Background: The independent effects of the neighborhood environment on health outcomes are of increasing interest in the public health literature. Empirical research has established that a number of social phenomena tend to cluster at the neighborhood level including crime, adolescent delinquency, social and physical disorder, low birthweight, and infant mortality. Residence in areas characterized by high concentrations of poverty and economic underdevelopment has been correlated with higher rates of all-cause mortality, cardiovascular disease, poor diet, and poorer mental health. Other research indicates the effects of place of residence on health operate independently of indicators of individual socioeconomic status such as household income and education. The research reported in this abstract attempts to build upon prior work by exploring the neighborhood effects on preterm birth in NC.

Preterm birth, defined as gestational age less than 37 weeks, is an important predictor of infant morbidity and mortality. Additionally, significant racial disparities in preterm birth exist of which, North Carolina is one of the most disparate states. In 1997, preterm rates were 9.2% for Whites and 16.5% for Blacks, ranking them 12th and 15th in the nation, respectively. We hypothesize that the neighborhood environment may be an important influence on birth outcomes.

The geographic regions where social problems tend to aggregate are characterized by the concentration of multiple forms of disadvantage. We chose four established neighborhood indicators to use in this analysis: poverty, residential stability, tract proportion rental and tract proportion Black-NonHispanic. The goal of this research was to asses if living in a neighborhood (census tract) characterized by higher levels of 'disadvantage' was associated with increased risk of preterm and very preterm birth compared with living in a neighborhood with lower levels of disadvantage, among this cohort of women.

Methods: These data came from the North Carolina Birth Outcomes Partnership Project (NC-BOP) and are from two original sources. The birth outcome and individual women's characteristics came from three consecutive years of North Carolina Birth Records (years 1999-2001) for Wake County NC. Wake County houses 627,846 people and is home to the NC state capital, Raleigh. The Wake County birth record file contained 30,481 births for the three years. The individual births were geocoded with latitude and longitude values using Geographic Data Technology (GDT) and were assigned to year 2000 US Census tracts. Of the 98.6% of birth files with complete addresses we sent to GDT for geocoding, 93.2% achieved an exact census tract match using GDT's methods. The NC birth records contain standardized information on each woman including details about her birth outcome (gestational age, birthweight, singleton status, etc), her personal characteristics (race/ethnicity, age, education, marital status) and her health behaviors (smoking, drinking, number of prenatal visits). We used these records to create the outcomes and covariates for this analysis. The second source of data was year 2000 census. We merged census tract level variables that characterized the women's neighborhoods with their birth records. For this analysis, we used the census tract to approximate women's neighborhoods; approximately 8225 (standard deviation = 4258) people resided in each census tract.

The birth cohort for this analysis was limited to singleton births; this was for two reasons: One, the etiology of preterm birth is different for singletons versus multiple

gestations. And two, while increasing in prevalence, the occurrence of natural multiples is still relatively rare. Two outcomes were chosen for this analysis: preterm birth and very preterm birth. Preterm birth is defined as gestational age less than 37 weeks (and birthweight less than 3888g), and very preterm was defined as less than 34 weeks gestational age and was constructed using the clinical gestational age variable found in the birth records. We chose to examine both preterm and very preterm births to explore the possibly differential neighborhood influences operating on the two outcomes. In this sample, 26,823 (88%) births were term, 2378 (8%) were preterm and 703 (2%) were very preterm. The neighborhood exposure variables include tract level poverty, tract level residential stability, percent renter of the tract and percent Black Non-Hispanic residing in the tract. Tertiles of each neighborhood variable were used for these analyses. Covariates included in the model include maternal race, maternal age, maternal education and marital status. These individual-level variables are established risk factors for preterm birth and possible confounders to the neighborhood-preterm birth relationship.

Adjustment for confounders was made when the crude risk ratio differed from the adjusted for each confounder by 10% or more. Log linear regression analysis, using generalized linear model procedures produced risk ratios and 95% confidence intervals for the relationships between the poverty, residential stability, proportion rental and proportion Black-NonHispanic. Multilevel analyses were conducted to explore the contribution of the neighborhood environment over that of the individual level predictors and to account for any clustering of the birth outcomes. We estimated random effects models with a fixed slope value for each predictor variable but with randomly distributed tract-specific intercepts and adjusted the models for maternal age, education, and marital status. We stratified our analyses by White-NonHispanic and Black-NonHispanic race because we anticipate the social and neighborhood processes resulting in preterm birth may differ by race. All analyses were conducted in Stata 8.1.

