Supplementary Online Content

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This supplementary material has been provided by the authors to give readers additional information about their work.

eTable 1: Child Opportunity Index indicators, definitions, and data sources[a].

Indicators	Definition (Data source and Year)
Education domain	
1. Early Childhood Education (ECE) centers	Number of ECE centers within a 5-mile radius (own data collection from state and federal sources; 2010)
2. High-quality ECE centers	Number of National Association for the Education of Young Children accredited centers within a 5-mile radius (own data collection from state and federal sources; 2010)
3. ECE enrollment	Percent 3- and 4-year-olds enrolled in nursery school, preschool or kindergarten (ACS; 2008–2012)
4. Third grade reading proficiency	Percent third graders scoring proficient on standardized reading tests, converted to NAEP scale score points (EDFacts, GS and SEDA; 2010)
5. Third grade math proficiency	Percent third graders scoring proficient on standardized math tests, converted to NAEP scale score points (EDFacts, GS and SEDA; 2010)
6. High school graduation rate	Percent ninth graders graduating from high school on time (EDFacts and GS; 2010)
7. Advanced Placement (AP) course enrollment	Ratio of students enrolled in at least one AP course to the number of 11th and 12th graders (CRDC; 2011)
8. College enrollment in nearby institutions	Percent 18-24 year-olds enrolled in college within 25-mile radius (ACS; 2008–2012)
9. School poverty	Percent students in elementary schools eligible for free or reduced-price lunches, reversed (NCES CCD; 2010)
10. Teacher experience[b]	Percent teachers in their first and second year (CRDC; 2011)
11. Adult educational attainment	Percent adults ages 25 and over with a college degree or higher (ACS; 2008–2012)
Health and Environment domain	
1. Access to healthy food[b]	Percent households without a car located further than a half-mile from the nearest super-market, reversed (USDA; 2010)
2. Access to green space[b]	Percent impenetrable surface areas such as rooftops, roads or parking lots (CDC; 2011)
3. Walkability	EPA Walkability Index (EPA; 2010–2012)
4. Housing vacancy rate[b]	Percent housing units that are vacant (ACS; 2008–2012)
5. Hazardous waste dump sites[b]	Average number of Superfund sites within a 2-mile radius (EPA; 2010)
6. Industrial pollutants in air, water or soil[b]	Index of toxic chemicals released by industrial facilities (EPA; 2010)
7. Airborne microparticles[b]	Mean estimated microparticle (PM2.5) concentration (CDC; 2010)
8. Ozone concentration[b]	Mean estimated 8-hour average ozone concentration (EPA; 2011)
9. Extreme heat exposure[b]	Summer days with maximum temperature above 90 degrees Fahrenheit (CDC; 2009–2011)
10. Health insurance coverage	Percent individuals ages 0-64 with health insurance coverage (ACS; 2008–2012)
Social and Economic domain	
1. Employment rate	Percent adults ages 25-54 who are employed (ACS; 2008–2012)
2. Commute duration[b]	Percent workers commuting more than one hour one way (ACS; 2008–2012)
3. Poverty rate[b]	Percent individuals living in households with incomes below 100% of the federal poverty threshold (ACS; 2008–2012)
4. Public assistance rate[b]	Percent households receiving cash public assistance or Food Stamps/Supplemental Nutrition Assistance Program (ACS; 2008–2012)
5. Home ownership rate	Percent owner-occupied housing units (ACS; 2008–2012)
6. High-skill employment	Percent individuals ages 16 and over employed in management, business, financial, computer, engineering, science, education, legal, community service, health care practitioner, health technology, arts and media occupations (ACS; 2008–2012)
7. Median household income	Median income of all households (ACS; 2008–2012)
8. Single-headed households[b]	Percent family households that are single-parent headed (ACS; 2008–2012)

[a] Adapted from the Child Opportunity Index: Technical Documentation (see reference #20).

[b] Scores are reversed, such that a higher score for the indicator reflects higher opportunity levels.

ACS: American Community Survey; CDC: Center for Disease Control and Prevention; CRDC: U.S. Department of Education Office for Civil Rights Data Collection; EDFacts: U.S. Department of Education Data Files; EPA: Environmental Protection Agency; GS: Great Schools data; NAEP: National Assessment of Educational Progress; NCES CCD: National Center for Education Statistics Common Core of Data; SEDA: Stanford Education Data Archive; USDA: U.S. Department of Agriculture

eTable 2: Social Vulnerability Index indicators, definitions, and data sources.

Indicators	Definition (Data source)
Socioeconomic	
1. Poverty	Persons below poverty estimate (ACS; 2000–2018)
2. Unemployment	Civilian (age 16+) unemployed estimate (ACS; 2000–2018)
3. Income	Per capita income estimate (ACS; 2000–2018)
4. High School Diploma	Persons (age 25+) with no high school diploma estimate (ACS; 2000–2018)
Household Composition and Disability	
1. Aged 65 or Older	Persons aged 65 and older estimate (ACS; 2000–2018)
2. Aged 17 or Younger	Persons aged 17 and younger estimate (ACS; 2000–2018)
3. Civilian with a Disability	Civilian noninstitutionalized population with a disability estimate (ACS; 2000–2018)
4. Single-Parent Households	Single parent household with children under 18 estimate (ACS; 2000–2018)
Minority Status and Language	
1. Minority	Minority (all persons except white, non-Hispanic) estimate (ACS; 2000–2018)
2. Speaks English "Less than Well"	Persons (age 5+) who speak English "less than well" estimate (ACS; 2000–2018)
Housing and Transportation	
1. Multi-Unit Structures	Housing in structures with 10 or more units estimate (ACS; 2000–2018)
2. Mobile Homes	Mobile homes estimate (ACS; 2000–2018)
3. Crowding	At household level (occupied housing units), more people than rooms estimate (ACS; 2000–2018)
4. No Vehicle	Households with no vehicle available estimate (ACS; 2000–2018)
5. Group Quarters	Persons in institutionalized and noninstitutionalized group quarters estimate (ACS; 2000–2018)

ACS: American Community Survey.

eTable 3: Charactersitics of children included and excluded from the analytic sample.

