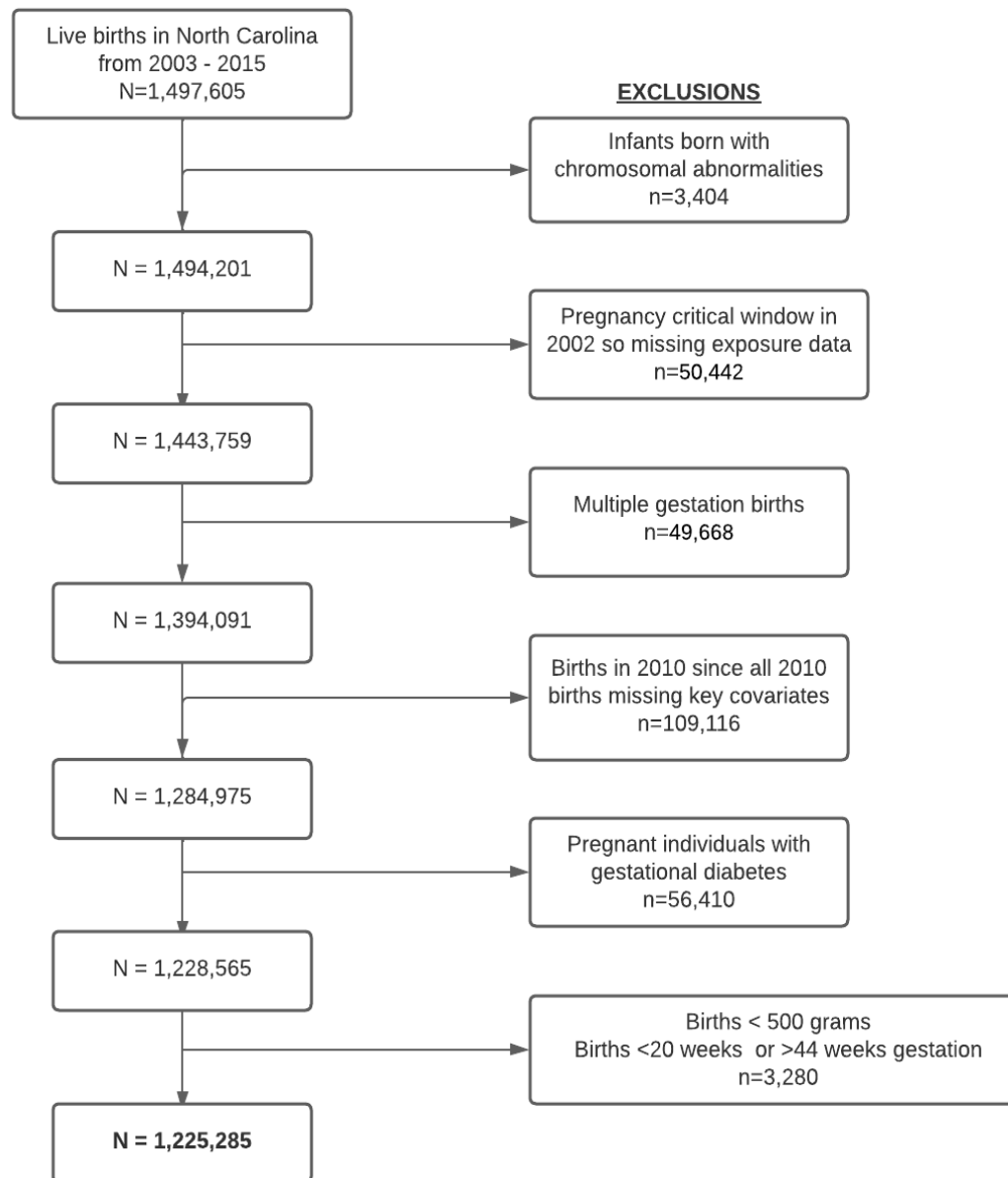
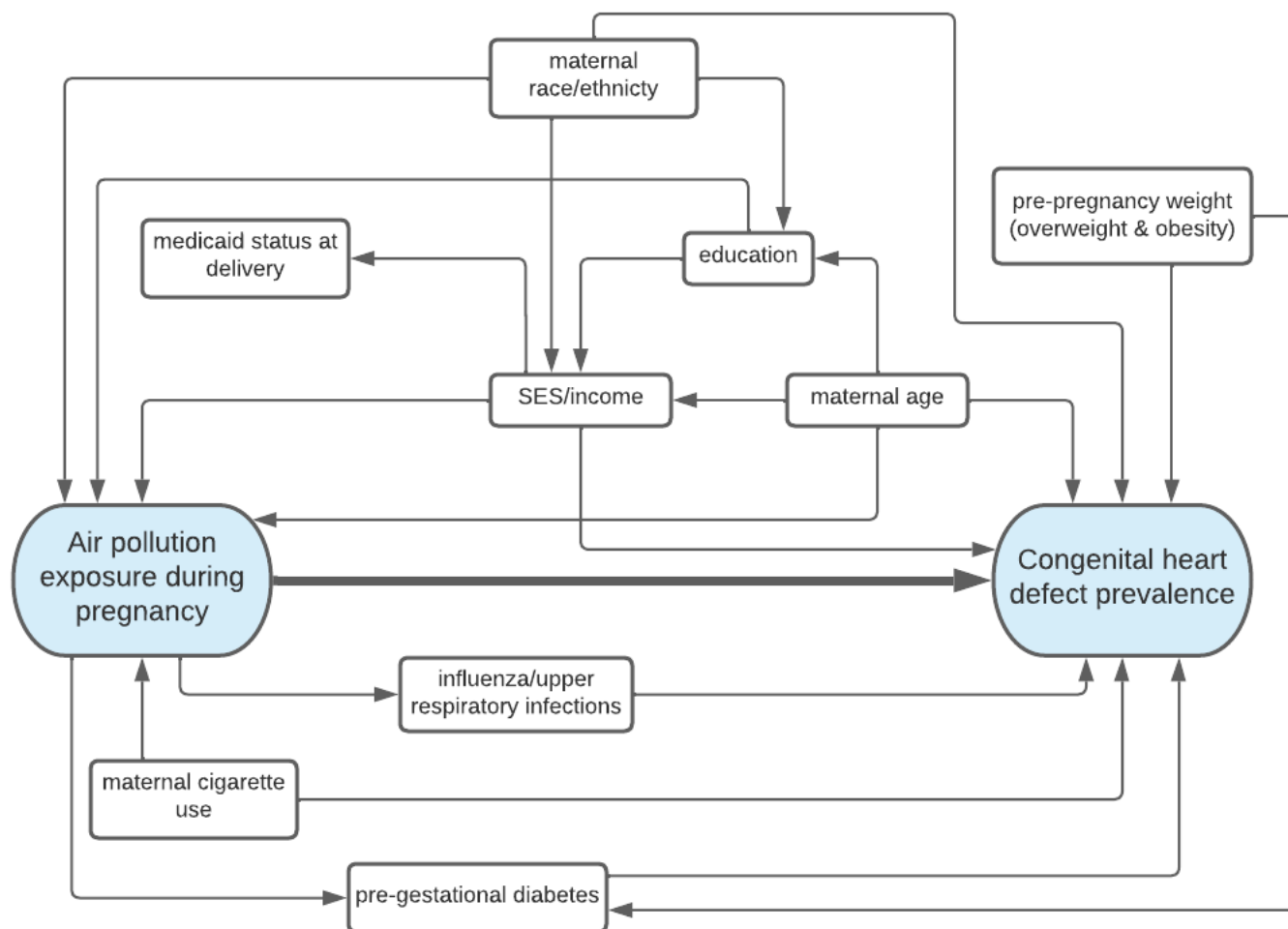


