort had a first approved preschool at age 3 and the year in which a cohort had the NHV program at birth, for municipalities that approved a preschool from 1933 onward. So, if y_p = year of preschool approval, and y_n = year of NHV implementation, then we are showing the distribution of $d = y_p - 3 - y_n$. The sample is limited to the 138 municipalities that ever had an approved preschool by 1960. In this sample, 19 municipalities never established NHV ("Never NHV"), and 26 municipalities had an approved preschool by 1933 ("Always Preschool").

Figure A3: Effects of Access to Preschool by Age at Exposure: Compulsory Schooling and Wage Income (Components of the Human Capital Index)

(a) More than Compulsory Schooling



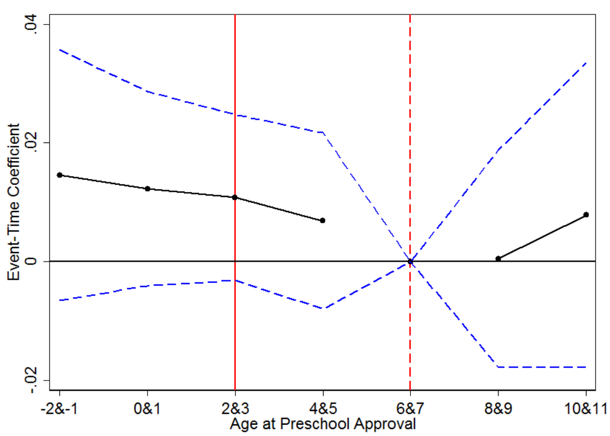
(b) Log Mean Wage Income between Ages 30 and 60



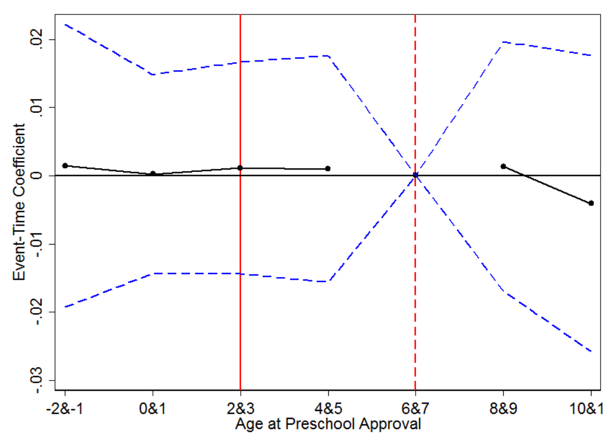
Notes: These figures show the coefficients and 95% confidence intervals from event-study regressions estimated on the municipality×birth-year collapsed data. See notes under Figure 2 for more details on the sample and specifications.

Figure A4: Effect of Access to Preschool by Age at Exposure: Additional Educational Outcomes **for the Next Generation**

(a) More than Compulsory Schooling

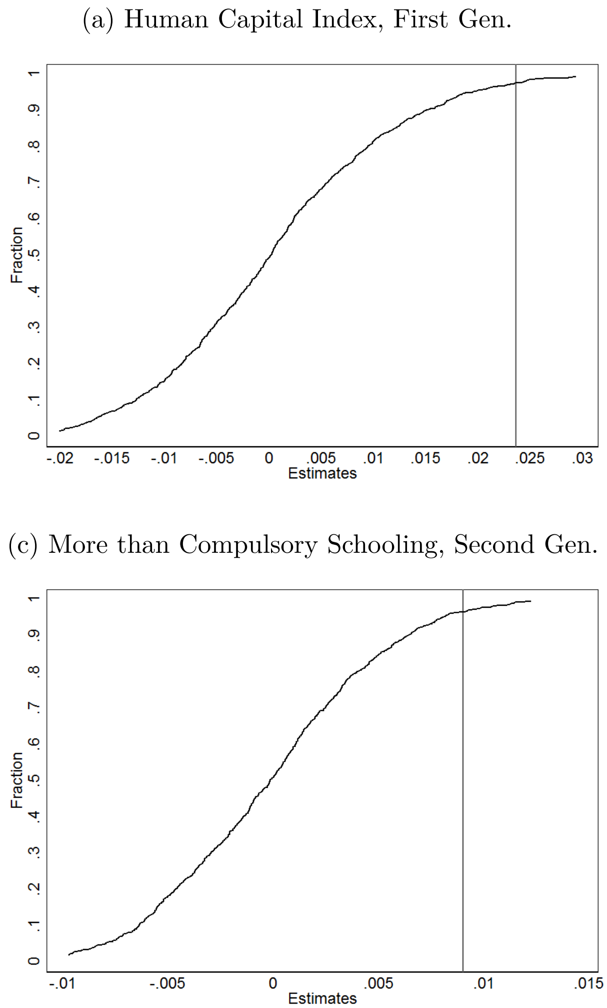


(b) Gymnasium



Notes: These figures show the coefficients and 95% confidence intervals from event-study regressions estimated on the municipality×birth-year collapsed data. See notes under Figure 2 for more details on the sample and specifications.