Characteristic	Excluded N = 17,421	Included N = 10,516	p-value
Birth year	**N (%) or mean (SD)**		<0.001
. Before 2000	8 (0.1%)	107 (1.0%)	
. 2000 to 2010	1,883 (14.0%)	3,596 (34.2%)	
. After 2010	11,560 (85.9%)	6,813 (64.8%)	
Child sex			0.15
. Male	8,898 (51.4%)	5,494 (52.2%)	
. Female	8,426 (48.6%)	5,022 (47.8%)	
Child race			<0.001
. White	9,717 (60.5%)	6,768 (65.3%)	
. Black	2,247 (14.0%)	1,915 (18.5%)	
. Asian	710 (4.4%)	208 (2.0%)	
. Native Hawaiian or Pacific Islander, American Indian or Alaska Native	409 (2.5%)	204 (2.0%)	
. Other race or More than one race	2,981 (18.6%)	1,269 (12.2%)	
Hispanic ethnicity	4,208 (25.5%)	1,576 (15.0%)	<0.001
Mode of delivery			<0.001
. Vaginal	9,283 (68.4%)	5,923 (65.2%)	
. Caesarean	4,283 (31.6%)	3,155 (34.8%)	
Gestational age at delivery (weeks)	38.5 (2.3)	37.0 (5.0)	<0.001
Education level during pregnancy			0.008
. Less than high school	976 (8.6%)	474 (8.7%)	
. High school degree or equivalent	1,849 (16.3%)	993 (18.2%)	
. Some college, no degree	2,557 (22.5%)	1,239 (22.7%)	
. College degree and above	5,987 (52.7%)	2,751 (50.4%)	
Household income during pregnancy			<0.001
. < $50,000/year	3,674 (40.7%)	2,635 (55.4%)	
. ≥ $50,000/year	5,349 (59.3%)	2,120 (44.6%)	
parity			<0.001
. Nulliparous	5,147 (40.7%)	2,915 (38.1%)	
. Multiparous	7,504 (59.3%)	4,734 (61.9%)	
Cigarette smoking during pregnancy			<0.001
. No	11,535 (93.9%)	6,618 (87.3%)	
. Yes	755 (6.1%)	965 (12.7%)	
Second-hand smoke exposure during pregnancy			<0.001
. No	10,455 (83.7%)	4,405 (73.4%)	
. Yes	2,041 (16.3%)	1,596 (26.6%)	
Maternal pre-pregnancy body mass index (kg/m^2)	27.0 (7.0)	27.1 (7.1)	0.43
Maternal asthma history			0.003
. No	2,781 (73.5%)	3,129.0 (76.4%)	
. Yes	1,004 (26.5%)	969.0 (23.6%)	
Paternal asthma history			<0.001
. No	2,004 (87.2%)	2,741.0 (83.9%)	
. Yes	295 (12.8%)	527.0 (16.1%)	

eTable 4: Participant characteristics according to very low and very high Child Opportunity Index categories at each life stage.

Overall ChOI categories	Birth		Infancy		Early childhood	
	Very low N = 2,100	Very high N = 2,263	Very low N = 2,105	Very high N = 2,360	Very low N = 2,034	Very high N = 2,573
Domain specific ChOI percentile rank	Mean (SD) or %		Mean (SD) or %		Mean (SD) or %	
. Education	18.2 (14.1)	81.5 (12.4)	17.7 (14.0)	81.5 (12.8)	17.1 (13.6)	82.0 (13.1)
. Health and Environment	18.7 (20.7)	79.7 (17.0)	19.8 (21.2)	80.3 (16.9)	21.2 (22.2)	82.0 (16.1)
. Social and Economic	9.4 (6.8)	90.3 (6.8)	9.2 (6.7)	90.2 (7.0)	9.1 (6.6)	90.3 (7.1)
Rurality of residence						
. Metropolitan	96.5	95.2	96.1	95.6	95.4	96.1
. Micropolitan	2.1	2.3	2.5	2.1	2.9	1.8
. Small town/rural areas	1.4	2.5	1.4	2.3	1.7	2.1
Birth year						
. Before 2000	0.3	1.3	0.4	1.3	0.3	1.3
. 2000 to 2010	38.8	29.6	40.1	28.9	42.4	30.0
. After 2010	60.9	69.1	59.5	69.8	57.2	68.7
Child sex						
. Male	50.7	51.6	50.4	51.5	50.9	51.6
. Female	49.3	48.4	49.6	48.5	40.1	48.4
Child race						
. White	26.6	85.0	25.7	85.3	24.5	84.3
. Black	53.8	2.9	54.8	2.7	56.0	3.0
. Asian	0.9	2.3	0.8	2.5	0.7	2.8
. Native Hawaiian or Pacific Islander, American Indian or Alaska Native	2.9	0.5	2.9	0.5	2.7	0.5
. Other race or More than one race	15.9	9.3	15.9	9.1	16.0	9.4
Hispanic ethnicity	22.5	6.9	22.7	6.4	23.2	6.3
Education level during pregnancy						
. Less than high school	18.4	2.5	19.0	2.4	19.6	2.3
. High school degree or equivalent	31.9	8.0	32.8	7.6	33.5	7.4
. Some college, no degree	26.9	16.2	26.4	15.9	26.4	15.9
. College degree and above	22.8	73.3	21.7	74.1	20.4	74.3
Household income during pregnancy						
. < $50,000/year	80.3	31.2	81.1	30.8	82.1	30.7
. ≥ $50,000/year	19.7	68.8	18.9	69.2	17.9	69.3
Cigarette smoking during pregnancy	16.3	6.3	16.8	6.3	17.0	6.5
Second-hand smoke exposure during pregnancy	32.1	25.0	32.6	24.5	32.9	24.7
Nulliparous	36.4	37.3	36.7	37.7	35.6	38.2
Mode of delivery						
. Vaginal	64.4	70.6	63.8	70.4	64.4	69.3
. Caesarean	35.6	29.4	36.2	29.6	35.6	30.7
Maternal asthma history	28.9	21.2	28.8	21.2	29.0	21.1
Paternal asthma history	16.6	15.7	16.5	15.7	16.5	15.7
Maternal pre-pregnancy body mass index (kg/m^2)	29.0 (8.1)	25.4 (6.2)	29.0 (8.1)	25.3 (6.0)	29.0 (8.1)	25.3 (6.2)
Gestational age at delivery (weeks)	37.2 (4.4)	37.6 (4.6)	37.1 (4.5)	37.7 (4.6)	37.1 (4.6)	37.8 (4.5)

eTable 5: Participant characteristics according to very high and very low Social Vulnerability Index categories at each life stage.

