

**eTable 1:** Comparison of selected demographic characteristics and outcomes at the time of delivery between non-geocoded patients, those excluded 2006-2008, and the final study population

Variables	(1) Excluded because could not be geocoded (2006-2013) N = 1,881	(2) Excluded because of year of delivery (2006-2008) N = 6,417	(3) Final study population (2009-2013) N = 10,496
<b>Maternal characteristics</b>			
Age at birth, years, median (IQR)	27.0 (22.9-31.3)	27.3 (23.0-31.9)	27.5 (23.3-31.6)
Race/ethnicity, n (%)			
White	1554 (83)	5881 (92)	9327 (89)
Black	116 (6)	208 (3)	382 (4)
Hispanic	131 (7)	228 (4)	601 (6)
Other	55 (3)	67 (1)	148 (1)
Missing	25 (1)	33 (1)	38 (<1)
Primary care patient, n (%)	750 (40)	3143 (49)	4789 (46)
Smoking status <sup>a</sup> , %			
Never	914 (49)	2967 (46)	4964 (47)
Ever	967 (51)	3450 (54)	5532 (53)
Pre-pregnancy body-mass index (kg/m <sup>2</sup> ), n (%)			
<18.5	42 (2)	137 (2)	223 (2)
18.5-24.9	710 (38)	2363 (37)	3851 (37)
25-29.9	444 (24)	1493 (23)	2770 (26)
≥30	490 (26)	1713 (27)	3103 (30)
Missing	195 (10)	711 (10)	549 (5)
≥10 healthcare visits during pregnancy, n (%)	1503 (80)	5166 (81)	8494 (81)
Receipt of Medical Assistance, %	817 (43)	2519 (39)	4796 (46)
Distance to nearest major road, m, median (IQR)	N/A	856 (288-3193)	866 (297-3355)
Drinking water source, %			
Municipal water	N/A	4483 (70)	7306 (70)
Well water	N/A	1934 (30)	3190 (30)
Community socioeconomic deprivation <sup>b</sup> , %			
Quartile 1	N/A	1571 (27)	2475 (26)
Quartile 2	N/A	1474 (25)	2313 (24)
Quartile 3	N/A	1453 (25)	2603 (27)
Quartile 4	N/A	1412 (24)	2306 (24)
Residential greenness, NDVI index, mean (SD)	N/A	0.56 (0.08)	0.54 (0.10)
Community type			
City	N/A	1283 (20)	2177 (21)

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<b>Variables, continued</b>			
Borough	N/A	1786 (28)	3005 (29)
Township	N/A	3348 (52)	5314 (51)
<b>Infant Characteristics</b>			
Male, n (%)	991 (53)	3281 (51)	5372 (51)
Birth weight, grams, mean (SD)	3215 (658)	3197 (624)	3272 (612)
Gestational age, weeks, mean (SD)	38.6 (2.4)	38.5 (2.5)	38.9 (2.2)
Preterm birth <37 weeks, n (%)	234 (12)	727 (11)	1103 (11)
Small for gestational age, n (%)	181 (10)	552 (10)	1024 (10)
5 minute Apgar score <7, n (%)	45 (2)	110 (2)	227 (2)
High-risk pregnancy <sup>c</sup> , n (%)	424 (23)	965 (15)	2853 (27)
Birth year, %			
2006-2008	239 (18)	6417 (100)	0
2009-2010	574 (43)	0	4854 (46)
2011-2013	516 (39)	0	5642 (54)
Birth season, %			
December-February	473 (25)	1560 (24)	2562 (24)
March-May	427 (23)	1608 (25)	2605 (25)
June-August	522 (28)	1682 (26)	2748 (26)
September-November	459 (24)	1567 (24)	2581 (25)

<sup>a</sup> Smoking, alcohol use, and high-risk pregnancy were reported during pregnancy in the EHR social history and problem list.

<sup>b</sup> Community socioeconomic deprivation was assigned at the township, borough, or census tract level, based on 6 indicators derived from the U.S. Census American Community Survey 2012 5-year estimates: combined less than high school education, not in the labor force, in poverty, on public assistance, civilian unemployment, and does not own a car; a higher score represents a more deprived community.

<sup>c</sup> Defined based on physician-reported high-risk pregnancy. When this variable was adjusted for the number of entries on the problem list by year (an adjustment for increased use of the problem list over time), there was no difference by group.

EHR = electronic health record; NDVI = normalized difference vegetation index.

**eTable 2:** Adjusted<sup>a</sup> Cox proportional hazards for risk of preterm birth

	Person-weeks	Hazard ratio (95 % CI)
UNGD activity index quartile		
1	38372	1.0
2	38371	1.1 (0.9-1.3)
3	38371	1.3 (1.0-1.7)
4	38371	1.5 (1.0-2.2)

<sup>a</sup> Adjusted for sex of neonate and season of birth; maternal characteristics: age at delivery, race/ethnicity, primary care patient status, smoking status, pre-pregnancy body mass index, parity, receipt of Medical Assistance, delivery hospital, drinking water source, distance to nearest major road, mean residential greenness during pregnancy; and community socioeconomic deprivation quartile. We ran a Cox proportional hazards model with time-varying (weekly) exposure to UNGD activity including robust standard errors to account for multiple births per woman and multiple women per community. UNGD = unconventional natural gas development.