Results: The sample description can be found in Table 1. The majority of term births (16745 [62.5%]) and preterm births (1238 [52.1%]) occurred among white women, but black women had more very preterm births (321 [45.7%]) than the other racial groups (White, Hispanic and Other-NonHispanic). The patterns of maternal age and education were quite evenly distributed among women delivering term, preterm and very preterm, with most mothers being between 30-34 years of age and having completed more than 12 years of education. Less than ¼ of the women who delivered term were unmarried, compared with 32% delivering preterm and 41% delivering very preterm. Tract level poverty was differentially distributed between term, preterm and very preterm births. Among women delivering term, most resided in tracts in the lowest tertile of poverty (37%); among preterm deliveries, most women lived in tracts with medium amounts of poverty (36.9%) and among the very preterm, most moms lived in the highest tertiles of poverty tracts (35.9%). Tertiles of tract level residential stability was fairly consistently distributed between the term, preterm and very preterm birth outcomes. Tract levels of renters were similar for the term and preterm births with fewest moms living in tracts with high renters; women delivering very preterm lived in tracts with high levels of renters (31.4%). Most women delivering term lived in tracts with medium levels of Black-NonHispanic residents (37.6%) while both those delivering preterm and very

preterm lived in tracts with high amounts of Black-NonHispanics (36.0% and 43.8%, respectively).

The race-stratified unadjusted association for both preterm and very preterm birth can be found in Table 2. In the unadjusted models for White-NonHispanic women, high levels of poverty were significantly associated with risk of preterm birth (Risk Ratio [RR]: 1.3, 95% Confidence Interval [95%CI] = 1.1, 1.5) while tract residential stability appeared virtually unrelated to birth outcomes. Similarly, tract rentership was minimally associated with preterm birth among these women. Medium and high levels of living in a racially heterogeneous tract (defined by proportion of Black-NonHispanic population) was minimally associated with risk of preterm birth for white women (RR= 1.1 [95% CI: 1.0, 1.3] and RR = 1.2 [95% CI: 1.0, 1.4], respectively). Of the individual level covariates, having 12 years of education (RR = 1.4 [95% CI = 1.2, 1.6]), having less than 12 years of education (RR = 1.4 [95% CI = 1.1, 1.8]) and being non-married (RR = 1.4 [95% CI: 1.2, 1.6]) were associated with risk of preterm birth. The pattern for very preterm birth among white women is identical to that of preterm birth, but the risk ratios are larger for each of the variables and the confidence intervals are wider demonstrating the loss of precision associated with the fewer number of very preterm birth outcomes.

The highest correlations between the neighborhood level variables were between the tract poverty and tract rented variables (r=0.7). Poverty was similarly related to proportion Black-NonHispanic (r=0.6), but Black-NonHispanic proportions and rented proportions were only modestly correlated (r=0.4). Residential stability and poverty were inversely correlated (r=-0.1).

In the unadjusted models for Black-NonHispanic women, residing in a tract with high levels of poverty was associated with a modest increased risk of preterm birth (RR=1.3, [95% CI: 1.0, 1.6]). Unlike what we found for white women, living in a tract with high levels of residential stability was also associated with preterm birth (RR=1.5, [95% CI: 1.1, 2.1]). The proportion of census tract that was renters was not associated with preterm birth, but for Black-NonHispanic women, living in a tract with a high proportion of Black-NonHispanic was associated with increased risk of preterm birth (RR=1.3, [95% CI: 1.0, 1.7]). Of the individual level covariates, being over 35 years of age (RR=1.3, [95% CI: 1.1, 1.7]), having 12 years of education (RR=1.3, [95% CI: 1.1, 1.5]), having less than 12 years of education (RR=1.5, [95% CI: 1.2, 1.7]), or being unmarried (RR=1.2, [95% CI: 1.1, 1.4]) were associated with preterm birth among these women. The patterns of association for the very preterm birth outcome in Black-NonHispanic women were similar to those for preterm birth, but many of the associations failed to achieve statistical significance.