	Birth		Infancy		Early childhood	
Overall SVI categories	**Very high** N = 1,994	**Very low** N = 2,390	**Very high** N = 2,032	**Very low** N = 2,434	**Very high** N = 1,971	**Very low** N = 2,550
Domain specific SVI percentile rank	**Mean (SD) or %**		**Mean (SD) or %**		**Mean (SD) or %**	
. Socioeconomic	0.9 (0.1)	0.1 (0.1)	0.9 (0.1)	0.1 (0.1)	0.9 (0.1)	0.1 (0.1)
. Household composition	0.8 (0.2)	0.3 (0.2)	0.8 (0.2)	0.3 (0.2)	0.8 (0.2)	0.3 (0.2)
. Minority status/language	0.8 (0.2)	0.3 (0.2)	0.8 (0.2)	0.3 (0.2)	0.8 (0.2)	0.3 (0.2)
. Housing type/Transportation	0.8 (0.2)	0.2 (0.2)	0.8 (0.2)	0.2 (0.2)	0.8 (0.2)	0.2 (0.2)
Rurality of residence						
. Metropolitan	95.1	94.7	94.3	95.6	95.0	95.5
. Micropolitan	3.2	3.0	3.5	2.5	3.4	3.0
. Small town/rural areas	1.7	2.3	2.1	1.9	1.6	1.5
Birth year						
. Before 2000	0.4	1.2	0.4	1.1	0.5	1.1
. 2000 to 2010	35.9	30.2	35.8	30.2	37.3	32.3
. After 2010	63.7	68.6	63.8	68.7	62.2	66.6
Child sex						
. Male	51.4	52.1	51.4	52.0	51.8	52.0
. Female	48.6	47.9	48.6	48.0	48.2	48.0
Child race						
. White	31.5	86.7	31.9	86.1	31.3	84.8
. Black	46.6	4.1	46.7	4.2	47.5	4.5
. Asian	1.1	1.7	1.2	2.0	1.2	2.2
. Native Hawaiian or Pacific Islander, American Indian or Alaska Native	2.8	0.7	2.8	0.7	2.8	0.5
. Other race or More than one race	18.0	6.8	17.4	7.1	17.2	7.9
Hispanic ethnicity	27.1	6.1	27.2	5.9	28.4	6.0
Education level during pregnancy						
. Less than high school	17.8	2.8	18.1	2.8	18.9	2.7
. High school degree or equivalent	30.1	8.7	30.6	8.8	30.6	8.4
. Some college, no degree	27.3	17.5	27.0	17.0	27.8	17.5
. College degree and above	24.8	71.0	24.3	71.5	22.7	71.3
Household income during pregnancy						
. < $50,000/year	76.7	34.1	76.9	33.8	77.9	33.5
. ≥ $50,000/year	23.3	65.9	23.1	66.2	22.1	66.5
Cigarette smoking during pregnancy	15.7	7.0	16.1	6.9	16.5	6.9
Second-hand smoke exposure during pregnancy	31.7	24.3	32.0	23.6	32.3	24.1
Nulliparous	37.9	37.2	38.5	37.1	37.2	37.6
Mode of delivery						
. Vaginal	64.1	70.0	63.2	70.1	64.2	69.8
. Caesarean	35.9	30.0	36.8	29.9	35.8	30.2
Maternal asthma history	28.6	20.7	28.3	20.4	28.1	20.4
Paternal asthma history	16.5	16.3	16.4	16.4	16.2	15.6
Maternal pre-pregnancy body mass index (kg/m^2)	28.9 (8.0)	25.6 (6.3)	28.9 (8.1)	25.6 (6.2)	28.9 (8.0)	25.5 (6.2)
Gestational age at delivery (weeks)	36.9 (4.7)	37.7 (4.5)	37.0 (4.7)	37.7 (4.5)	37.0 (4.8)	37.7 (4.3)

eTable 6: Secondary analyses for the association of Child Opportunity Index (ChOI) at different life stages with asthma incidence.

ChOI categories	Incidence rate ratio (95% CI)				
	Crude model	**Model A**	**Model B**	**Model C**	**Model D**
Birth					
. Very Low Opportunity	reference	reference	reference	reference	reference
. Low Opportunity	0.77 (0.67, 0.88)	0.89 (0.77, 1.02)	0.88 (0.76, 1.02)	0.88 (0.76, 1.02)	0.96 (0.79, 1.16)
. Moderate Opportunity	0.70 (0.61, 0.80)	0.87 (0.75, 1.00)	0.86 (0.74, 1.00)	0.97 (0.84, 1.12)	0.86 (0.71, 1.05)
. High Opportunity	0.66 (0.58, 0.75)	0.87 (0.75, 1.00)	0.87 (0.75, 1.00)	0.89 (0.77, 1.03)	0.92 (0.75, 1.12)
. Very High Opportunity	0.61 (0.53, 0.69)	0.83 (0.71, 0.98)	0.84 (0.72, 0.99)	0.89 (0.76, 1.04)	0.80 (0.65, 1.00)
Infancy					
. Very Low Opportunity	reference	reference	reference	reference	reference
. Low Opportunity	0.75 (0.65, 0.86)	0.85 (0.73, 0.99)	0.85 (0.73, 0.98)	0.88 (0.76, 1.01)	0.89 (0.74, 1.08)
. Moderate Opportunity	0.71 (0.62, 0.81)	0.87 (0.75, 1.01)	0.87 (0.75, 1.01)	0.95 (0.82, 1.10)	0.87 (0.72, 1.05)
. High Opportunity	0.63 (0.55, 0.72)	0.82 (0.71, 0.96)	0.82 (0.71, 0.96)	0.83 (0.72, 0.97)	0.85 (0.70, 1.04)
. Very High Opportunity	0.61 (0.53, 0.69)	0.83 (0.71, 0.97)	0.84 (0.72, 0.99)	0.84 (0.72, 0.98)	0.79 (0.64, 0.98)
Early Childhood					
. Very Low Opportunity	reference	reference	reference	reference	reference
. Low Opportunity	0.70 (0.61, 0.82)	0.81 (0.69, 0.94)	0.80 (0.69, 0.93)	0.91 (0.76, 1.09)	0.86 (0.71, 1.04)
. Moderate Opportunity	0.75 (0.65, 0.86)	0.91 (0.78, 1.06)	0.91 (0.78, 1.05)	1.00 (0.85, 1.19)	0.89 (0.74, 1.07)
. High Opportunity	0.61 (0.53, 0.70)	0.79 (0.68, 0.92)	0.79 (0.68, 0.93)	0.84 (0.70, 1.00)	0.81 (0.67, 0.99)
. Very High Opportunity	0.59 (0.52, 0.68)	0.80 (0.68, 0.94)	0.81 (0.69, 0.95)	0.92 (0.77, 1.09)	0.84 (0.69, 1.02)

Model A: Adjusted for sociodemographic characteristics, parental asthma history, and parity.
Model B: Adjusted for sociodemographic characteristics, parental asthma history, parity, prenatal cigarette smoking, prenatal second-hand smoke exposure, pre-pregnancy body mass index, mode of delivery, and gestational age.
Model C: Adjusted for sociodemographic characteristics, parental asthma history, parity, and body mass index in early childhood.
Model D: Analyses restricted to residential addresses that were obtained during or after the year 2010, and adjusted for sociodemographic characteristics, parental asthma history, parity, prenatal cigarette smoking, prenatal second-hand smoke exposure, pre-pregnancy body mass index, mode of delivery, and gestational age.

eTable 7: "Leave-one-out" analyses for the association of Child Opportunity Index (ChOI) at birth with asthma incidence. All incidence rate ratios (IRR) and 95% confidence intervals are relative to the very low opportunity category.