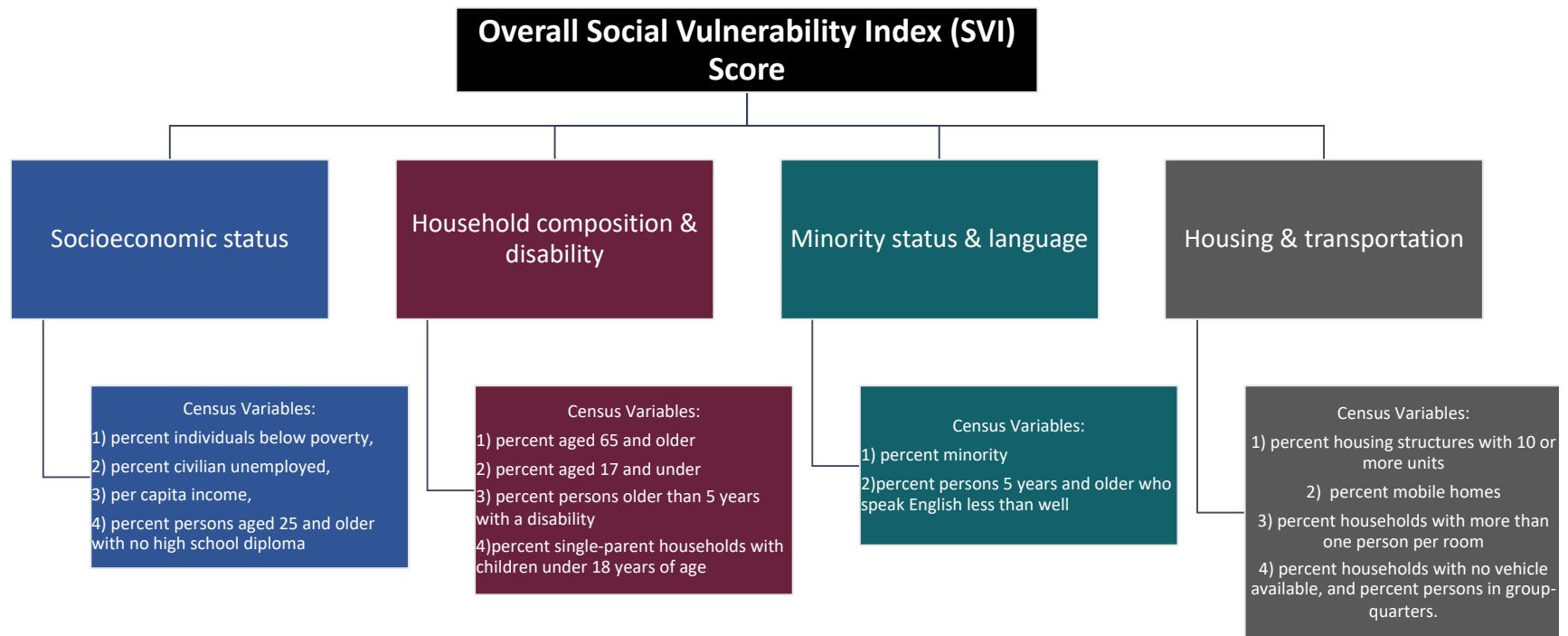


Supplementary Figure 1: Flow chart of study population showing exclusion criteria for study.



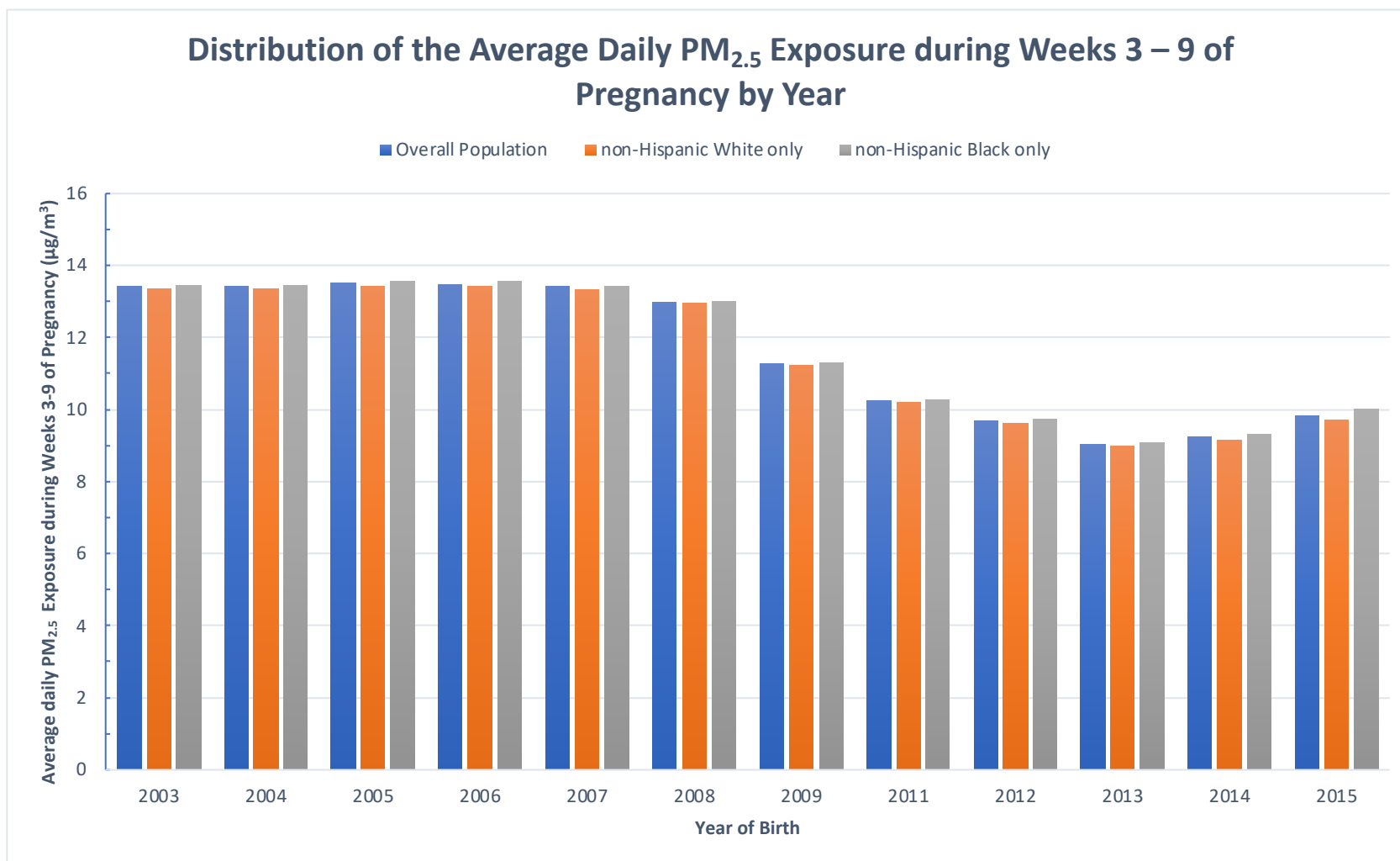
Supplementary Figure 2: Directed Acyclic Graph (DAG) for research question examining air pollution exposure during pregnancy and congenital heart defect prevalence.