Figure A5: Permutation Tests for Main Outcomes: CDFs of Coefficient Estimates from 1,000 Random Draws of Placebo Treatment Years



Notes: These figures show the cumulative density functions (cdfs) from a permutation test in which, in each of 1,000 iterations, each of the 138 municipalities in our sample is randomly assigned a preschool approval year between 1921 and 1960 instead of the true approval year. The vertical lines show the locations of the true coefficients from our preferred specification for each of our main outcomes. For further details on sample and specifications see notes under Tables 4 and 5.

Table A1: Effects of Approved Preschool Availability on the Number of Births in the Subsequent Three Years; Urban Municipalities

	Number of Births in Next 3 Years		
	(1) [Ever Preschool]	(2) [No Non-App. Preschool]	(3) [1933-1947 Switchers]
Any Approved Preschool	-182.4 [147.6]	-394.5 [234.3]	33.68 [42.66]
Mean, dep. var.	1620.3	2379.7	675.5
N (cells)	1020	525	735

Notes: Each cell presents the coefficient for an indicator for there being an approved preschool in a given municipality×year based on separate regressions. The data on births are for urban municipalities in the years 1933-1950. In column (1) the sample is limited to urban municipalities that ever had an approved preschool by 1960. Column (2) further drops municipalities that had at least one established but not approved preschool over this time period. Column (3) only uses municipalities that approved a preschool between 1933 and 1947.
Significance levels: * p<0.1 ** p<0.05 *** p<0.01

Table A2: Effects of Access to Preschool at Age 3 on Different Adult Income Measures

Outcome	(1)	(2)
Avg Age 30-60 Wage Inc	3808.711**	1790.183
	[1795.209]	[1552.952]
Control Mean, dep. var.	2.36e+05	2.36e+05
N (cells)	3862	3862
Log Age 30-60 PDV Wage Inc	0.040***	0.016*
	[0.011]	[0.009]
Control Mean, dep. var.	14.265	14.265
N (cells)	3862	3862
Log Avg Age 30-60 Tot Inc	0.028***	0.009
	[0.008]	[0.006]
Control Mean, dep. var.	12.326	12.326
N (cells)	3862	3862
Log Avg Age 49-51 Wage Inc	0.022**	0.010
	[0.009]	[0.009]
Control Mean, dep. var.	12.276	12.276
N (cells)	3723	3723
Any Wage Inc., Age 49-51	0.008***	0.004*
	[0.003]	[0.002]
Control Mean, dep. var.	0.892	0.892
N (cells)	3723	3723
Cohort FE	Yes	Yes
Municipality FE	Yes	Yes
Muni Controls	Yes	Yes
County Trends	No	Yes

Notes: Each cell presents the coefficient for the treatment indicator from a separate regression. The units of analysis are municipality×birth-year cells. The outcomes are: average age 30-60 wage income in levels, log of the present discounted value of age 30-60 wage income (following Chetty et al., 2011), log average age 30-60 total income, log average age 49-51 wage income, and an indicator for any positive wage income at ages 49-51. See notes under Table 4 for more details on specifications and controls.
Significance levels: * p<0.1 ** p<0.05 *** p<0.01

Table A3: Effects of Access to Preschool at Age 3 on Main Outcomes; Individual-level Micro-Data

	First Generation Outcomes		Second Generation Outcomes		
	(1) HC Index	(2) Survival>Age 65	(3) Yrs.School	(4) $\geq$Comp. Edu.	(5) Gym.
Any Approved Preschool at Age 3	0.024*** [0.008]	0.007*** [0.002]	0.029 [0.019]	0.009** [0.004]	0.007 [0.005]
N (individuals)	796648	880708	316530	316530	316530

Notes: Each coefficient is from a separate regression that uses individual-level data. Standard errors are clustered on the municipality level. The human capital index is constructed using three measures: years of schooling, an indicator for having more than nine years of compulsory schooling, and the natural log of average wage income over all ages observable between 30 and 60 (see text for more details). All regressions control for municipality and birth year fixed effects (of the first generation), municipality time-varying controls, and county-specific linear trends. Standard errors are clustered at the municipality level.
Significance levels: * p<0.1 ** p<0.05 *** p<0.01

Table A4: Effects of Access to Preschool at Age 3 on Adult Health Care Utilization and Diagnoses