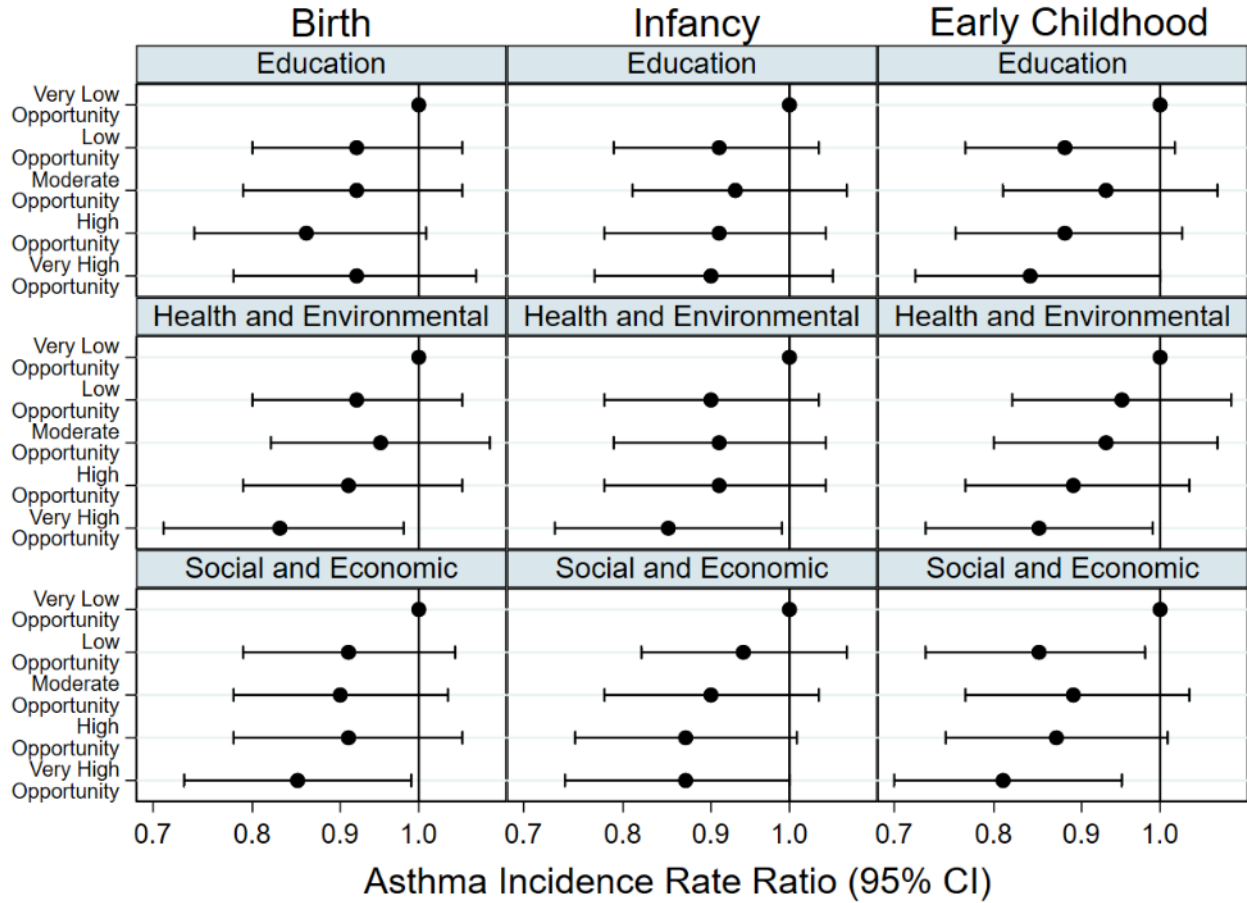| ChOI category	Excluded cohort no.	IRR (95% CI)	Excluded cohort no.	IRR (95% CI)	Excluded cohort no.	IRR (95% CI)	Excluded cohort no.	IRR (95% CI)	Excluded cohort no.	IRR (95% CI)
Low	1	0.88 (0.76, 1.02)	11	0.88 (0.76, 1.02)	21	0.89 (0.77, 1.02)	31	0.88 (0.76, 1.02)	41	0.89 (0.77, 1.03)
Moderate		0.86 (0.74, 1)		0.86 (0.74, 1)		0.87 (0.75, 1)		0.86 (0.74, 1)		0.86 (0.74, 1)
High		0.87 (0.75, 1.01)		0.87 (0.75, 1.01)		0.87 (0.75, 1.01)		0.87 (0.75, 1.01)		0.86 (0.73, 1)
Very High		0.84 (0.72, 0.99)		0.85 (0.72, 0.99)		0.85 (0.72, 0.99)		0.85 (0.72, 0.99)		0.84 (0.72, 0.99)
Low	2	0.86 (0.74, 1)	12	0.88 (0.76, 1.02)	22	0.88 (0.76, 1.02)	32	0.88 (0.76, 1.02)	42	0.89 (0.77, 1.03)
Moderate		0.88 (0.75, 1.02)		0.86 (0.74, 1)		0.87 (0.75, 1.01)		0.86 (0.74, 1)		0.87 (0.75, 1.01)
High		0.86 (0.74, 1.01)		0.87 (0.75, 1.01)		0.87 (0.75, 1.01)		0.87 (0.74, 1.01)		0.87 (0.75, 1.01)
Very High		0.84 (0.71, 0.98)		0.84 (0.72, 0.99)		0.85 (0.72, 0.99)		0.84 (0.72, 0.98)		0.85 (0.72, 0.99)
Low	3	0.89 (0.77, 1.03)	13	0.88 (0.76, 1.02)	23	0.87 (0.75, 1.01)	33	0.88 (0.76, 1.01)	43	0.88 (0.76, 1.02)
Moderate		0.87 (0.75, 1.01)		0.86 (0.74, 1)		0.85 (0.73, 0.99)		0.87 (0.75, 1.01)		0.86 (0.74, 1)
High		0.87 (0.75, 1.01)		0.87 (0.75, 1.01)		0.86 (0.73, 1)		0.87 (0.75, 1.01)		0.87 (0.75, 1.02)
Very High		0.85 (0.72, 0.99)		0.85 (0.72, 0.99)		0.83 (0.7, 0.97)		0.84 (0.72, 0.99)		0.85 (0.73, 1)
Low	4	0.88 (0.76, 1.02)	14	0.88 (0.76, 1.02)	24	0.88 (0.76, 1.02)	34	0.88 (0.76, 1.02)	44	0.88 (0.76, 1.02)
Moderate		0.86 (0.74, 1)		0.86 (0.74, 1)		0.85 (0.73, 0.99)		0.87 (0.75, 1.01)		0.86 (0.74, 1)
High		0.87 (0.75, 1.01)		0.86 (0.74, 1)		0.87 (0.74, 1.01)		0.87 (0.75, 1.01)		0.86 (0.74, 1)
Very High		0.84 (0.72, 0.99)		0.85 (0.73, 1)		0.83 (0.71, 0.97)		0.85 (0.72, 0.99)		0.84 (0.72, 0.99)
Low	5	0.85 (0.74, 0.99)	15	0.9 (0.77, 1.04)	25	0.9 (0.78, 1.05)	35	0.88 (0.76, 1.02)	45	0.88 (0.76, 1.02)
Moderate		0.84 (0.73, 0.98)		0.86 (0.74, 1.01)		0.87 (0.74, 1.01)		0.85 (0.73, 1)		0.86 (0.74, 1)