This multilevel models contained a total of 28226 women; 17461 White-NonHispanic and 6003 Black-NonHispanic observations in 105 census tracts. The minimum number of White-NonHispanic women per census tract was 3, the mean number of White-NonHispanic women per census tract was 169.1, and the maximum number of White-NonHispanic women per census tract was 991. The minimum number of Black-NonHispanic women per census tract was 1, the mean number of Black-NonHispanic women per census tract was 52.5, and the maximum number of Black-NonHispanic women per census tract was 161. The intra-class correlation coefficient, an indicator of clustering of the birth outcomes (preterm birth and very preterm birth) by

census tract was essentially 0 for the White-NonHispanic women and ranged from 0.01-0.03 for the Black-NonHispanic women.

Model 1 of the multilevel models (Table 3) represented preterm birth as a function of tract poverty tertiles, stratified by maternal race and adjusting for maternal age, maternal education and marital status. The individual level covariates continued to demonstrate significant associations with preterm birth, particularly for Black-NonHispanic women. Living in tracts with higher amounts of poverty contributed little to this model of risk for preterm birth for both Black and White-NonHispanic women; the risk ratios hovered at 1.1 and 1.2, indicating a very small effect. **Model 2** is the same model but for very preterm birth. Among white women, high levels of tract poverty, compared with the lowest tertiles, appears associated with very preterm over and above the individual level covariates (RR=1.6, 95% CI=1.1, 2.2).

Model 3 of the multilevel models (Table 3, continued) represented preterm birth as a function of residential stability, stratified by maternal race and adjusting for maternal age, maternal education and marital status. The individual level covariates continued to demonstrate significant associations with preterm birth. Consistent with the crude associations, living in tracts with higher amounts of residential stability, controlling for tract poverty, contributed little to this model of risk for preterm birth; the risk ratios hovered at 1.1 and 1.2. **Model 4** is the same model but for very preterm birth. Similar to the crude associations, high levels of tract poverty, compared with the lowest tertiles, appears associated with very preterm over and above the individual level covariates for both White-NonHispanic (RR=1.6, 95% CI=1.1, 2.2) and Black-NonHispanic (RR= 1.3, 95% CI=0.8, 1.9) women. Tract level residential stability is mildly associated with very preterm birth for white women but demonstrates a greater association for black women (RR=1.4, 95% CI: 0.9, 2.0).

Model 5 (Table 3, continued) represented preterm birth as a function of proportion renters living in the tract. After adjusting for the individual covariates and tract poverty, tract rentership contributes virtually nothing to this model with risk ratios at approximately 1.0, indicating on balance, no effect. Considering very preterm birth, however (**Model 6)**, the importance of proportion of tract rentership, controlling for poverty, appear to increase. White-NonHispanic women living in tracts with high proportion of renters were at 40% increased risk of preterm compared with low proportions of renters (RR=1.4, 95% CI = 1.0, 2.2). The association for Black-NonHispanic women was similar, but smaller (RR=1.2, 95% CI: 0.7, 1.9).

In **Model 7**, risk of preterm birth is estimated by proportion Black-NonHispanic, adjusting for individual covariates and tract poverty. The effect of both tract poverty and tract Black-NonHispanic is very small in this model with the most sizable association seen for Black-NonHispanic women living in tracts with high proportions of Black-NonHispanic people (RR=1.2, [95% CI: 0.9, 1.4]). Using very preterm birth as the outcome of interest, **Model 8,** the contribution of both the poverty and high proportions of Black-NonHispanic residents variables increases in their association with very preterm birth among White-NonHispanic women. Among the Black-NonHispanic women, high levels of Black-NonHispanic residents was associated with a modest increased risk of very preterm birth (RR=1.3, [95% CI: 0.7, 2.3]).

Discussion

We conducted multilevel analyses to determine what contribution neighborhood level factors- percent poverty, residential stability, proportion renter and proportion Black-NonHispanic- made to the disparity in preterm and very preterm birth experiences of Black and White-NonHispanic women. The neighborhood level variables demonstrated a small to modest association with preterm and very preterm birth risk, after adjusting for individual level covariates in these analyses. While the poverty and rental variables were fairly highly correlated, they showed dissimilar associations with the birth outcomes, suggesting they may be measuring different aspects of the neighborhood environment in these analyses.