Outcome	(1)	(2)
Hosp. Nights: Age 45-54	-0.095 [0.165]	0.119 [0.154]
Control Mean, dep. var.	8.666	8.666
N (cells)	3862	3862
Hosp. Nights: Age 55-64	-0.408** [0.190]	-0.390* [0.200]
Control Mean, dep. var.	12.415	12.415
N (cells)	3862	3862
Hosp. Nights: Age 65-74	0.290* [0.174]	0.200 [0.153]
Control Mean, dep. var.	12.881	12.881
N (cells)	3862	3862
Diagnosed Cardio	0.003 [0.003]	0.001 [0.003]
Control Mean, dep. var.	0.220	0.220
N (cells)	3862	3862
Diagnosed Heart	-0.003* [0.002]	-0.001 [0.002]
Control Mean, dep. var.	0.074	0.074
N (cells)	3862	3862
Diagnosed Diabetes	-0.001 [0.001]	-0.001 [0.001]
Control Mean, dep. var.	0.031	0.031
N (cells)	3862	3862
Diagnosed Cancer	-0.001 [0.001]	-0.000 [0.001]
Control Mean, dep. var.	0.043	0.043
N (cells)	3862	3862
Cohort FE	Yes	Yes
Municipality FE	Yes	Yes
Muni Controls	Yes	Yes
County Trends	No	Yes

Notes: Each cell presents the coefficient for the treatment indicator from a separate regression. The units of analysis are municipality×birth-year cells. The outcomes are: the number of nights spent at the hospital over different age ranges, as well as diagnoses for cardiovascular disease, heart disease, diabetes, and cancer. See notes under Table 4 for more details on specifications and controls.
Significance levels: * p<0.1 ** p<0.05 *** p<0.01

Table A5: Effects of Access to Preschool at Age 3 on the Fertility Outcomes of Females Born in 1935-1957

	(1) No Kids	(2) Num. Kids	(3) Age at Fst. Birth	(4) Dad Ever Miss.
Any Approved Preschool at Age 3	-0.004	0.003	0.116**	-0.002
	[0.004]	[0.015]	[0.051]	[0.004]
Control Mean, dep. var.	0.096	2.130	23.711	0.140
N (cells)	3161	3161	3156	3161

Notes: Each column reports the results from a separate regression. The units of analysis are municipality×birth-year cells. The sample is limited to females who were born in 1935-1957 in the 138 municipalities that ever had an approved preschool by 1960. See notes under Table 4 for more details on specifications and controls.

Significance levels: * $p<0.1$ ** $p<0.05$ *** $p<0.01$

Table A6: Effects of Access to Preschool at Age 3 on the Education of the Next Generation, Using All (Rather than Firstborn) Children

Outcome	(1)	(2)
Child's Years of Schooling	0.060***	0.032
	[0.022]	[0.022]
Control Mean, dep. var.	12.131	12.131
N (cells)	3153	3153
Child Has More than Compulsory Education	0.019***	0.010*
	[0.005]	[0.005]
Control Mean, dep. var.	0.730	0.730
N (cells)	3153	3153
Child Has Completed Gymnasium	0.018***	0.011**
	[0.004]	[0.004]
Control Mean, dep. var.	0.202	0.202
N (cells)	3153	3153
Cohort FE	Yes	Yes
Municipality FE	Yes	Yes
Muni Controls	Yes	Yes
County Trends	No	Yes

Notes: Each cell presents the coefficient for the treatment indicator for a separate regression. The units of analysis are cells based on the *mother's* municipality×birth-year. The analyses are identical to those in Table 5, except we use a sample of all children of mothers born in 1935-1957 rather than only the firstborns. See notes under Table 5 for more details on specifications and controls.
Significance levels: * p<0.1 ** p<0.05 *** p<0.01

Table A7: Robustness to Changes in Specification

Outcome	(1) [Rural Trends]	(2) [Edu. Ref.]	(3) [Rural*Decade]	(4) [Frac Yrs]
Human Capital Index	0.028***	0.032***	0.030***	0.041***
	[0.009]	[0.009]	[0.009]	[0.012]
N (cells)	3862	3862	3862	3862
Survival beyond Age 65	0.006***	0.006***	0.006***	0.007***
	[0.002]	[0.002]	[0.002]	[0.003]
N (cells)	3862	3862	3862	3862
Second Gen.: More than	0.015***	0.016***	0.016***	0.016**
Compulsory Education	[0.005]	[0.004]	[0.004]	[0.007]
N (cells)	3151	3151	3151	3057
Cohort FE	Yes	Yes	Yes	Yes
Municipality FE	Yes	Yes	Yes	Yes
Muni Controls	Yes	Yes	Yes	Yes
County Trends	No	No	No	Yes

Notes: Each cell presents the coefficient for the treatment indicator from a separate regression. The units of analysis are municipality×birth-year cells. The human capital index is constructed using three measures: years of schooling, an indicator for having more than nine years of compulsory schooling, and the natural log of average wage income over all ages observable between 30 and 60 (see text for more details). See notes under Tables 4 and 5 for more details on specifications and controls in the baseline model.
Significance levels: * p<0.1 ** p<0.05 *** p<0.01