High		0.84 (0.72, 0.99)		0.88 (0.75, 1.02)		0.88 (0.75, 1.03)		0.88 (0.75, 1.03)		0.87 (0.75, 1.02)
Very High		0.83 (0.71, 0.97)		0.85 (0.72, 0.99)		0.84 (0.71, 0.98)		0.8 (0.68, 0.95)		0.87 (0.74, 1.02)
Low	6	0.88 (0.76, 1.02)	16	0.89 (0.77, 1.03)	26	0.88 (0.76, 1.02)	36	0.88 (0.76, 1.03)	46	0.9 (0.78, 1.05)
Moderate		0.86 (0.74, 1)		0.85 (0.73, 0.99)		0.87 (0.74, 1.01)		0.85 (0.73, 0.99)		0.88 (0.75, 1.02)
High		0.87 (0.75, 1.01)		0.86 (0.74, 1)		0.86 (0.74, 1)		0.86 (0.74, 1.01)		0.88 (0.76, 1.03)
Very High		0.84 (0.72, 0.98)		0.85 (0.72, 1)		0.83 (0.7, 0.97)		0.84 (0.71, 0.99)		0.86 (0.73, 1.01)
Low	7	0.88 (0.76, 1.02)	17	0.88 (0.76, 1.02)	27	0.88 (0.76, 1.02)	37	0.86 (0.74, 0.99)		
Moderate		0.87 (0.75, 1)		0.87 (0.74, 1.01)		0.85 (0.73, 1)		0.86 (0.74, 1.01)		
High		0.87 (0.75, 1.01)		0.85 (0.73, 0.99)		0.89 (0.76, 1.04)		0.87 (0.74, 1.01)		
Very High		0.85 (0.72, 0.99)		0.84 (0.72, 0.99)		0.86 (0.73, 1.01)		0.84 (0.72, 0.99)		
Low	8	0.88 (0.76, 1.02)	18	0.89 (0.77, 1.03)	28	0.88 (0.76, 1.02)	38	0.88 (0.76, 1.02)		
Moderate		0.86 (0.74, 1)		0.87 (0.75, 1.01)		0.86 (0.74, 1)		0.86 (0.74, 1)		
High		0.87 (0.74, 1.01)		0.88 (0.75, 1.02)		0.87 (0.75, 1.02)		0.87 (0.75, 1.01)		
Very High		0.84 (0.72, 0.99)		0.86 (0.73, 1.01)		0.84 (0.72, 0.99)		0.85 (0.72, 0.99)		
Low	9	0.87 (0.75, 1)	19	0.88 (0.76, 1.02)	29	0.88 (0.76, 1.02)	39	0.88 (0.76, 1.02)		
Moderate		0.88 (0.76, 1.02)		0.86 (0.74, 1)		0.86 (0.74, 0.99)		0.86 (0.74, 1)		
High		0.86 (0.74, 1.01)		0.87 (0.75, 1.01)		0.87 (0.75, 1.01)		0.87 (0.75, 1.01)		
Very High		0.87 (0.74, 1.02)		0.84 (0.72, 0.99)		0.85 (0.72, 1)		0.84 (0.72, 0.99)		
Low	10	0.88 (0.76, 1.02)	20	0.87 (0.75, 1.01)	30	0.88 (0.76, 1.02)	40	0.88 (0.76, 1.02)		
Moderate		0.86 (0.74, 1)		0.89 (0.76, 1.04)		0.86 (0.74, 1)		0.86 (0.74, 1)		
High		0.87 (0.74, 1.01)		0.89 (0.76, 1.04)		0.87 (0.75, 1.01)		0.87 (0.75, 1.01)		
Very High		0.85 (0.72, 0.99)		0.86 (0.73, 1.02)		0.84 (0.72, 0.99)		0.85 (0.72, 0.99)		