Notes: Note that this DAG is for the unstratified analyses. The following variables were identified as confounders from the DAG above: maternal smoking during pregnancy, maternal age, SES/income, and maternal race/ethnicity. As data on SES/income were unavailable in our dataset, we used the following data that we had available as proxies: maternal Medicaid status at delivery, maternal education, and imported data on Social Vulnerability Index (SVI). Data on Medicaid status and education can give insight into income while the SVI includes data related to SES. For the race-stratified analyses, all aforementioned variables other than race were included in the statistical adjustment set.



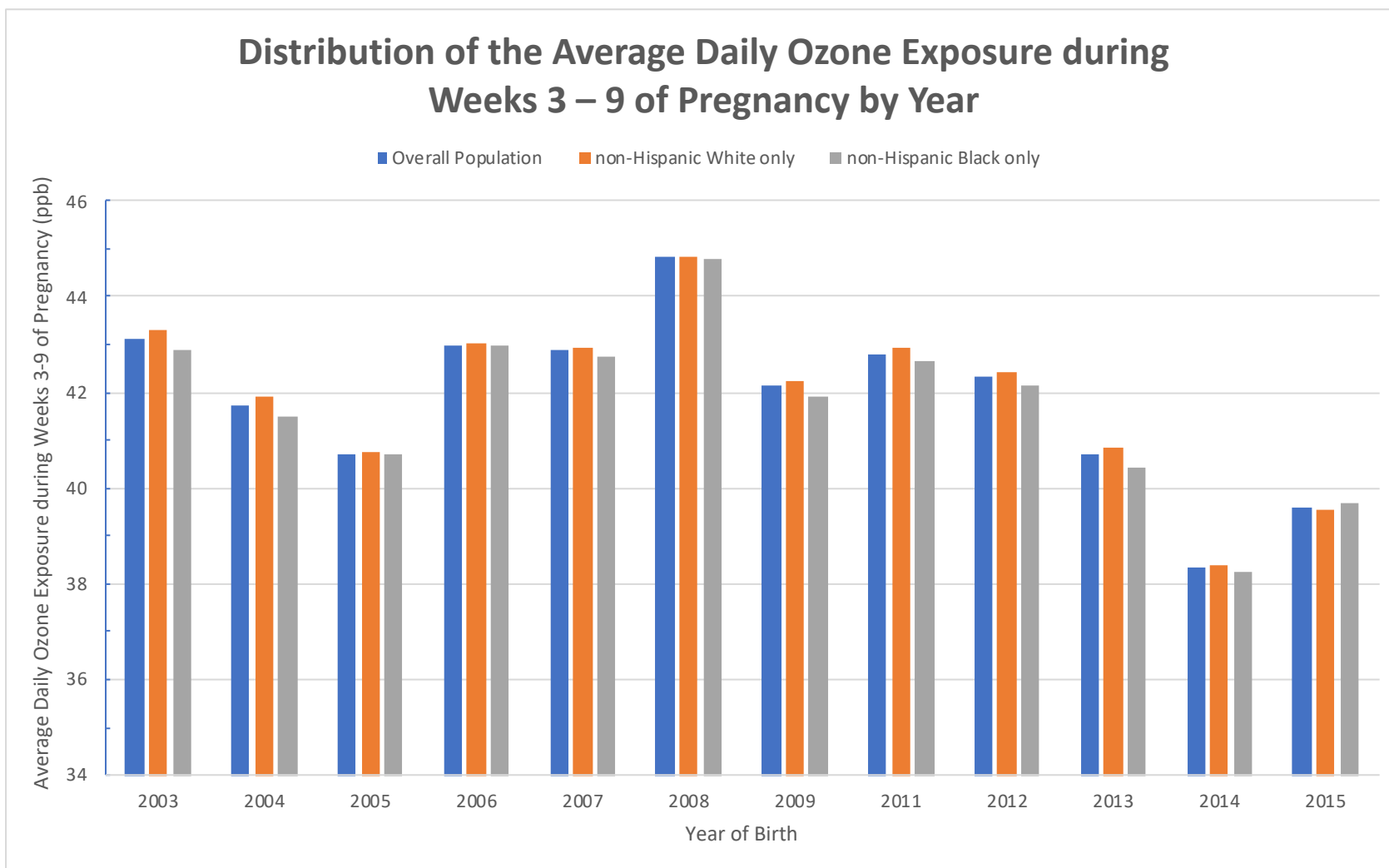
Supplementary Figure 3: Diagram showing breakdown of Social Vulnerability Index (SVI) overall score, including details of census variables.

Note: We incorporated data from the Social Vulnerability Index (SVI) in order to adjust for confounding related to social vulnerability of communities as well as neighborhood-level SES. We incorporated the SVI data into our analyses in order to account for components of overall social vulnerability that could confound the relationship between air pollution exposure and prevalence of CHDs in our study. Factors that influence social vulnerability, such as differences in SES, housing & transportation, and household composition may often arise from structural inequities (e.g., racial segregation and redlining). The SVI was created by the Centers for Disease Control & Prevention and the Agency for Toxic Substances & Disease Registry. The SVI utilizes United States census data to approximate social vulnerability of census tracts throughout the United States in order to identify communities that might need additional support prior to, during, or after, natural or human-caused disasters or disease outbreaks. The SVI ranks each census tract on 15 census variables that fall under the umbrella of 4 themes: socioeconomic status, household composition & disability, minority status & language, and housing & transportation. We used data from the state-level SVI for North Carolina where census tracts in North Carolina are compared within the state. The SVI assigns all census tracts an index score of vulnerability on a scale between 0 and 1, where 0 indicates the least vulnerable and 1 indicates the highest vulnerability. The SVI is a relative measure of vulnerability and not an absolute measure. Creators of the SVI note that an index score was assigned for each census tract during the years of 2000, 2010, 2014, 2016, and 2018 using data from the decennial censuses and American Community Surveys. We assigned the overall SVI score (a compilation of all 4 SVI themes) to each person in our dataset, assigning the SVI for the maternal census tract that was closest in time to the baby's birth year.