Table A8: Robustness to Changes in Sample

Outcome	(1) [Rural]	(2) [Urban]	(3) [No Always Impl.]	(4) [Ever NHV]
Human Capital Index	0.030**	0.021*	0.013	0.021**
	[0.012]	[0.012]	[0.008]	[0.009]
N (cells)	1876	1986	3134	3331
Survival beyond Age 65	0.004*	0.007**	0.007***	0.007***
	[0.002]	[0.003]	[0.002]	[0.002]
N (cells)	1876	1986	3134	3331
Second Gen.: More than Compulsory Education	0.018***	0.011	0.008	0.012**
	[0.006]	[0.008]	[0.005]	[0.005]
N (cells)	1541	1610	1580	2728
Cohort FE	Yes	Yes	Yes	Yes
Municipality FE	Yes	Yes	Yes	Yes
Muni Controls	Yes	Yes	Yes	Yes
County Trends	No	No	Yes	Yes

Notes: Each cell presents the coefficient for the treatment indicator from a separate regression. The units of analysis are municipality×birth-year cells. The human capital index is constructed using three measures: years of schooling, an indicator for having more than nine years of compulsory schooling, and the natural log of average wage income over all ages observable between 30 and 60 (see text for more details). See notes under Tables 4 and 5 for more details on specifications and controls in the baseline model.
Significance levels: * $p<0.1$ ** $p<0.05$ *** $p<0.01$

Table A9: Correlation Between Access to Preschool at Age 3 and **Predicted** Outcomes of the First Generation

	(1) Pr. HC Index	(2) Pr. Yrs. School	(3) Pr. More than Comp.	(4) Pr. Log Wage Inc	(5) Pr. Survival Beyond Age 65
Any Approved Preschool at Age 3	-0.00178 [0.0106]	-0.0113 [0.0476]	0.000719 [0.00492]	-0.00249 [0.00991]	-0.00217 [0.00267]
N (cells)	3862	3862	3862	3862	3862

Notes: Each coefficient is from a separate regression. The units of analysis are municipality×birth-year cells. Before collapsing, we estimate an auxiliary regression on the individual-level data, where we regress each outcome on gender and month-of-birth indicators, as well municipality×birth-year fixed effects. We thus obtain conditional mean outcomes for each municipality×birth-year cohort. Then, as outcomes, we use predicted variables from a regression of each conditional outcome on the following time-varying municipality characteristics: log population, percent female, percent urban, percent industrial, percent agricultural, percent paying income tax, log taxable income, percent paying property tax, percent voting for the social democratic party, the radical liberal party, the agrarian liberal party, and the conservative party, respectively. The sample is limited to the 138 municipalities that ever had an approved preschool by 1960. All regressions include municipality and year-of-birth fixed effects as well as county-specific linear time trends. All regressions are weighted by the number of observations in each municipality×birth-year cell. Standard errors are clustered on the municipality level.
Significance levels: * $p<0.1$ ** $p<0.05$ *** $p<0.01$

Table A10: Correlation Between Access to Preschool at Age 3 and **Predicted** Outcomes of the Second Generation

	(1) Pr. Yrs.School	(2) Pr. More than Comp. Edu.	(3) Pr. Gym.
Any Approved	-0.0190*	-0.00179	-0.00144
Preschool at Age 3	[0.0104]	[0.00187]	[0.00164]
N (cells)	3156	3156	3156

Notes: Each coefficient is from a separate regression. The units of analysis are cells based on the *mother's* municipality×birth-year. See notes under Appendix Table A9 for more details on specifications and controls. Standard errors are clustered on the municipality level.
Significance levels: * p<0.1 ** p<0.05 *** p<0.01

Table A11: "First Stage": Access to Preschool and Share of Children Aged 3-6 Enrolled; 1939-1950; Urban Municipalities

	Share Enrolled, Ages 3-7		
	(1) [1940-50, Ever Preschool]	(2) [No Non-App. Preschool]	(3) [1940-1950, Switchers]
Any Approved	0.0610***	0.0967***	0.0785
Preschool	[0.0216]	[0.0321]	[0.0474]
Mean of dep. var.	0.0968	0.0988	0.0768
N (cells)	748	660	187

Notes: Each cell presents the coefficient for the treatment indicator for a separate regression. The units of analysis are municipality×birth-year cells. In column (1) the sample is limited to the 67 urban municipalities that ever had an approved preschool by 1960, observed in years 1940-1950. Column (2) further drops municipalities that had at least one established but not approved preschool over this time period. Column (3) only uses municipalities that approved a preschool between 1940 and 1950. The outcome is the share of children aged 3-7 who are enrolled in preschool. To calculate this variable, we use data on the number of children enrolled in each preschool in each of the nine years of book publications, interpolate to get estimates of enrollment in every year, and then aggregate to the municipality×year level. We then use data on the number of survivors past age four in each of the urban municipalities as the denominator for the years 1940-1950. We begin in 1940 since that is the first year when we can observe all living 7-year-olds (as our earliest data on births are from 1933). Standard errors are clustered on the municipality level.
Significance levels: * p<0.1 ** p<0.05 *** p<0.01