eTable 8: "Leave-one-out" analyses for the association of Child Opportunity Index (ChOI) in infancy with asthma incidence. All incidence rate ratios (IRR) and 95% confidence intervals are relative to the very low opportunity category.

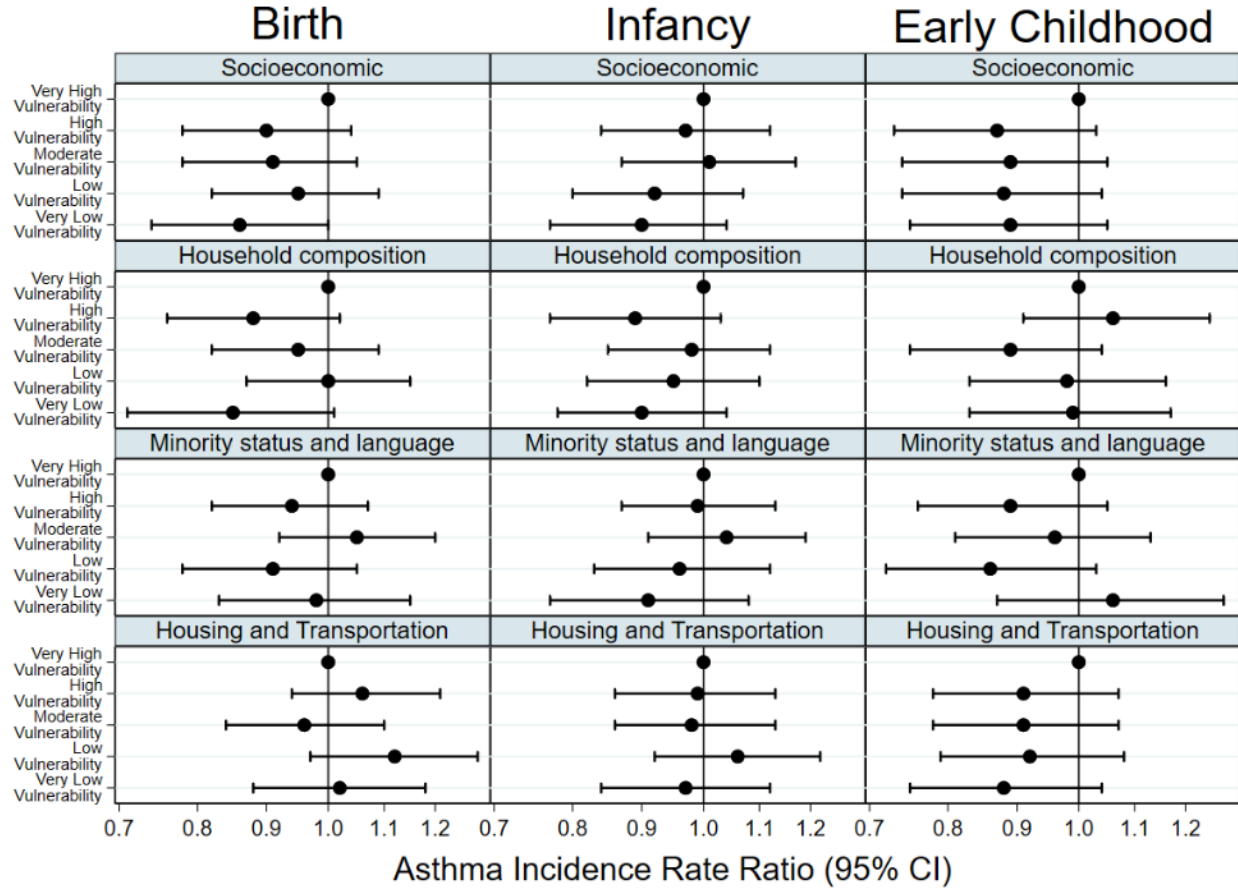| ChOI category	Excluded cohort no.	IRR (95% CI)	Excluded cohort no.	IRR (95% CI)	Excluded cohort no.	IRR (95% CI)	Excluded cohort no.	IRR (95% CI)	Excluded cohort no.	IRR (95% CI)
Low	1	0.85 (0.74, 0.99)	11	0.85 (0.74, 0.98)	21	0.85 (0.74, 0.99)	31	0.85 (0.73, 0.98)	41	0.86 (0.74, 0.99)
Moderate		0.87 (0.75, 1.01)		0.87 (0.75, 1.01)		0.87 (0.76, 1.01)		0.87 (0.75, 1.01)		0.88 (0.76, 1.02)
High		0.83 (0.71, 0.96)		0.83 (0.71, 0.96)		0.83 (0.71, 0.96)		0.83 (0.71, 0.96)		0.81 (0.69, 0.95)
Very High		0.85 (0.72, 0.99)		0.85 (0.72, 0.99)		0.85 (0.72, 0.99)		0.84 (0.72, 0.99)		0.85 (0.72, 0.99)
Low	2	0.84 (0.72, 0.97)	12	0.85 (0.73, 0.98)	22	0.85 (0.74, 0.98)	32	0.85 (0.73, 0.98)	42	0.86 (0.74, 0.99)
Moderate		0.87 (0.75, 1.02)		0.87 (0.75, 1.01)		0.88 (0.76, 1.01)		0.87 (0.75, 1.01)		0.88 (0.76, 1.02)
High		0.82 (0.7, 0.96)		0.82 (0.71, 0.96)		0.83 (0.71, 0.97)		0.82 (0.71, 0.96)		0.83 (0.71, 0.96)
Very High		0.84 (0.71, 0.98)		0.84 (0.72, 0.99)		0.84 (0.72, 0.99)		0.84 (0.72, 0.98)		0.85 (0.72, 0.99)
Low	3	0.85 (0.74, 0.99)	13	0.85 (0.73, 0.98)	23	0.85 (0.73, 0.98)	33	0.85 (0.73, 0.98)	43	0.84 (0.73, 0.98)
Moderate		0.87 (0.75, 1.01)		0.87 (0.75, 1)		0.87 (0.75, 1.01)		0.87 (0.75, 1.01)		0.87 (0.75, 1.01)
High		0.82 (0.71, 0.96)		0.83 (0.71, 0.97)		0.82 (0.71, 0.96)		0.82 (0.71, 0.96)		0.83 (0.71, 0.96)
Very High		0.84 (0.72, 0.99)		0.85 (0.72, 0.99)		0.83 (0.71, 0.98)		0.84 (0.72, 0.98)		0.85 (0.73, 1)
Low	4	0.85 (0.73, 0.98)	14	0.85 (0.73, 0.98)	24	0.85 (0.73, 0.98)	34	0.85 (0.73, 0.98)	44	0.85 (0.73, 0.98)
Moderate		0.87 (0.75, 1.01)		0.87 (0.75, 1.01)		0.86 (0.74, 1)		0.87 (0.75, 1.01)		0.87 (0.75, 1.01)
High		0.83 (0.71, 0.96)		0.82 (0.7, 0.96)		0.82 (0.7, 0.95)		0.83 (0.71, 0.97)		0.82 (0.7, 0.95)
Very High		0.84 (0.72, 0.99)		0.85 (0.73, 1)		0.83 (0.71, 0.97)		0.85 (0.72, 0.99)		0.84 (0.72, 0.98)