Supplementary Figure 4: Distribution of average PM_{2.5} exposure during weeks 3 – 9 of pregnancy in study populations by year.

Notes: Overall population is the entire study population and includes the following racial groupings in our dataset: non-Hispanic White, non-Hispanic Black, Hispanic, Asian/Pacific Islander, American Indian, and other/unknown. The sample sizes for each of the above groups are as follows: overall population: N = 1,225,285; non-Hispanic White strata: N = 699,422; non-Hispanic Black strata: N = 282,010.



Supplementary Figure 5: Distribution of average ozone exposure during weeks 3 – 9 of pregnancy in study populations by year.

Notes: Overall population is the entire study population and includes the following racial groupings in our dataset: non-Hispanic White, non-Hispanic Black, Hispanic, Asian/Pacific Islander, American Indian, and other/unknown. The sample sizes for each of the above groups are as follows: overall population: N = 1,225,285; non-Hispanic White strata: N = 699,422; non-Hispanic Black strata: N = 282,010. Ozone is measured as a daily 8-hour average in parts per billion (ppb).

Supplementary Table 1: Unadjusted and adjusted prevalence ratios (PR) in the association between isolated/multiple cases of pulmonary valve atresia/stenosis and air pollution (PM_{2.5} and ozone) in overall population.

Pulmonary Valve Atresia/Stenosis										
		Isolated Cases			Multiple Cases					
		Unadjusted Single Pollutant Model	Adjusted Single Pollutant Model	Adjusted Co-pollutant Model	Unadjusted Single Pollutant Model	Adjusted Single Pollutant Model	Adjusted Co-pollutant Model			
		n _{cases} PR _{unadj} (95% CI)	n _{cases} PR _{adj} (95% CI)	PR _{adj} (95% CI)	n _{cases} PR _{adj} (95% CI)	n _{cases} PR _{adj} (95% CI)	PR _{adj} (95% CI)			
PM _{2.5}	IQR	372 0.99 (0.87, 1.12)	372 1.00 (0.88, 1.13)	1.01 (0.87, 1.17)	482 0.98 (0.88, 1.10)	477 1.01 (0.90, 1.13)	1.01 (0.89, 1.15)			
	Quartile 1	90 reference	90 reference	reference	110 reference	109 reference	reference			
	Quartile 2	106 1.18 (0.89, 1.56)	106 1.19 (0.89, 1.57)	1.19 (0.90, 1.57)	134 1.22 (0.95, 1.57)	132 1.22 (0.95, 1.57)	1.22 (0.95, 1.57)			
	Quartile 3	90 1.00 (0.75, 1.34)	90 1.02 (0.76, 1.37)	1.02 (0.76, 1.36)	120 1.09 (0.84, 1.41)	119 1.13 (0.87, 1.47)	1.13 (0.87, 1.47)			
	Quartile 4	86 0.95 (0.71, 1.28)	86 0.98 (0.73, 1.32)	0.96 (0.69, 1.35)	118 1.07 (0.83, 1.39)	117 1.13 (0.87, 1.47)	1.13 (0.84, 1.52)			
	≤ 8μg/m ³	29 reference	29 reference	reference	37 reference	37 reference	reference			
	> 8μg/m ³	343 0.96 (0.66, 1.41)	343 0.98 (0.67, 1.43)	0.98 (0.67, 1.44)	445 0.98 (0.70, 1.37)	440 1.00 (0.71, 1.40)	1.00 (0.71, 1.40)			
	> 10μg/m ³	242 0.95 (0.65, 1.40)	242 0.96 (0.65, 1.41)	0.94 (0.63, 1.39)	333 1.02 (0.73, 1.44)	330 1.04 (0.74, 1.47)	1.05 (0.75, 1.48)			
	> 12μg/m ³	124 0.85 (0.57, 1.27)	124 0.89 (0.59, 1.33)	0.75 (0.48, 1.17)	176 0.95 (0.66, 1.35)	174 0.94 (0.66, 1.35)	0.93 (0.64, 1.36)			
	≤ 10μg/m ³	130 reference	130 reference	reference	149 reference	147 reference	reference			
	> 10μg/m ³	242 0.95 (0.77, 1.17)	242 0.96 (0.78, 1.19)	0.97 (0.77, 1.21)	333 1.14 (0.94, 1.38)	330 1.18 (0.97, 1.44)	1.19 (0.98, 1.46)			
	≤ 12μg/m ³	248 reference	248 reference	reference	306 reference	303 reference	reference			
	> 12μg/m ³	124 0.82 (0.66, 1.01)	124 0.83 (0.67, 1.03)	0.80 (0.63, 1.03)	176 0.94 (0.78, 1.13)	174 0.97 (0.81, 1.17)	0.97 (0.79, 1.20)			
Ozone	IQR	372 0.98 (0.83, 1.16)	372 0.98 (0.83, 1.16)	0.97 (0.80, 1.19)	482 0.99 (0.85, 1.14)	477 1.00 (0.86, 1.15)	0.99 (0.83, 1.18)			
	Quartile 1	101 reference	101 reference	reference	114 reference	112 reference	reference			
	Quartile 2	82 0.81 (0.61, 1.09)	82 0.81 (0.61, 1.09)	0.81 (0.60, 1.09)	123 1.08 (0.84, 1.39)	120 1.06 (0.82, 1.37)	1.06 (0.82, 1.38)			
	Quartile 3	96 0.95 (0.72, 1.26)	96 0.95 (0.72, 1.25)	0.95 (0.72, 1.26)	133 1.17 (0.91, 1.50)	133 1.16 (0.90, 1.50)	1.16 (0.90, 1.49)			
	Quartile 4	93 0.92 (0.69, 1.22)	93 0.93 (0.70, 1.23)	0.94 (0.68, 1.31)	112 0.98 (0.76, 1.27)	112 0.99 (0.76, 1.29)	0.95 (0.70, 1.29)			

Notes: The IQR for PM_{2.5} is 3.81. The IQR for ozone is 15.84. Adjusted models include the following covariates: maternal smoking, categorical maternal age, maternal Medicaid status at delivery, maternal education, and categorical Social Vulnerability Index. In the co-pollutant model, the adjustment set includes the other pollutant. The unadjusted model is a single pollutant model. The co-pollutant model includes the continuous IQR form of the other pollutant. There n for the adjusted single pollutant model and the adjusted co-pollutant model are exactly the same (also having the same observations in both models). **Abbreviations:** PM_{2.5} = particulate matter less than 2.5 micrometers in diameter; IQR = interquartile range; n_{cases} = the number of birth defect cases; PR_{unadj} = unadjusted prevalence ratio; PR_{adj} = adjusted prevalence ratio; 95% CI = 95% confidence interval.

Supplementary Table 2: Unadjusted and adjusted prevalence ratios (PR) in the association between pulmonary valve atresia and air pollution (PM_{2.5} and ozone) in overall population.