Table A12: Interaction Effects between Access to NHV at Birth and Access to Preschool at Age 3 on Education of the Next Generation

	Child Outcomes at Age 25		
	(1) Yrs.School	(2) More than Comp. Edu.	(3) Gym.
Any Approved Preschool at Age 3	0.0293	0.0110**	0.00804
	[0.0229]	[0.00541]	[0.00613]
NHV at Birth	0.0110	0.00866	0.00665
	[0.0305]	[0.00635]	[0.00752]
Preschool x NHV	-0.00813	-0.00684	-0.00373
	[0.0268]	[0.00592]	[0.00755]
Control Mean, dep. var.	12.22	0.747	0.216
N (cells)	3151	3151	3151

Notes: Each column reports the results from a separate regression. The units of analysis are cells based on the *mother's* municipality×birth-year. See notes under Table 6 for more details on specifications and controls.

Significance levels: * p<0.1 ** p<0.05 *** p<0.01

Table A13: Interaction Effect between Access to NHV at Birth and Access to Preschool at Age 3 on a Human Capital Index and Survival; Drop Post-1949 Cohorts in 28 Municipalities with Worse NHV Data

	(1) Human Capital Index	(2) Survival Past Age 65
Any Approved Preschool at Age 3	0.026***	0.007***
	[0.010]	[0.002]
NHV at Birth	0.022**	0.005*
	[0.010]	[0.003]
Preschool x NHV	-0.019**	-0.002
	[0.010]	[0.003]
N (cells)	3638	3638

Notes: Each column reports the results from a separate regression. The units of analysis are municipality×birth-year cells. For the 28 municipalities that do not establish NHV by 1949 in our data, we drop cohorts born in 1950-1957 since we do not have precise information on NHV initiation in those years. See notes under Table 6 for more details on specifications and controls.

Significance levels: * p<0.1 ** p<0.05 *** p<0.01

Table A14: Interaction Effect between Access to NHV at Birth and Access to Preschool at Age 3 on Education, Income, and Survival; Drop NHV-Treated Observations at Bottom of Human Capital Index Distribution

	(1) Human Capital Index	(2) Survival Past Age 65
Any Approved Preschool at Age 3	0.028***	0.007***
	[0.010]	[0.002]
NHV at Birth	0.024**	0.005*
	[0.010]	[0.003]
Preschool x NHV	-0.021**	-0.002
	[0.010]	[0.003]
N (cells)	3862	3862

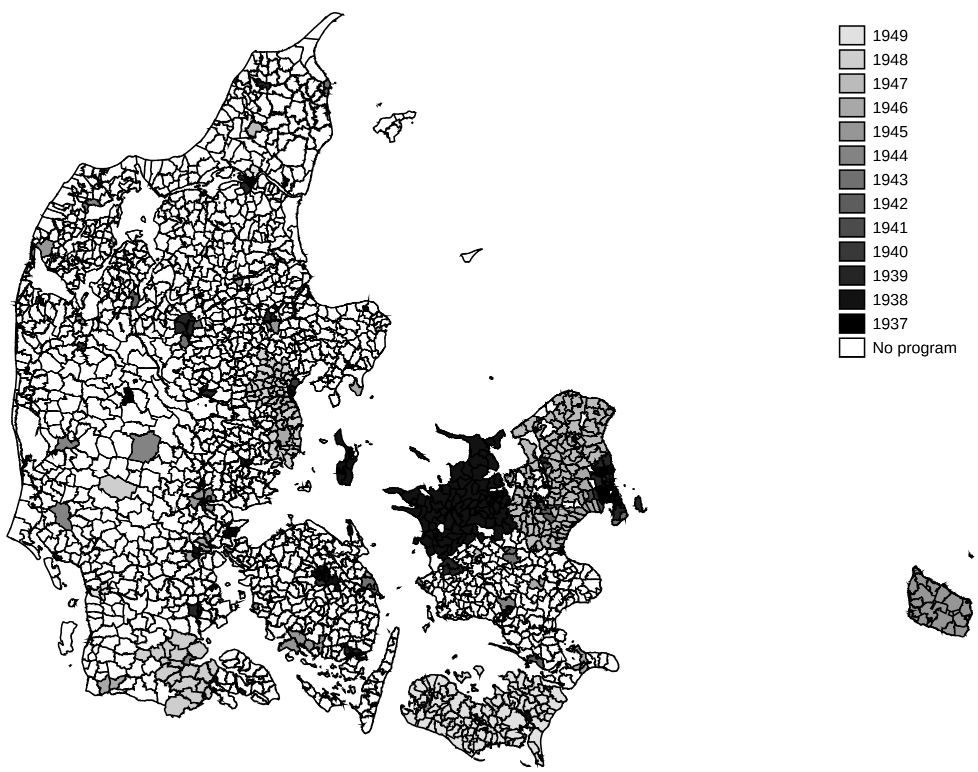
Notes: Each column reports the results from a separate regression. The units of analysis are municipality×birth-year cells. Before collapsing the data, we drop NHV-treated individual observations who are in the 1st percentile of the human capital index distribution. See notes under Table 6 for more details on specifications and controls.
Significance levels: * $p<0.1$ ** $p<0.05$ *** $p<0.01$