The findings for residential stability were opposite what we expected. We hypothesized living in a more stable neighborhood would protect against preterm and very preterm birth. We found little effect of residential stability, and when an effect was present, it was one of increased risk for adverse birth outcomes. Several possible reasons for these counterintuitive findings exist. Residential stability may be inadequately captured by our categorization. Instead, there may be a threshold effect to residential stability at which more or less is irrelevant and a dichotomous modeling would be more appropriate (more than 33%?). Perhaps the census tract is the wrong unit of aggregation for estimating stability effects; losing or retaining one's closest neighbors may be more salient to pregnancy health. Lastly, it could be that residential stability is not particularly relevant to pregnancy outcomes

Poverty has been demonstrated to exert a consistent and negative effect on low birth weight and other adverse birth outcomes in the epidemiological literature. Our poverty effects were fairly modest and inconsistent. These somewhat irregular poverty effects may have arisen for several reasons. In a manner similar to residential stability, we may have employed improper cut points or would have benefited by using a dichotomous / threshold variable to estimate poverty. This analysis employed one census variable to approximate the actual poverty experience in the tract. Perhaps we should have used more than one variable, and index of poverty of deprivation, or another census variable, such as percent of census tract on public assistance or unemployment, to estimate the effects of low income / poverty on birth outcomes.

The neighborhoods in which women live, work and gestate are a probable source of both support and stress. These neighborhood influences, which arise from political, economic and racial structures (such as racism), may reasonably affect birth outcomes. Work in this area is relatively new and underdeveloped and while the results of this study are not as pronounced as one might expect, they represent an important step forward in understanding the role the neighborhood environment may play in adverse birth outcomes, such as preterm and very preterm birth.

TABLE 1: SAMPLE DESCRIPTION

	Term Births [N=26823 (88%)] Number (column %)	Preterm Births [N=2378 (7.8%)] Number (column %)	Very Preterm Births [N=703 (2.3%)] Number (column %)
Maternal Race			
White-NH	16745 (62.4)	1238 (52.1)	279 (39.7)
Black-NH	5520 (20.6)	487 (33.0)	321 (45.7)
Hispanic	3128 (11.7)	239 (10.1)	72 (10.2)
Other -NH	1414 (5.3)	112 (4.7)	29 (4.13)
missing	16 (0.1)	5 (0.2)	2 (0.3)
Maternal Age			
< 20 yrs	1685 (6.3)	182 (7.7)	65 (9.3)
20-24 yrs	4650 (17.3)	445 (18.7)	146 (11.5)
25-29 yrs	7406 (27.6)	664 (27.9)	184 (26.2)
30-34 yrs	8414 (31.4)	648 (27.3)	198 (28.2)
35+ yrs	4667 (17.4)	439 (18.5)	110 (15.7)
missing	1 (1.0)	0 (0.0)	0 (0.0)
Maternal Education			
>12 years	18254 (68.1)	1405 (59.1)	370 (52.6)
12 years	4786 (17.8)	554 (23.3)	178 (25.3)
< 12 years	3720 (13.9)	408 (17.2)	148 (21.1)
missing	63 (0.2)	11 (0.5)	7 (1.0)
Marital Status			
Married	20797 (77.5)	1621 (68.2)	412 (58.6)
Non-married	6022 (22.5)	757 (31.8)	291 (41.4)
missing	4 (0.0)	0 (0.00)	0 (0.00)
Tract Poverty			
Low (5%)	9928 (37.0)	728 (30.6)	172 (24.5)
Med (<10%)	9679 (36.1)	858 (36.1)	245 (34.9)
High (10-50%)	6341 (23.6)	692 (29.1)	252 (35.9)
missing	875 (3.3)	100 (4.2)	34 (4.8)
Tract Residential Stability			
Low (14.8 - 37.0)	9472 (35.3)	777 (32.7)	227 (32.3)
Med (37.3 - 48.0	9815 (36.6)	878 (36.9)	254 (36.1)
High (48.2 - 72.3)	6661 (24.8)	623 (26.2)	188 (26.7)
missing	875 (3.3)	100 (4.2)	34 (4.8)
Tract Rentership			
Low (1.8 - 23.4)	11436 (42.6)	924 (38.9)	221 (31.4)
Med (23.6 - 48.0)	8592 (32.0)	754 (31.7)	228 (32.4)
High (48.4 - 90.4)	5920 (22.1)	600 (25.2)	220 (31.3)
missing	875 (3.3)	100 (4.2)	34 (4.8)
Tract Black Non-Hispanic			
Low (1.0 - 9.2)	8139 (30.3)	581 (24.4)	134 (19.1)
Med (9.3 - 20.7)	10080 (37.6)	840 (35.3)	227 (32.3)
High (21.9 - 93.0)	7729 (28.8)	857 (36.0)	308 (43.8)
missing	875 (3.3)	100 (4.2)	34 (4.8)