Pulmonary Valve Atresia						
	<i>Unadjusted Single Pollutant Model</i>		<i>Adjusted Single Pollutant Model</i>		<i>Adjusted Co-pollutant Model</i>	
	n _{cases}	PR _{unadj} (95% CI)	n _{cases}	PR _{adj} (95% CI)	n _{cases}	PR _{adj} (95% CI)
PM_{2.5}						
IQR	156	1.11 (0.92, 1.33)	155	1.17 (0.97, 1.41)	155	1.08 (0.86, 1.35)
Quartile 1	34	reference	33	reference	33	reference
Quartile 2	39	1.15 (0.72, 1.82)	39	1.22 (0.77, 1.94)	39	1.22 (0.77, 1.94)
Quartile 3	35	1.03 (0.64, 1.65)	35	1.15 (0.71, 1.85)	35	1.13 (0.70, 1.82)
Quartile 4	48	1.41 (0.91, 2.19)	48	1.62 (1.04, 2.53)	48	1.44 (0.87, 2.40)
≤ 8μg/m ³	15	reference	15	reference	15	reference
> 8μg/m ³	141	0.77 (0.45, 1.31)	140	0.81 (0.48, 1.38)	140	0.77 (0.45, 1.32)
> 10μg/m ³	110	0.83 (0.49, 1.43)	110	0.89 (0.52, 1.54)	110	0.86 (0.49, 1.49)
> 12μg/m ³	66	0.87 (0.50, 1.53)	66	0.92 (0.52, 1.63)	66	0.83 (0.45, 1.53)
≤ 10μg/m ³	46	reference	45	reference	45	reference
> 10μg/m ³	110	1.22 (0.86, 1.72)	110	1.34 (0.94, 1.90)	110	1.24 (0.86, 1.79)
≤ 12μg/m ³	90	reference	89	reference	89	reference
> 12μg/m ³	66	1.20 (0.87, 1.65)	66	1.31 (0.95, 1.81)	66	1.17 (0.81, 1.69)
Ozone						
IQR	156	1.27 (0.99, 1.64)	155	1.29 (0.99, 1.66)	155	1.21 (0.88, 1.65)
Quartile 1	25	reference	25	reference	25	reference
Quartile 2	43	1.72 (1.05, 2.82)	42	1.64 (1.00, 2.70)	42	1.70 (1.03, 2.79)
Quartile 3	47	1.88 (1.16, 3.05)	47	1.83 (1.13, 2.98)	47	1.79 (1.10, 2.91)
Quartile 4	41	1.64 (1.00, 2.69)	41	1.65 (1.00, 2.71)	41	1.32 (0.75, 2.33)

Notes: The IQR for PM_{2.5} is 3.81. The IQR for ozone is 15.84. Adjusted models include the following covariates: maternal smoking, categorical maternal age, maternal Medicaid status at delivery, maternal education, categorical Social Vulnerability Index, and maternal race. In the co-pollutant model, the adjustment set includes the other pollutant. The co-pollutant model includes the continuous IQR form of the other pollutant.

Abbreviations: PM_{2.5} = particulate matter less than 2.5 micrometers in diameter; IQR = interquartile range; n_{cases} = the number of birth defect cases; PR_{unadj} = unadjusted prevalence ratio; PR_{adj} = adjusted prevalence ratio; 95% CI = 95% confidence interval.

Supplementary Table 3: Unadjusted and adjusted prevalence ratios (PR) in the association between pulmonary valve stenosis and air pollution (PM_{2.5} and ozone) in overall population.

Pulmonary Valve Stenosis						
	Unadjusted Single Pollutant Model		Adjusted Single Pollutant Model		Adjusted Co-pollutant Model	
	n _{cases}	PR _{unadj} (95% CI)	n _{cases}	PR _{adj} (95% CI)	n _{cases}	PR _{adj} (95% CI)
PM _{2.5}	IQR	728 0.96 (0.87, 1.05)	724 0.97 (0.88, 1.06)	724 0.98 (0.88, 1.09)		
	Quartile 1	174 reference	174 reference	174 reference		
	Quartile 2	207 1.19 (0.97, 1.45)	205 1.18 (0.97, 1.45)	205 1.18 (0.97, 1.45)		
	Quartile 3	184 1.06 (0.86, 1.30)	183 1.07 (0.87, 1.32)	183 1.07 (0.87, 1.32)		
	Quartile 4	163 0.94 (0.76, 1.16)	162 0.95 (0.77, 1.18)	162 0.95 (0.74, 1.21)		
	≤ 8μg/m ³	56 reference	56 reference	56 reference		
	> 8μg/m ³	672 0.98 (0.75, 1.29)	668 0.99 (0.75, 1.30)	668 0.99 (0.76, 1.31)		
	> 10μg/m ³	484 0.98 (0.75, 1.30)	481 0.98 (0.74, 1.30)	481 0.98 (0.74, 1.30)		
	> 12μg/m ³	247 0.88 (0.66, 1.17)	245 0.88 (0.66, 1.19)	245 0.82 (0.60, 1.12)		
	≤ 10μg/m ³	244 reference	243 reference	243 reference		
	> 10μg/m ³	484 1.01 (0.87, 1.18)	481 1.02 (0.88, 1.20)	481 1.04 (0.89, 1.22)		
	≤ 12μg/m ³	481 reference	479 reference	479 reference		
	> 12μg/m ³	247 0.84 (0.72, 0.98)	245 0.85 (0.73, 0.99)	245 0.84 (0.71, 1.00)		
	Ozone	IQR	728 0.95 (0.84, 1.07)	724 0.96 (0.85, 1.08)	724 0.97 (0.84, 1.12)	
		Quartile 1	193 reference	191 reference	191 reference	
Quartile 2		171 0.89 (0.72, 1.09)	169 0.88 (0.72, 1.08)	169 0.88 (0.71, 1.08)		
Quartile 3		190 0.98 (0.81, 1.20)	190 0.98 (0.81, 1.20)	190 0.99 (0.81, 1.21)		
Quartile 4		174 0.90 (0.73, 1.11)	174 0.91 (0.74, 1.12)	174 0.95 (0.74, 1.20)		

Notes: The IQR for PM_{2.5} is 3.81. The IQR for ozone is 15.84. Adjusted models include the following covariates: maternal smoking, categorical maternal age, maternal Medicaid status at delivery, maternal education, categorical Social Vulnerability Index, and maternal race. In the co-pollutant model, the adjustment set includes the other pollutant. The co-pollutant model includes the continuous IQR form of the other pollutant.

Abbreviations: PM_{2.5} = particulate matter less than 2.5 micrometers in diameter; IQR = interquartile range; n_{cases} = the number of birth defect cases; PR_{unadj} = unadjusted prevalence ratio; PR_{adj} = adjusted prevalence ratio; 95% CI = 95% confidence interval.

Supplementary Table 4: Unadjusted and adjusted prevalence ratios (PR) in the association between pulmonary valve stenosis and air pollution (PM_{2.5} and ozone) in Non-Hispanic White and Non-Hispanic Black populations in North Carolina.