B The Nurse Home Visiting Program, Prior Evidence, and Main Effects in the Preschool Analysis Sample

The Danish Nurse Home Visiting Program was first introduced in 1937 and still exists today. From that year onwards, NHV was gradually rolled out in Danish municipalities until it became a compulsory municipal program in 1974. Earlier work has studied the short- and long-run health effects of access to NHV in the 1937-1949 period (Wüst, 2012; Hjort, Sø lvsten and Wüst, 2017; Wüst et al., 2018). Similar to the approach in this paper, these studies have exploited the rollout of NHV over time in a difference-in-difference framework.

Figure B.1 displays the geographic and time variation in NHV availability for Danish municipalities in the 1937-1949 period. The figure is based on data on program initiation dates for all implementing municipalities of that period from the Danish National Archives. The displayed variation in the timing of program implementation across municipalities largely stemmed from the lengthy accreditation process at the DNBH: The DNBH both approved the content of municipal programs and the planned number of nurses (to secure adequate coverage in the local programs). Accreditation was a prerequisite for government 50 percent co-funding of municipal programs. Another source of variation came from differences in the preferences of local general practitioners, who in some places promoted the initiation of NHV but in other places opposed it (Buus, 2001).

Figure B.1: The Year of NHV Implementation Across Danish Municipalities, 1937-1949



Source: Hjort, Sø lvsten and Wüst (2017).

Exploiting the variation in NHV access across time and municipalities, Wüst (2012) shows that—in the short run—the program reduced infant mortality. The study finds that program exposure led to a significant increase in infant survival of 5-8 lives saved per 1,000 live births. In supplementary analyses, she finds that this mortality decline is particularly driven by a decrease in deaths from diarrhea-related causes decreased; in fact, NHV accounted for 17-29 percent of the overall decrease in diarrhea-related mortality over the analysis time period. She argues that a primary mechanism for this effect was through improved infant nutrition (e.g., via breastfeeding) and a reduction in the severity of illness due to better monitoring by health professionals.

In a follow-up paper, Hjort, Sø lvsten and Wüst (2017) find that NHV also had positive long-run health effects: Exposed individuals have higher long-run survival rates in adulthood (in the 45-64 year age range that they can study) and are less likely to be diagnosed with cardiovascular disease. Moreover, NHV-treated cohorts have fewer hospital nights during the same range of ages. While the effects for health outcomes are sizeable and robust, estimates for the impact of NHV on education and labor market outcomes (years of schooling, an indicator for only completing compulsory education, log wages and occupational status around age 60) are small, imprecise, and unstable across specifications.

Finally, bridging the gap between short- and long-run impacts of NHV, Wüst et al. (2018) analyze young adult outcomes using a similar research design. They do not find any significant impacts of NHV on male obesity status and height at conscription (at age 18-25). However, at this young age, obesity rates are still very low in the population of men that they study. At the same time, they document that treated men were more likely to emigrate from Denmark. Given that they show that emigrants in the sample are positively selected and given that individuals who emigrated before 1980 do not enter the analyses in Hjort, Sø lvsten and Wüst (2017), this finding suggests that the results of Hjort, Sø lvsten and Wüst (2017) may be lower bounds for the overall effects of NHV.

The main threat to identification in the studies on NHV exposure is endogenous program adoption. Hjort, Sø lvsten and Wüst (2017) provide two pieces of evidence in support of their empirical strategy: First, they show that their main results are robust to different specifications (i.e., the inclusion of trends and time-varying controls) and constraints to the analysis sample of municipalities (i.e., a focus on "ever-implementers" and a matched sample of treated and control municipalities). Second, they present event-study graphs that support the credibility of the parallel trend assumption.

In light of the previous work on NHV in Denmark, we do not focus on the main effects of NHV in this paper. However, the following tables reproduce the findings in Hjort, Sø lvsten and Wüst (2017) using our main analysis sample. As Appendix Tables B.1 and B.2 show, we find similar effects of NHV exposure on survival (not always precise), the number of nights spent in the hospital, and on the incidence of diagnoses for cardiovascular diseases and heart conditions in our preschool analysis sample. Additionally, Appendix Tables B.3 and B.4 confirm that the main effects of preschool and NHV exposure are largely unaffected by the inclusion of an indicator for exposure to the other program. This finding lends further credibility to our assumption of independence of the introduction of the two municipally-organized programs.