TABLE 2: UNADJUSTED RISK RATIOS FOR RISK OF PRETERM; COMBINED AND RACE STRATIFIED

	WHITE-NonHispanic Preterm Unadjusted RR (95% CI) (N=17461)	WHITE-NonHispanic Very-PTB Unadjusted RR (95% CI) (N=17433)
Maternal Age		
< 20 yrs	1.3 (1.0, 1.7)	1.5 (0.8, 2.6)
20-24 yrs	1.0 (referent)	1.0 (referent)
25-29 yrs	1.0 (0.8, 1.2)	0.8, (0.5, 1.2)
30-34 yrs	0.8 (0.7, 1.0)	0.8 (0.6, 1.2)
35+ yrs	0.9 (0.8, 1.1)	0.7 (0.5, 1.1)
Maternal Education		
>12 years	1.0 (referent)	1.0 (referent)
12 years	1.4 (1.2, 1.6)	1.8 (1.3, 2.4)
< 12 years	1.4 (1.1, 1.8)	2.3 (1.5, 3.4)
Marital Status		
Married	1.0 (referent)	1.0 (referent)
Non-married	1.4 (1.2, 1.6)	1.9 (1.4, 2.6)
Tract Poverty		
Low (5%)	1.0 (referent)	1.0 (referent)
Med (<10%)	1.1 (0.9, 1.2)	1.1 (0.9, 1.5)
High (10-50%)	1.3 (1.1, 1.5)	1.8 (1.3, 2.4)
Tract Residential Stability		
Low (14.8 - 37.0)	1.0 (referent)	1.0 (referent)
Med (37.3 - 48.0	1.1 (0.9, 1.2)	0.9 (0.7, 1.2)
High (48.2 - 72.3)	1.1 (1.0, 1.3)	1.1 (0.8, 1.5)
Tract Rentership		
Low (1.8 - 23.4)	1.0 (referent)	1.0 (referent)
Med (23.6 - 48.0)	0.9 (0.8, 1.1)	1.2 (0.9, 1.5)
High (48.4 - 90.4)	1.0 (0.9, 1.2)	1.7 (1.2, 2.3)
Tract Black Non-Hispanic		
Low (1.0 - 9.2)	1.0 (referent)	1.0 (referent)
Med (9.3 - 20.7)	1.1 (1.0, 1.3)	1.3 (1.0, 1.7)
High (21.9 - 93.0)	1.2 (1.0, 1.4)	1.5 (1.1, 2.1)

TABLE 2, Continued: UNADJUSTED RISK RATIOS FOR RISK OF VERY PRETERM BIRTH; COMBINED AND RACE STRATIFIED

	BLACK-NonHispanic Preterm Unadjusted RR (95% CI) (N=6003)	BLACK-NonHispanic Very-PTB Unadjusted RR (95% CI) (N=6003)
Maternal Age		
< 20 yrs	0.9 (0.7, 1.2)	0.9 (0.6, 1.4)
20-24 yrs	1.0 (referent)	1.0 (referent)
25-29 yrs	1.0 (0.9, 1.2)	1.1 (0.8, 1.4)
30-34 yrs	1.2 (1.0, 1.4)	1.3 (0.9, 1.7)
35+ yrs	1.3 (1.1, 1.7)	1.3 (0.9, 1.8)
Maternal Education		
>12 years	1.0 (referent)	1.0 (referent)
12 years	1.3 (1.1, 1.5)	1.1 (0.8, 1.4)
< 12 years	1.5 (1.2, 1.7)	1.5 (1.2, 2.0)
Marital Status		
Married	1.0 (referent)	1.0 (referent)
Non-married	1.2 (1.1, 1.4)	1.3 (1.1, 1.7)
Tract Poverty		
Low (5%)	1.0 (referent)	1.0 (referent)
Med (<10%)	1.2 (0.9, 1.5)	1.3 (0.9, 1.8)
High (10-50%)	1.3 (1.0, 1.6)	1.3 (0.9, 1.9)
Tract Residential Stability		
Low (14.8 - 37.0)	1.0 (referent)	1.0 (referent)
Med (37.3 - 48.0	1.3 (1.0, 1.7)	1.2 (0.9, 1.6)
High (48.2 - 72.3)	1.5 (1.1, 2.1)	1.4 (1.1, 1.9)
Tract Rentership		
Low (1.8 - 23.4)	1.0 (referent)	1.0 (referent)
Med (23.6 - 48.0)	1.0 (0.9, 1.2)	1.1 (0.8, 1.5)
High (48.4 - 90.4)	1.1 (1.0, 1.3)	1.2 (0.9, 1.6)
Tract Black Non-Hispanic		
Low (1.0 - 9.2)	1.0 (referent)	1.0 (referent)
Med (9.3 - 20.7)	1.1 (0.8, 1.4)	1.0 (0.6, 1.6)
High (21.9 - 93.0)	1.3 (1.0, 1.7)	1.3 (0.9, 2.1)