Low	5	0.83 (0.72, 0.96)	15	0.86 (0.74, 1)	25	0.87 (0.75, 1.01)	35	0.85 (0.73, 0.99)	45	0.85 (0.73, 0.99)
Moderate		0.86 (0.74, 0.99)		0.88 (0.76, 1.02)		0.87 (0.74, 1.01)		0.86 (0.74, 1)		0.88 (0.76, 1.02)
High		0.8 (0.69, 0.94)		0.83 (0.71, 0.97)		0.83 (0.71, 0.97)		0.84 (0.71, 0.98)		0.83 (0.71, 0.97)
Very High		0.83 (0.71, 0.98)		0.85 (0.72, 1)		0.82 (0.7, 0.97)		0.81 (0.69, 0.96)		0.87 (0.74, 1.02)
Low	6	0.85 (0.73, 0.98)	16	0.86 (0.74, 1)	26	0.85 (0.73, 0.98)	36	0.85 (0.73, 0.99)	46	0.87 (0.75, 1)
Moderate		0.87 (0.75, 1.01)		0.86 (0.74, 1)		0.88 (0.75, 1.02)		0.85 (0.73, 0.99)		0.88 (0.76, 1.02)
High		0.83 (0.71, 0.96)		0.82 (0.7, 0.95)		0.82 (0.7, 0.96)		0.81 (0.69, 0.95)		0.84 (0.72, 0.97)
Very High		0.84 (0.72, 0.99)		0.85 (0.73, 1)		0.83 (0.7, 0.97)		0.83 (0.7, 0.98)		0.86 (0.73, 1)
Low	7	0.85 (0.74, 0.99)	17	0.85 (0.73, 0.99)	27	0.85 (0.73, 0.98)	37	0.82 (0.71, 0.96)		
Moderate		0.87 (0.75, 1.01)		0.89 (0.77, 1.04)		0.86 (0.74, 1)		0.87 (0.75, 1.01)		
High		0.83 (0.71, 0.96)		0.82 (0.7, 0.96)		0.84 (0.72, 0.99)		0.83 (0.71, 0.96)		
Very High		0.84 (0.72, 0.99)		0.84 (0.72, 0.99)		0.85 (0.73, 1)		0.85 (0.72, 0.99)		
Low	8	0.85 (0.73, 0.98)	18	0.85 (0.74, 0.99)	28	0.85 (0.73, 0.98)	38	0.85 (0.73, 0.98)		
Moderate		0.87 (0.75, 1.01)		0.88 (0.76, 1.02)		0.87 (0.75, 1.01)		0.87 (0.75, 1.01)		
High		0.82 (0.71, 0.96)		0.83 (0.71, 0.97)		0.83 (0.71, 0.97)		0.83 (0.71, 0.96)		
Very High		0.84 (0.72, 0.99)		0.86 (0.73, 1.01)		0.84 (0.72, 0.99)		0.84 (0.72, 0.99)		
Low	9	0.84 (0.72, 0.97)	19	0.85 (0.73, 0.98)	29	0.84 (0.73, 0.98)	39	0.85 (0.73, 0.98)		
Moderate		0.88 (0.76, 1.03)		0.87 (0.75, 1.01)		0.86 (0.75, 1)		0.87 (0.75, 1.01)		
High		0.82 (0.7, 0.95)		0.83 (0.71, 0.96)		0.82 (0.71, 0.96)		0.83 (0.71, 0.96)		
Very High		0.87 (0.74, 1.02)		0.84 (0.72, 0.98)		0.85 (0.72, 0.99)		0.84 (0.72, 0.99)		
Low	10	0.85 (0.73, 0.98)	20	0.83 (0.71, 0.97)	30	0.85 (0.73, 0.98)	40	0.85 (0.73, 0.98)		
Moderate		0.87 (0.75, 1.01)		0.9 (0.77, 1.04)		0.87 (0.75, 1.01)		0.87 (0.75, 1.01)		
High		0.82 (0.71, 0.96)		0.85 (0.72, 0.99)		0.82 (0.71, 0.96)		0.82 (0.71, 0.96)		
Very High		0.85 (0.72, 0.99)		0.86 (0.73, 1.01)		0.84 (0.72, 0.99)		0.84 (0.72, 0.99)		