Table B.1: Effect of NHV on Survival in Preschool Analysis Sample

Outcome	(1)	(2)
Survival beyond Age 55	0.001*	0.001*
	(0.001)	(0.001)
Control Mean, dep. var.	0.973	0.973
N (cells)	3862	3862
Survival beyond Age 60	0.002	0.002
	(0.001)	(0.001)
Control Mean, dep. var.	0.932	0.932
N (cells)	3862	3862
Survival beyond Age 65	0.002	0.003
	(0.002)	(0.002)
Control Mean, dep. var.	0.875	0.875
N (cells)	3862	3862
Cohort FE	Yes	Yes
Municipality FE	Yes	Yes
Muni Controls	Yes	Yes
County Trends	No	Yes

Notes: Each cell presents the coefficient for the treatment indicator—which is equal to 1 if the NHV program was operating in a given municipality×birth-year and 0 otherwise—for a separate regression. The units of analysis are municipality×birth-year cells. Before collapsing, we estimate an auxiliary regression on the individual-level data, where we regress each outcome on gender and month-of-birth indicators, as well municipality×birth-year fixed effects. We thus obtain conditional mean outcomes for each municipality×birth-year cohort, and use them as dependent variables. The sample is limited to the 138 municipalities that ever had an approved preschool by 1960. All regressions are weighted by the number of observations in each municipality×birth-year cell. Standard errors are clustered on the municipality level.
Significance levels: * $p<0.1$ ** $p<0.05$ *** $p<0.01$

Table B.2: Effect of NHV on Long-Term Health Outcomes in Preschool Analysis Sample

Outcome	(1)	(2)
Hosp. Nights: Age 55-64	-0.242	-0.252
	(0.150)	(0.164)
Control Mean, dep. var.	12.415	12.415
N (cells)	3862	3862
Diagnosed Cardio	-0.006**	-0.006**
	(0.003)	(0.002)
Control Mean, dep. var.	0.220	0.220
N (cells)	3862	3862
Diagnosed Heart	-0.003**	-0.003**
	(0.001)	(0.001)
Control Mean, dep. var.	0.074	0.074
N (cells)	3862	3862
Diagnosed Diabetes	-0.001	-0.001
	(0.001)	(0.001)
Control Mean, dep. var.	0.031	0.031
N (cells)	3862	3862
Diagnosed Cancer	-0.000	-0.000
	(0.001)	(0.001)
Control Mean, dep. var.	0.043	0.043
N (cells)	3862	3862
Cohort FE	Yes	Yes
Municipality FE	Yes	Yes
Muni Controls	Yes	Yes
County Trends	No	Yes

Notes: See notes under Appendix Table B.1.
Significance levels: * p<0.1 ** p<0.05 *** p<0.01

Table B.3: Main Effects of Access to Preschool and to NHV on Human Capital Index and Survival

Outcome/Program	(1)	(2)
Human Capital Index: Preschool	0.038***	0.024***
	(0.010)	(0.009)
Human Capital Index: NHV	0.012*	0.005
	(0.007)	(0.006)
Control Mean, dep. var.	0.029	0.029
N (cells)	3862	3862
Survival beyond Age 65: Preschool	0.005***	0.007***
	(0.002)	(0.002)
Survival beyond Age 65: NHV	0.002	0.003
	(0.002)	(0.002)
Control Mean, dep. var.	0.875	0.875
N (cells)	3862	3862
Cohort FE	Yes	Yes
Municipality FE	Yes	Yes
Muni Controls	Yes	Yes
County Trends	No	Yes

Notes: See notes under Appendix Table B.1.
Significance levels: * p<0.1 ** p<0.05 *** p<0.01

Table B.4: Main Effects of Access to Preschool and to NHV on Long-Term Health Outcomes