TABLE 3: RACE STRATIFIED MULTILEVEL MODEL ODDS RATIOS FOR PRETERM AND VERY PRETERM BIRTH OUTCOMES					
		MODEL 1. Preterm Birth		MODEL 2. Very Preterm Birth	
		POVERTY ONLY MODEL		POVERTY ONLY MODEL	
		WHITE-NH	BLACK-NH	WHITE-NH	BLACK-NH
		Preterm	Preterm	Very PTB	Very PTB
		Adjusted	Adjusted	Adjusted	Adjusted
		OR (95% CI)	OR (95% CI)	OR (95% CI)	OR (95% CI)
		(N=17433)	(N=5985)	(N=17433)	(N=5985)
Maternal Age					
	< 20 yrs	1.1 (0.7, 1.6)	0.7 (0.5, 0.9)	1.1 (0.5, 2.1)	0.6 (0.4, 1.0)
	20-24 yrs	1.0 (referent)	1.0 (referent)	1.0 (referent)	1.0 (referent)
	25-29 yrs	1.2 (1.0, 1.5)	1.3 (1.0, 1.6)	1.2 (0.7, 1.9)	1.3 (1.0, 1.9)
	30-34 yrs	1.0 (0.8, 1.2)	1.7 (1.3, 2.1)	1.3 (0.8, 2.1)	1.9 (1.3, 2.7)
	35+ yrs	1.1 (0.9, 1.4)	2.1 (1.6, 2.7)	1.2 (0.7, 1.9)	1.9 (1.2, 2.8)
Maternal Education					
	>12 years	1.0 (referent)	1.0 (referent)	1.0 (referent)	1.0 (referent)
	12 years	1.3 (1.1, 1.6)	1.4 (1.1, 1.7)	1.5 (1.1, 2.2)	1.1 (0.8, 1.5)
	<12 years	1.3 (1.0, 1.8)	1.9 (1.5, 2.4)	1.9 (1.1, 3.4)	1.9 (1.2, 2.7)
Marital Status					
	Married	1.0 (referent)	1.0 (referent)	1.0 (referent)	1.0 (referent)
	Not	1.2 (1.0 (1.5)	1.5 (1.2, 1.8)	1.5 (1.0, 2.2)	1.6 (1.2, 2.2)
Tract Poverty					
	Low	1.0 (referent)	1.0 (referent)	1.0 (referent)	1.0 (referent)
	Med	1.0 (0.9, 1.2)	1.2 (0.9, 1.6)	1.1 (0.8, 1.4)	1.3 (0.8, 2.0)
	High	1.2 (1.0, 1.4)	1.2 (0.9, 1.5)	1.6 (1.1, 2.2)	1.2 (0.7, 1.8)
		Rho = 0.0	Rho = 0.0	Rho = 0.0	Rho = 0.03