eTable 9: "Leave-one-out" analyses for the association of Child Opportunity Index (ChOI) in early childhood with asthma incidence. All incidence rate ratios (IRR) and 95% confidence intervals are relative to the very low opportunity category.

ChOI category	Excluded cohort no.	IRR (95% CI)	Excluded cohort no.	IRR (95% CI)	Excluded cohort no.	IRR (95% CI)	Excluded cohort no.	IRR (95% CI)	Excluded cohort no.	IRR (95% CI)
Low	1	0.8 (0.69, 0.93)	11	0.8 (0.69, 0.93)	21	0.8 (0.69, 0.94)	31	0.8 (0.69, 0.93)	41	0.81 (0.69, 0.94)
Moderate		0.91 (0.79, 1.06)		0.91 (0.78, 1.05)		0.91 (0.79, 1.06)		0.91 (0.78, 1.05)		0.92 (0.79, 1.06)
High		0.8 (0.68, 0.93)		0.8 (0.68, 0.93)		0.8 (0.68, 0.93)		0.8 (0.68, 0.93)		0.79 (0.68, 0.92)
Very High		0.81 (0.69, 0.95)		0.81 (0.69, 0.95)		0.81 (0.69, 0.95)		0.81 (0.69, 0.95)		0.8 (0.68, 0.94)
Low	2	0.78 (0.67, 0.91)	12	0.8 (0.69, 0.93)	22	0.8 (0.69, 0.93)	32	0.8 (0.69, 0.93)	42	0.8 (0.69, 0.93)
Moderate		0.92 (0.79, 1.07)		0.91 (0.78, 1.05)		0.92 (0.79, 1.06)		0.91 (0.78, 1.05)		0.91 (0.78, 1.06)
High		0.77 (0.66, 0.91)		0.79 (0.68, 0.92)		0.79 (0.68, 0.93)		0.79 (0.68, 0.92)		0.79 (0.68, 0.92)
Very High		0.81 (0.69, 0.95)		0.81 (0.69, 0.94)		0.81 (0.69, 0.95)		0.81 (0.69, 0.94)		0.81 (0.69, 0.95)
Low	3	0.8 (0.69, 0.94)	13	0.8 (0.69, 0.93)	23	0.79 (0.67, 0.92)	33	0.8 (0.69, 0.93)	43	0.79 (0.68, 0.92)
Moderate		0.91 (0.78, 1.06)		0.9 (0.78, 1.05)		0.89 (0.76, 1.04)		0.91 (0.78, 1.05)		0.91 (0.78, 1.06)
High		0.79 (0.68, 0.93)		0.8 (0.68, 0.93)		0.79 (0.67, 0.93)		0.79 (0.68, 0.93)		0.79 (0.68, 0.93)
Very High		0.81 (0.69, 0.95)		0.81 (0.69, 0.95)		0.8 (0.68, 0.94)		0.8 (0.69, 0.94)		0.82 (0.69, 0.96)
Low	4	0.8 (0.69, 0.93)	14	0.8 (0.69, 0.93)	24	0.81 (0.69, 0.94)	34	0.8 (0.69, 0.93)	44	0.8 (0.69, 0.93)
Moderate		0.91 (0.78, 1.05)		0.91 (0.78, 1.05)		0.9 (0.77, 1.04)		0.91 (0.78, 1.05)		0.91 (0.78, 1.05)
High		0.8 (0.68, 0.93)		0.79 (0.67, 0.92)		0.79 (0.68, 0.93)		0.8 (0.68, 0.93)		0.79 (0.67, 0.92)
Very High		0.8 (0.69, 0.94)		0.82 (0.7, 0.96)		0.79 (0.67, 0.93)		0.81 (0.69, 0.95)		0.8 (0.68, 0.94)
Low	5	0.78 (0.67, 0.91)	15	0.82 (0.7, 0.96)	25	0.82 (0.71, 0.96)	35	0.79 (0.67, 0.92)	45	0.81 (0.69, 0.94)
Moderate		0.9 (0.77, 1.05)		0.92 (0.79, 1.07)		0.91 (0.78, 1.06)		0.91 (0.78, 1.06)		0.92 (0.79, 1.07)
High		0.77 (0.66, 0.91)		0.8 (0.69, 0.94)		0.81 (0.69, 0.94)		0.8 (0.68, 0.94)		0.81 (0.69, 0.95)
Very High		0.81 (0.69, 0.95)		0.81 (0.69, 0.96)		0.81 (0.69, 0.95)		0.79 (0.67, 0.94)		0.84 (0.71, 0.98)
Low	6	0.79 (0.68, 0.92)	16	0.81 (0.7, 0.95)	26	0.8 (0.69, 0.93)	36	0.8 (0.68, 0.93)	46	0.8 (0.69, 0.93)
Moderate		0.9 (0.78, 1.05)		0.9 (0.77, 1.05)		0.9 (0.78, 1.05)		0.89 (0.76, 1.04)		0.91 (0.78, 1.05)
High		0.79 (0.68, 0.93)		0.8 (0.68, 0.93)		0.78 (0.66, 0.91)		0.78 (0.66, 0.92)		0.79 (0.68, 0.93)
Very High		0.8 (0.68, 0.94)		0.82 (0.7, 0.96)		0.78 (0.66, 0.92)		0.79 (0.67, 0.93)		0.81 (0.69, 0.94)
Low	7	0.8 (0.69, 0.93)	17	0.8 (0.68, 0.93)	27	0.8 (0.69, 0.94)	37	0.78 (0.67, 0.91)		
Moderate		0.91 (0.79, 1.06)		0.94 (0.8, 1.09)		0.91 (0.78, 1.06)		0.91 (0.79, 1.06)		
High		0.8 (0.68, 0.93)		0.79 (0.68, 0.93)		0.8 (0.68, 0.94)		0.8 (0.68, 0.93)		
Very High		0.81 (0.69, 0.95)		0.8 (0.68, 0.95)		0.81 (0.69, 0.96)		0.81 (0.69, 0.95)		
Low	8	0.8 (0.69, 0.93)	18	0.81 (0.69, 0.94)	28	0.79 (0.68, 0.92)	38	0.8 (0.69, 0.93)		
Moderate		0.91 (0.78, 1.05)		0.92 (0.79, 1.07)		0.9 (0.77, 1.04)		0.91 (0.78, 1.05)		
High		0.79 (0.68, 0.92)		0.8 (0.69, 0.94)		0.79 (0.68, 0.92)		0.79 (0.68, 0.93)		
Very High		0.81 (0.69, 0.95)		0.82 (0.7, 0.97)		0.8 (0.68, 0.94)		0.81 (0.69, 0.95)		
Low	9	0.81 (0.69, 0.94)	19	0.8 (0.69, 0.93)	29	0.81 (0.69, 0.94)	39	0.8 (0.69, 0.93)		
Moderate		0.91 (0.78, 1.06)		0.91 (0.78, 1.05)		0.89 (0.77, 1.04)		0.91 (0.78, 1.05)		
High		0.79 (0.67, 0.92)		0.79 (0.68, 0.93)		0.79 (0.67, 0.92)		0.79 (0.68, 0.93)		
Very High		0.82 (0.7, 0.96)		0.81 (0.69, 0.95)		0.81 (0.69, 0.95)		0.81 (0.69, 0.95)		
Low	10	0.8 (0.68, 0.93)	20	0.82 (0.7, 0.96)	30	0.8 (0.69, 0.93)	40	0.8 (0.69, 0.93)		
Moderate		0.9 (0.78, 1.05)		0.91 (0.78, 1.07)		0.91 (0.78, 1.05)		0.91 (0.78, 1.05)		
High		0.79 (0.68, 0.93)		0.81 (0.69, 0.95)		0.79 (0.68, 0.93)		0.79 (0.68, 0.93)		
Very High		0.81 (0.69, 0.95)		0.83 (0.71, 0.98)		0.81 (0.69, 0.94)		0.81 (0.69, 0.95)		

eFigure 1: Association of domain-specific Child Opportunity Index (ChOI) at birth, infancy, and early childhood with asthma incidence. All incidence rate ratios and 95% confidence intervals are relative to the very low ChOI category and adjusted for sociodemographics, parental asthma history, parity, prenatal cigarette smoking, prenatal second-hand smoke exposure, pre-pregnancy body mass index, mode of delivery, and gestational age.

eFigure 2: Association of domain-specific Social Vulnerability Index (SVI) at birth, infancy, and early childhood with asthma incidence. All incidence rate ratios and 95% confidence intervals are relative to the very high SVI category and adjusted for sociodemographics, parental asthma history, parity, prenatal cigarette smoking, prenatal second-hand smoke exposure, pre-pregnancy BMI, mode of delivery, and gestational age.

eMethods: Description of Child Opportunity Index and Social Vulnerability Index.

Child Opportunity Index
Researchers at Brandeis University developed the ChOI version 2.0 as a summary measure of the quality of neighborhoods in which children live across the US.[1] This index quantifies 29 indicators of neighborhood conditions that impact children's healthy development, drawn from public sources and grouped into three domains: education; health and environment; social and economic. The developers calculated domain-specific and overall ChOI scores for a total of 72,195 census tracts across 50 US states and Washington D.C. The scores were standardized at the national level such that higher scores reflect more favorable neighborhood opportunities relative to other neighborhoods across the US. The researchers also generated percentile ranks for each census tract based on domain-specific and overall ChOI scores, ranging from 1st (lowest opportunity) to 100th percentile (highest opportunity).

Social Vulnerability Index
The Centers for Disease Control and Prevention (CDC) developed and validated the SVI to identify high risk populations that are especially vulnerable in the face of a stressor or during public health emergencies.[2] This index is derived from 15 US Census variables grouped into four domains: socioeconomic status; household composition and disability; racial/ethnic minority and language status; and housing and transportation type. For each census tract, the CDC generated percentile ranks, ranging from 0 (lowest vulnerability) to 1 (highest vulnerability), for all 15 variables collectively (i.e., overall SVI) and for each of the four domains, relative to all tracts across 50 states and Washington DC.

eReferences

1. Acevedo-Garcia D, Noelke C, McArdle N, et al. Racial And Ethnic Inequities In Children's Neighborhoods: Evidence From The New Child Opportunity Index 2.0. Health Aff (Millwood). 2020;39(10):1693-1701.
2. Flanagan BE, Hallisey EJ, Adams E, Lavery A. Measuring Community Vulnerability to Natural and Anthropogenic Hazards: The Centers for Disease Control and Prevention's Social Vulnerability Index. J Environ Health. 2018;80(10):34-36.