Pulmonary Valve Stenosis											
		Non-Hispanic White					Non-Hispanic Black				
		Unadjusted Single Pollutant Model		Adjusted Single Pollutant Model		Adjusted Co-pollutant Model	Unadjusted Single Pollutant Model		Adjusted Single Pollutant Model		Adjusted Co-pollutant Model
		n _{cases}	PR _{unadj} (95% CI)	n _{cases}	PR _{adj} (95% CI)	PR _{adj} (95% CI)	n _{cases}	PR _{adj} (95% CI)	n _{cases}	PR _{adj} (95% CI)	PR _{adj} (95% CI)
PM _{2.5}	IQR	377	0.96 (0.85, 1.09)	374	0.99 (0.87, 1.12)	1.01 (0.87, 1.17)	200	0.86 (0.72, 1.04)	199	0.87 (0.72, 1.05)	0.91 (0.73, 1.12)
	Quartile 1	95	reference	95	reference	reference	43	reference	43	reference	reference
	Quartile 2	104	1.13 (0.86, 1.50)	103	1.14 (0.86, 1.50)	1.14 (0.86, 1.50)	64	1.44 (0.98, 2.12)	63	1.42 (0.96, 2.09)	1.42 (0.96, 2.09)
	Quartile 3	90	1.01 (0.76, 1.35)	89	1.05 (0.78, 1.40)	1.05 (0.79, 1.41)	58	1.27 (0.86, 1.89)	58	1.28 (0.86, 1.91)	1.29 (0.86, 1.91)
	Quartile 4	88	0.98 (0.73, 1.30)	87	1.02 (0.76, 1.37)	1.06 (0.77, 1.48)	35	0.79 (0.51, 1.24)	35	0.80 (0.51, 1.26)	0.82 (0.50, 1.35)
	≤ 8μg/m ³	35	reference	35	reference	reference	13	reference	13	reference	reference
	> 8μg/m ³	342	0.86 (0.61, 1.22)	339	0.90 (0.63, 1.27)	0.90 (0.64, 1.28)	187	1.11 (0.63, 1.95)	186	1.12 (0.64, 1.96)	1.14 (0.65, 2.00)
	> 10μg/m ³	245	0.87 (0.61, 1.25)	242	0.90 (0.63, 1.29)	0.91 (0.64, 1.31)	135	1.11 (0.63, 1.96)	135	1.12 (0.63, 1.98)	1.15 (0.65, 2.04)
	> 12μg/m ³	126	0.78 (0.54, 1.14)	124	0.85 (0.58, 1.24)	0.78 (0.52, 1.18)	66	0.96 (0.53, 1.74)	66	0.95 (0.52, 1.74)	1.02 (0.55, 1.90)
	≤ 10μg/m ³	132	reference	132	reference	reference	65	reference	64	reference	reference
	> 10μg/m ³	245	1.00 (0.81, 1.23)	242	1.02 (0.83, 1.27)	1.04 (0.84, 1.30)	135	1.01 (0.75, 1.36)	135	1.04 (0.77, 1.40)	1.10 (0.81, 1.49)
	≤ 12μg/m ³	251	reference	250	reference	reference	134	reference	133	reference	reference
	> 12μg/m ³	126	0.84 (0.68, 1.05)	124	0.87 (0.70, 1.08)	0.87 (0.68, 1.11)	66	0.80 (0.60, 1.08)	66	0.81 (0.60, 1.10)	0.87 (0.63, 1.21)
	Ozone	IQR	377	0.95 (0.80, 1.12)	374	0.95 (0.80, 1.12)	0.94 (0.77, 1.15)	200	0.84 (0.67, 1.06)	199	0.85 (0.68, 1.06)
Quartile 1		94	reference	93	reference	reference	60	reference	59	reference	reference
Quartile 2		93	0.91 (0.68, 1.21)	91	0.87 (0.65, 1.16)	0.87 (0.65, 1.16)	46	0.88 (0.60, 1.29)	46	0.89 (0.61, 1.31)	0.88 (0.60, 1.30)
Quartile 3		102	1.02 (0.77, 1.35)	102	0.99 (0.75, 1.31)	0.99 (0.75, 1.32)	54	0.97 (0.67, 1.41)	54	0.99 (0.68, 1.43)	0.99 (0.99, 1.44)
Quartile 4		88	0.90 (0.68, 1.21)	88	0.90 (0.67, 1.21)	0.91 (0.65, 1.27)	40	0.70 (0.47, 1.05)	40	0.71 (0.48, 1.07)	0.77 (0.48, 1.24)

Notes: The IQR for PM_{2.5} is 3.81. The IQR for ozone is 15.84. Adjusted models include the following covariates: maternal smoking, categorical maternal age, maternal Medicaid status at delivery, maternal education, and categorical Social Vulnerability Index. In the co-pollutant model, the adjustment set includes the other pollutant. The unadjusted model is a single pollutant model. The co-pollutant model includes the continuous IQR form of the other pollutant. There n for the adjusted single pollutant model and the adjusted co-pollutant model are exactly the same (also having the same observations in both models). **Abbreviations:** PM_{2.5} = particulate matter less than 2.5 micrometers in diameter; IQR = interquartile range; n_{cases} = the number of birth defect cases; PR_{unadj} = unadjusted prevalence ratio; PR_{adj} = adjusted prevalence ratio; 95% CI = 95% confidence interval.

Supplementary Table 5: Unadjusted and adjusted prevalence ratios (PR) in the association between isolated/multiple cases of pulmonary valve stenosis and air pollution (PM_{2.5} and ozone) in overall population.