TABLE 3: RACE STRATIFIED MULTILEVEL MODEL ODDS RATIOS FOR PRETERM AND VERY PRETERM BIRTH OUTCOMES, continued					
		MODEL 3. Preterm Birth RESIDENTIAL STABILITY MODEL		MODEL 4. Very Preterm Birth RESIDENTIAL STABILITY MODEL	
		WHITE-NH Preterm Adjusted OR (95% CI) (N=17433)	BLACK-NH Preterm Adjusted OR (95% CI) (N=5985)	WHITE-NH Very PTB Adjusted OR (95% CI) (N=17433)	BLACK-NH Very PTB Adjusted OR (95% CI) (N=5985)
Maternal Age					
	< 20 yrs	1.1 (0.8, 1.6)	0.7 (0.5, 0.9)	1.1 (0.5, 2.1)	0.6 (0.4, 1.0)
	20-24 yrs	1.0 (referent)	1.0 (referent)	1.0 (referent)	1.0 (referent)
	25-29 yrs	1.2 (1.0, 1.5)	1.3 (1.0, 1.6)	1.2 (0.7, 1.9)	1.3 (1.0, 1.9)
	30-34 yrs	1.0 (0.8, 1.2)	1.6 (1.3, 2.1)	1.3 (0.8, 2.1)	1.9 (1.3, 2.7)
	35+ yrs	1.1 (0.9, 1.4)	2.1 (1.6, 2.7)	1.2 (0.7, 1.9)	1.9 (1.2, 2.8)
Maternal Education					
	>12 years	1.0 (referent)	1.0 (referent)	1.0 (referent)	1.0 (referent)
	12 years	1.3 (1.1, 1.6)	1.4 (1.1, 1.6)	1.5 (1.1, 2.2)	1.1 (0.8, 1.5)
	<12 years	1.3 (1.0, 1.8)	1.9 (1.5, 2.4)	1.9 (1.1, 3.4)	1.9 (1.2, 2.8)
Marital Status					
	Married	1.0 (referent)	1.0 (referent)	1.0 (referent)	1.0 (referent)
	Not	1.2 (1.0 (1.5)	1.5 (1.2, 1.8)	1.5 (1.0, 2.2)	1.6 (1.2, 2.2)
Tract Poverty					
	Low	1.0 (referent)	1.0 (referent)	1.0 (referent)	1.0 (referent)
	Med	1.0 (0.9, 1.2)	1.1 (0.9, 1.5)	1.1 (0.8, 1.4)	1.4 (0.9, 2.0)
	High	1.2 (1.0, 1.4)	1.2 (0.9, 1.5)	1.6 (1.1, 2.2)	1.3 (0.8, 1.9)
Tract Residential Stability					
	Low	1.0 (referent)	1.0 (referent)	1.0 (referent)	1.0 (referent)
	Med	1.1 (0.9, 1.2)	1.0 (0.9, 1.3)	0.9 (0.7, 1.2)	1.2 (0.9, 1.7)
	High	1.1 (1.0, 1.3)	1.2 (1.0, 1.5)	1.1 (0.8, 1.5)	1.4 (0.9, 2.0)
		Rho = 0.0	Rho = 0.0	Rho = 0.0	Rho = 0.03

TABLE 3: RACE STRATIFIED MULTILEVEL MODEL ODDS RATIOS FOR PRETERM AND VERY PRETERM BIRTH OUTCOMES, continued					
		MODEL 5. Preterm Birth		MODEL 6. Very Preterm Birth	
		PERCENT TRACT RENTAL MODEL		PERCENT TRACT RENTAL MODEL	
		WHITE-NH	BLACK-NH	WHITE-NH	BLACK-NH
		Preterm	Preterm	Very PTB	Very PTB
		Adjusted	Adjusted	Adjusted	Adjusted
		OR (95% CI)	OR (95% CI)	OR (95% CI)	OR (95% CI)
		(N=17461)	(N=6003)	(N=17461)	(N=6003)
Maternal Age					
	< 20 yrs	1.1 (0.8, 1.6)	0.7 (0.5, 0.9)	1.1 (0.5, 2.1)	0.7 (0.42, 1.0)
	20-24 yrs	1.0 (referent)	1.0 (referent)	1.0 (referent)	1.0 (referent)
	25-29 yrs	1.2 (0.9, 1.5)	1.3 (1.0, 1.6)	1.2 (0.7, 1.9)	1.3 (1.0, 1.9)
	30-34 yrs	1.0 (0.8, 1.2)	1.7 (1.3, 2.1)	1.4 (0.9, 2.1)	1.9 (1.3, 2.7)
	35+ yrs	1.1 (0.9, 1.4)	2.1 (1.6, 2.7)	1.2 (0.7,1.9)	1.9 (1.2, 2.9)
Maternal Education					
	>12 years	1.0 (referent)	1.0 (referent)	1.0 (referent)	1.0 (referent)
	12 years	1.3 (1.0, 1.8)	1.4 (1.1, 1.7)	1.6 (1.1, 2.2)	1.1 (0.8, 1.5)
	<12 years	1.3 (1.1, 1.6)	1.9 (1.5, 2.4)	2.03 (1.2, 3.6)	1.9 (1.3, 2.7)
Marital Status					
	Married	1.0 (referent)	1.0 (referent)	1.0 (referent)	1.0 (referent)
	Not	1.2 (1.0, 1.5)	1.5 (1.2, 1.8)	1.4 (0.9, 2.2)	1.6 (1.2, 2.2)
Tract Poverty					
	Low	1.0 (referent)	1.0 (referent)	1.0 (referent)	1.0 (referent)
	Med	1.1 (0.9, 1.2)	1.2 (0.9, 1.6)	1.0 (0.7,1.3)	1.2 (0.8, 1.9)
	High	1.3 (1.1, 1.6)	1.2 (0.8, 1.7)	1.3 (0.8, 1.9)	1.0 (0.6, 1.8)
Tract Rentership					
	Low	1.0 (referent)	1.0 (referent)	1.0 (referent)	1.0 (referent)
	Med	0.9 (0.8, 1.0)	1.0 (0.7, 1.3)	1.1 (0.8, 1.5)	1.1 (0.7, 1.7)
	High	0.9 (0.7, 1.0)	1.0 (0.7, 1.4)	1.4 (1.0, 2.2)	1.2 (0.7, 1.9)
		Rho = 0.0	Rho = 0.01	Rho = 0.0	Rho = 0.03