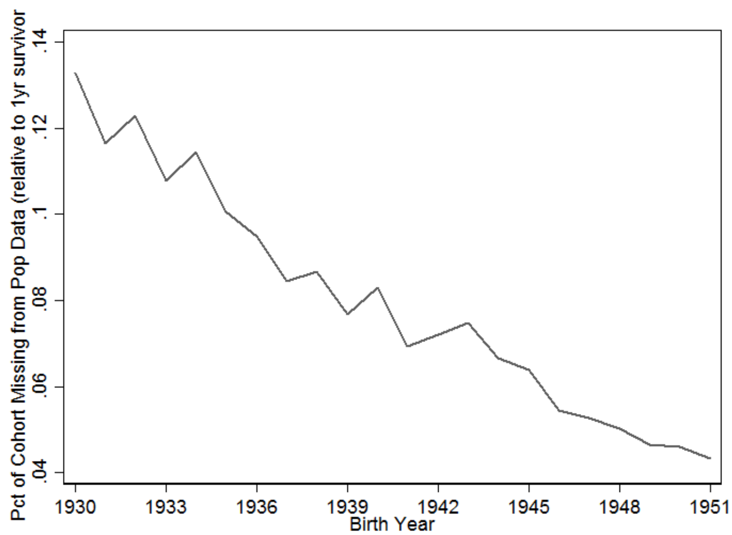
Outcome/Program	(1)	(2)
Hosp. Nights: Preschool	-0.392**	-0.389*
	(0.193)	(0.201)
Hosp. Nights: NHV	-0.221	-0.250
	(0.150)	(0.162)
Control Mean, dep. var.	12.415	12.415
N (cells)	3862	3862
Diagnosed Cardio: Preschool	0.003	0.002
	(0.003)	(0.003)
Diagnosed Cardio: NHV	-0.006**	-0.006**
	(0.003)	(0.002)
Control Mean, dep. var.	0.220	0.220
N (cells)	3862	3862
Diagnosed Heart: Preschool	-0.003*	-0.001
	(0.002)	(0.002)
Diagnosed Heart: NHV	-0.003**	-0.003**
	(0.001)	(0.001)
Control Mean, dep. var.	0.074	0.074
N (cells)	3862	3862
Diagnosed Diabetes: Preschool	-0.001	-0.001
	(0.001)	(0.001)
Diagnosed Diabetes: NHV	-0.001	-0.001
	(0.001)	(0.001)
Control Mean, dep. var.	0.031	0.031
N (cells)	3862	3862
Diagnosed Cancer: Preschool	-0.001	-0.000
	(0.001)	(0.001)
Diagnosed Cancer: NHV	-0.000	-0.000
	(0.001)	(0.001)
Control Mean, dep. var.	0.043	0.043
N (cells)	3862	3862
Cohort FE	Yes	Yes
Municipality FE	Yes	Yes
Muni Controls	Yes	Yes
County Trends	No	Yes

Notes: See notes under Appendix Table B.1.
Significance levels: * p<0.1 ** p<0.05 *** p<0.01

C Sample Construction and Missing Individuals

Since we can only study the outcomes of survivors, who are observed in the administrative data—i.e., those who were aged 23 to 50 in 1980—we are concerned with endogenous sample selection due to effects on mortality or emigration before 1980. We address this concern in two ways. First, we compare our analysis sample to annual aggregate data on live births and infant deaths in Denmark, which is available for years 1933-1950. Appendix Figure C.1 illustrates the percentage of "missing" Danish-born individuals in our outcome data (including individuals who are missing due to invalid parish codes) by year of birth.[1]

Figure C.1: Comparison of First-Year Survivors to All Danish-Born Individuals in the Outcome Data



Notes: This graph shows the percentage of "missing" Danish-born individuals in our outcome data (including individuals who are missing due to invalid parish codes) by year of birth. We calculate this percentage as: (# of Danish-born observations in register data)/(# of live births - # infant deaths).

Not surprisingly, we miss more individuals from older than younger cohorts—about 13 percent of the 1930 cohort and only 4 percent of the 1951 cohort are missing from our outcome data. However, using only the younger cohorts with fewer missing observations, we found that statistically significant mortality impacts of preschool only materialize around age 60. Thus we do not believe that selection due to mortality prior to age 50 has a meaningful impact on our results.

Second, we use municipality-level data on live births and infant deaths for 67 urban municipalities in the ever-implementing sample for years 1933-1950. We correlate the share of "not missing" Danish-born individuals in our outcome data relative to all first-year survivors with our key treatment variable, an indicator for an approved preschool in the municipality×year. Appendix Table C.1 reports the results from various specifications of this regression, showing no statistically significant relationships.

[1]We calculate this percentage as: (# of Danish-born observations in register data)/(# of live births - # infant deaths). Aggregate data on live births and infant deaths come from DNBH (various years).

Table C.1: Correlation between Share of Cohort "Not Missing" and Access to Preschool; Urban Municipalities

Outcome	(1)	(2)	(3)
Any Approved Preschool at Age 3	-0.070 (0.160)	-0.015 (0.092)	0.111 (0.084)
Mean, dep. var.		0.928	
N (cells)		1548	
Cohort FE	Yes	Yes	Yes
Municipality FE	Yes	Yes	Yes
Muni Controls	No	Yes	Yes
County Trends	No	No	Yes

Notes: Each cell presents the coefficient for the treatment indicator for a separate regression. The units of analysis are municipality×birth-year cells. The sample is limited to the 67 urban municipalities that ever had an approved preschool by 1960. The outcome is the ratio of observations in our outcome data to the number of 1-year survivors (i.e., # of live births - # infant deaths) in each municipality×year cell. All regressions are weighted by the number of observations in each municipality×birth-year cell. Standard errors are clustered on the municipality level.
Significance levels: * p<0.1 ** p<0.05 *** p<0.01

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