Pulmonary Valve Stenosis											
		Isolated Cases					Multiple Cases				
		Unadjusted Single Pollutant Model		Adjusted Single Pollutant Model		Adjusted Co-pollutant Model	Unadjusted Single Pollutant Model		Adjusted Single Pollutant Model		Adjusted Co-pollutant Model
		n _{cases}	PR _{unadj} (95% CI)	n _{cases}	PR _{adj} (95% CI)	PR _{adj} (95% CI)	n _{cases}	PR _{adj} (95% CI)	n _{cases}	PR _{adj} (95% CI)	PR _{adj} (95% CI)
PM _{2.5}	IQR	354	0.95 (0.84, 1.08)	354	0.96 (0.85, 1.10)	0.98 (0.84, 1.14)	374	0.96 (0.85, 1.09)	370	0.97 (0.86, 1.10)	0.98 (0.85, 1.14)
	Quartile 1	89	reference	89	reference	reference	85	reference	85	reference	reference
	Quartile 2	102	1.15 (0.86, 1.52)	102	1.15 (0.87, 1.53)	1.15 (0.87, 1.53)	105	1.24 (0.93, 1.64)	103	1.21 (0.91, 1.62)	1.21 (0.91, 1.62)
	Quartile 3	85	0.96 (0.71, 1.29)	85	0.97 (0.72, 1.31)	0.97 (0.72, 1.31)	99	1.17 (0.87, 1.56)	98	1.17 (0.87, 1.57)	1.17 (0.87, 1.57)
	Quartile 4	78	0.88 (0.65, 1.19)	78	0.90 (0.66, 1.22)	0.88 (0.63, 1.25)	85	1.00 (0.74, 1.35)	84	1.01 (0.75, 1.37)	1.02 (0.72, 1.43)
	≤ 8μg/m ³	29	reference	29	reference	reference	27	reference	27	reference	reference
	> 8μg/m ³	325	0.91 (0.63, 1.34)	325	0.92 (0.63, 1.35)	0.93 (0.64, 1.36)	347	1.05 (0.71, 1.55)	343	1.05 (0.71, 1.56)	1.06 (0.72, 1.57)
	> 10μg/m ³	225	0.88 (0.60, 1.30)	225	0.89 (0.60, 1.31)	0.87 (0.59, 1.29)	259	1.09 (0.73, 1.62)	256	1.09 (0.73, 1.62)	1.10 (0.74, 1.64)
	> 12μg/m ³	113	0.77 (0.51, 1.16)	113	0.81 (0.53, 1.22)	0.68 (0.44, 1.07)	134	0.99 (0.65, 1.49)	132	0.96 (0.63, 1.47)	0.96 (0.62, 1.49)
	≤ 10μg/m ³	129	reference	129	reference	reference	115	reference	114	reference	reference
	> 10μg/m ³	225	0.89 (0.71, 1.10)	225	0.90 (0.72, 1.12)	0.91 (0.73, 1.14)	259	1.15 (0.92, 1.43)	256	1.16 (0.93, 1.45)	1.19 (0.95, 1.49)
	≤ 12μg/m ³	241	reference	241	reference	reference	240	reference	238	reference	reference
	> 12μg/m ³	113	0.77 (0.61, 0.96)	113	0.78 (0.62, 0.98)	0.76 (0.59, 0.97)	134	0.91 (0.74, 1.13)	132	0.92 (0.74, 1.14)	0.93 (0.73, 1.19)
	Ozone	IQR	354	0.95 (0.80, 1.13)	354	0.95 (0.80, 1.13)	0.97 (0.79, 1.19)	374	0.95 (0.81, 1.12)	370	0.96 (0.81, 1.13)
Quartile 1		99	reference	99	reference	reference	94	reference	92	reference	reference
Quartile 2		78	0.79 (0.59, 1.06)	78	0.79 (0.59, 1.06)	0.78 (0.58, 1.05)	93	0.99 (0.74, 1.32)	91	0.98 (0.73, 1.31)	0.98 (0.73, 1.31)
Quartile 3		89	0.90 (0.67, 1.20)	89	0.90 (0.67, 1.19)	0.90 (0.68, 1.20)	101	1.07 (0.81, 1.42)	101	1.08 (0.81, 1.43)	1.08 (0.81, 1.43)
Quartile 4		88	0.89 (0.67, 1.18)	88	0.89 (0.67, 1.19)	0.96 (0.69, 1.35)	86	0.91 (0.68, 1.22)	86	0.93 (0.69, 1.24)	0.93 (0.66, 1.31)

Notes: The IQR for PM_{2.5} is 3.81. The IQR for ozone is 15.84. Adjusted models include the following covariates: maternal smoking, categorical maternal age, maternal Medicaid status at delivery, maternal education, and categorical Social Vulnerability Index. In the co-pollutant model, the adjustment set includes the other pollutant. The unadjusted model is a single pollutant model. The co-pollutant model includes the continuous IQR form of the other pollutant. There n for the adjusted single pollutant model and the adjusted co-pollutant model are exactly the same (also having the same observations in both models). **Abbreviations:** PM_{2.5} = particulate matter less than 2.5 micrometers in diameter; IQR = interquartile range; n_{cases} = the number of birth defect cases; PR_{unadj} = unadjusted prevalence ratio; PR_{adj} = adjusted prevalence ratio; 95% CI = 95% confidence interval.

Supplementary Table 6: Unadjusted and adjusted prevalence ratios (PR) in the association between isolated/multiple cases of Tetralogy of Fallot and air pollution (PM_{2.5} and ozone) in overall population.

Tetralogy of Fallot											
		Isolated Cases					Multiple Cases				
		Unadjusted Single Pollutant Model		Adjusted Single Pollutant Model		Adjusted Co-pollutant Model	Unadjusted Single Pollutant Model		Adjusted Single Pollutant Model		Adjusted Co-pollutant Model
		n _{cases}	PR _{unadj} (95% CI)	n _{cases}	PR _{adj} (95% CI)	PR _{adj} (95% CI)	n _{cases}	PR _{adj} (95% CI)	n _{cases}	PR _{adj} (95% CI)	PR _{adj} (95% CI)
PM _{2.5}	IQR	205	0.99 (0.83, 1.17)	202	1.01 (0.85, 1.20)	1.08 (0.88, 1.32)	169	1.13 (0.94, 1.34)	168	1.16 (0.97, 1.39)	1.16 (0.94, 1.44)
	Quartile 1	55	reference	55	reference	reference	29	reference	29	reference	reference
	Quartile 2	42	0.76 (0.51, 1.14)	40	0.73 (0.48, 1.10)	0.72 (0.48, 1.09)	42	1.45 (0.90, 2.32)	42	1.49 (0.93, 2.40)	1.49 (0.93, 2.40)
	Quartile 3	51	0.93 (0.63, 1.36)	50	0.93 (0.63, 1.37)	0.95 (0.64, 1.39)	50	1.73 (1.09, 2.73)	49	1.80 (1.14, 2.86)	1.80 (1.13, 2.86)
	Quartile 4	57	1.04 (0.72, 1.50)	57	1.07 (0.74, 1.56)	1.30 (0.85, 1.98)	48	1.65 (1.04, 2.62)	48	1.80 (1.13, 2.86)	1.79 (1.07, 2.99)
	≤ 8μg/m ³	16	reference	16	reference	reference	11	reference	11	reference	reference
	> 8μg/m ³	189	0.96 (0.58, 1.60)	186	0.95 (0.57, 1.59)	0.97 (0.58, 1.62)	158	1.17 (0.64, 2.16)	157	1.23 (0.66, 2.27)	1.21 (0.65, 2.23)
	> 10μg/m ³	137	0.97 (0.58, 1.63)	135	0.94 (0.56, 1.59)	0.96 (0.57, 1.63)	129	1.33 (0.72, 2.47)	128	1.44 (0.78, 2.67)	1.43 (0.77, 2.66)
	> 12μg/m ³	77	0.96 (0.56, 1.64)	77	0.96 (0.56, 1.66)	0.99 (0.56, 1.75)	79	1.43 (0.76, 2.68)	78	1.56 (0.82, 2.95)	1.54 (0.80, 2.99)
	≤ 10μg/m ³	68	reference	67	reference	reference	40	reference	40	reference	reference
	> 10μg/m ³	137	1.03 (0.77, 1.37)	135	1.05 (0.78, 1.41)	1.09 (0.80, 1.47)	129	1.64 (1.15, 2.34)	128	1.73 (1.21, 2.47)	1.72 (1.19, 2.48)
	≤ 12μg/m ³	128	reference	125	reference	reference	90	reference	90	reference	reference
	> 12μg/m ³	77	0.98 (0.74, 1.31)	77	1.04 (0.78, 1.38)	1.12 (0.82, 1.54)	79	1.44 (1.06, 1.94)	78	1.50 (1.10, 2.04)	1.54 (1.09, 2.16)
	Ozone	IQR	205	0.89 (0.71, 1.11)	202	0.90 (0.72, 1.13)	0.85 (0.66, 1.11)	169	1.10 (0.86, 1.41)	168	1.12 (0.87, 1.43)
Quartile 1		51	reference	49	reference	reference	44	reference	43	reference	reference
Quartile 2		63	1.24 (0.85, 1.79)	63	1.30 (0.89, 1.88)	1.32 (0.91, 1.93)	35	0.80 (0.51, 1.24)	35	0.80 (0.51, 1.25)	0.80 (0.51, 1.25)
Quartile 3		46	0.90 (0.61, 1.34)	46	0.94 (0.63, 1.40)	0.92 (0.62, 1.38)	33	0.75 (0.48, 1.18)	33	0.75 (0.48, 1.18)	0.75 (0.47, 1.18)
Quartile 4		45	0.88 (0.59, 1.32)	44	0.91 (0.60, 1.36)	0.78 (0.49, 1.26)	57	1.29 (0.87, 1.92)	57	1.32 (0.89, 1.97)	1.32 (0.82, 2.11)