TABLE 3: RACE STRATIFIED MULTILEVEL MODEL ODDS RATIOS FOR PRETERM AND VERY PRETERM BIRTH OUTCOMES, continued					
		MODEL 7. Preterm Birth		MODEL 8. Very Preterm Birth	
		PERCENT TRACT BLACK-NH MODEL		PERCENT TRACT BLACK-NH MODEL	
		WHITE-NH	BLACK-NH	WHITE-NH	BLACK-NH
		Preterm	Preterm	Very PTB	Very PTB
		Adjusted	Adjusted	Adjusted	Adjusted
		OR (95% CI)	OR (95% CI)	OR (95% CI)	OR (95% CI)
		(N=17461)	(N=6003)	(N=17461)	(N=6003)
Maternal Age					
	< 20 yrs	1.1 (0.8, 1.6)	0.7 (0.5, 0.9)	1.1 (0.5, 2.1)	0.6 (0.4, 1.0)
	20-24 yrs	1.0 (referent)	1.0 (referent)	1.0 (referent)	1.0 (referent)
	25-29 yrs	1.2 (1.0, 1.5)	1.3 (1.0, 1.6)	1.2 (0.7, 1.8)	1.3 (1.0, 1.9)
	30-34 yrs	1.00 (0.8, 1.2)	1.6 (1.3, 2.1)	1.3 (0.9, 2.1)	1.9 (1.6, 2.7)
	35+ yrs	1.1 (0.9, 1.4)	2.1 (1.6, 2.7)	1.2 (0.7,1.9)	1.9 (1.2, 2.8)
Maternal Education					
	>12 years	1.0 (referent)	1.0 (referent)	1.0 (referent)	1.0 (referent)
	12 years	1.3 (1.1, 1.6)	1.4 (1.1, 1.7)	1.5 (1.1, 2.2)	1.1 (0.8, 1.5)
	<12 years	1.3 (1.0, 1.8)	1.9 (1.5, 2.4)	1.9 (1.1, 3.4)	1.9 (1.3, 2.7)
Marital Status					
	Married	1.0 (referent)	1.0 (referent)	1.0 (referent)	1.0 (referent)
	Not	1.2 (1.0, 1.2)	1.5 (1.2, 1.8)	1.5 (1.0, 2.2)	1.6 (1.2, 2.2)
Tract Poverty					
	Low	1.0 (referent)	1.0 (referent)	1.0 (referent)	1.0 (referent)
	Med	1.0 (0.8, 1.1)	1.1 (0.8, 1.4)	1.0 (0.7, 1.4)	1.2 (0.7, 1.9)
	High	1.1 (0.9, 1.4)	1.0 (0.8, 1.4)	1.4 (1.0, 2.1)	1.0 (0.6, 1.7)
Tract Black Non-Hispanic					
	Low	1.0 (referent)	1.0 (referent)	1.0 (referent)	1.0 (referent)
	Med	1.1 (0.9, 1.2)	1.0 (0.7, 1.4)	1.2 (0.8, 1.6)	1.0 (0.6, 1.8)
	High	1.1 (0.9, 1.3)	1.2 (0.9, 1.4)	1.2 (0.8, 1.8)	1.3 (0.7, 2.3)
		Rho = 0.0	Rho = 0.0	Rho = 0.0	Rho = 0.03