Notes: The IQR for PM_{2.5} is 3.81. The IQR for ozone is 15.84. Adjusted models include the following covariates: maternal smoking, categorical maternal age, maternal Medicaid status at delivery, maternal education, and categorical Social Vulnerability Index. In the co-pollutant model, the adjustment set includes the other pollutant. The unadjusted model is a single pollutant model. The co-pollutant model includes the continuous IQR form of the other pollutant. There n for the adjusted single pollutant model and the adjusted co-pollutant model are exactly the same (also having the same observations in both models). **Abbreviations:** PM_{2.5} = particulate matter less than 2.5 micrometers in diameter; IQR = interquartile range; *n_{cases}* = the number of birth defect cases; PR_{unadj} = unadjusted prevalence ratio; PR_{adj} = adjusted prevalence ratio; 95% CI = 95% confidence interval.

Supplementary Table 7: Unadjusted and adjusted prevalence ratios (PR) in the association between isolated/multiple cases of atrioventricular septal defects and air pollution (PM_{2.5} and ozone) in overall population.

Atrioventricular Septal Defects										
		Isolated Cases			Multiple Cases					
		<i>Unadjusted Single Pollutant Model</i>	<i>Adjusted Single Pollutant Model</i>	<i>Adjusted Co-pollutant Model</i>	<i>Unadjusted Single Pollutant Model</i>	<i>Adjusted Single Pollutant Model</i>	<i>Adjusted Co-pollutant Model</i>			
		n _{cases} PR _{unadj} (95% CI)	n _{cases} PR _{adj} (95% CI)	PR _{adj} (95% CI)	n _{cases} PR _{adj} (95% CI)	n _{cases} PR _{adj} (95% CI)	PR _{adj} (95% CI)			
PM _{2.5}	IQR	70 1.07 (0.81, 1.41)	70 ---	---	196 0.98 (0.83, 1.17)	194 1.00 (0.84, 1.19)	0.93 (0.76, 1.14)			
	Quartile 1	11 reference	11 reference	reference	47 reference	46 reference	reference			
	Quartile 2	21 1.91 (0.92, 3.96)	21 ---	---	58 1.23 (0.84, 1.81)	58 1.26 (0.86, 1.86)	1.26 (0.86, 1.86)			
	Quartile 3	20 1.82 (0.87, 3.80)	20 ---	---	46 0.98 (0.65, 1.47)	45 0.98 (0.65, 1.49)	0.96 (0.63, 1.45)			
	Quartile 4	18 1.64 (0.77, 3.46)	18 ---	---	45 0.96 (0.64, 1.44)	45 0.99 (0.65, 1.50)	0.83 (0.52, 1.32)			
	≤ 8μg/m ³	5 reference	5 reference	reference	21 reference	20 reference	reference			
	> 8μg/m ³	65 1.06 (0.43, 2.63)	65 ---	---	175 0.68 (0.43, 1.97)	174 0.72 (0.45, 1.14)	0.70 (0.44, 1.12)			
	> 10μg/m ³	52 1.18 (0.47, 2.96)	52 ---	---	127 0.69 (0.43, 1.09)	126 0.74 (0.46, 1.18)	0.69 (0.43, 1.12)			
	> 12μg/m ³	25 0.99 (0.38, 2.60)	25 ---	---	71 0.67 (0.41, 1.09)	71 0.68 (0.41, 1.12)	0.58 (0.34, 1.00)			
	≤ 10μg/m ³	18 reference	18 reference	reference	69 reference	68 reference	reference			
	> 10μg/m ³	52 1.47 (0.86, 2.51)	52 ---	---	127 0.94 (0.70, 1.26)	126 0.95 (0.70, 1.28)	0.90 (0.66, 1.23)			
	≤ 12μg/m ³	45 reference	45 reference	reference	125 reference	123 reference	reference			
	> 12μg/m ³	25 0.91 (0.56, 1.48)	25 ---	---	71 0.93 (0.69, 1.24)	71 0.95 (0.71, 1.28)	0.86 (0.62, 1.20)			
Ozone	IQR	70 1.02 (0.70, 1.49)	70 ---	---	196 1.14 (0.91, 1.43)	194 1.13 (0.90, 1.42)	1.19 (0.90, 1.57)			
	Quartile 1	18 reference	18 reference	reference	34 reference	34 reference	reference			
	Quartile 2	17 0.95 (0.49, 1.83)	17 ---	---	60 1.77 (1.16, 2.69)	60 1.77 (1.16, 2.70)	1.78 (1.17, 2.72)			
	Quartile 3	19 1.06 (0.55, 2.01)	19 ---	---	53 1.56 (1.01, 2.40)	52 1.52 (0.98, 2.34)	1.51 (0.98, 2.33)			
	Quartile 4	16 0.89 (0.45, 1.74)	16 ---	---	49 1.44 (0.93, 2.23)	48 1.40 (0.90, 2.18)	1.36 (0.83, 2.25)			

Notes: The IQR for PM_{2.5} is 3.81. The IQR for ozone is 15.84. Adjusted models include the following covariates: maternal smoking, categorical maternal age, maternal Medicaid status at delivery, maternal education, and categorical Social Vulnerability Index. In the co-pollutant model, the adjustment set includes the other pollutant. The unadjusted model is a single pollutant model. The co-pollutant model includes the continuous IQR form of the other pollutant. There n for the adjusted single pollutant model and the adjusted co-pollutant model are exactly the same (also having the same observations in both models). Isolated cases adjusted models did not converge. **Abbreviations:** PM_{2.5} = particulate matter less than 2.5 micrometers in diameter; IQR = interquartile range; n_{cases} = the number of birth defect cases; PR_{unadj} = unadjusted prevalence ratio; PR_{adj} = adjusted prevalence ratio; 95% CI = 95% confidence interval.