

Shauna Potts¹, Donna Williams, DrPH², Malesa Pereira, MPH²
Spelman College¹, LSU Health New Orleans School of Public Health²

Introduction

- 19% of people live in parishes that don't meet the standard air quality
- Consistent exposure to chemicals have been found to be damaging to the placenta and disrupt fetal health development
- In 2018, a total of 13,394,777 pounds of emissions were released in the year 2018 that negatively impact reproductive health. Zinc, hydrogen cyanide, acrylamide, atrazine, and lead were the top 5 chemicals that these facilities produced.
- In 2017, the CDC ranked Louisiana 2nd in both preterm pregnancies and low birth weight
- In 2019, 10.7% of Louisiana babies were low birthweight while the national average was 8.3%. In 2019, 12.7% of babies in Louisiana were premature while the national average was 9.9%

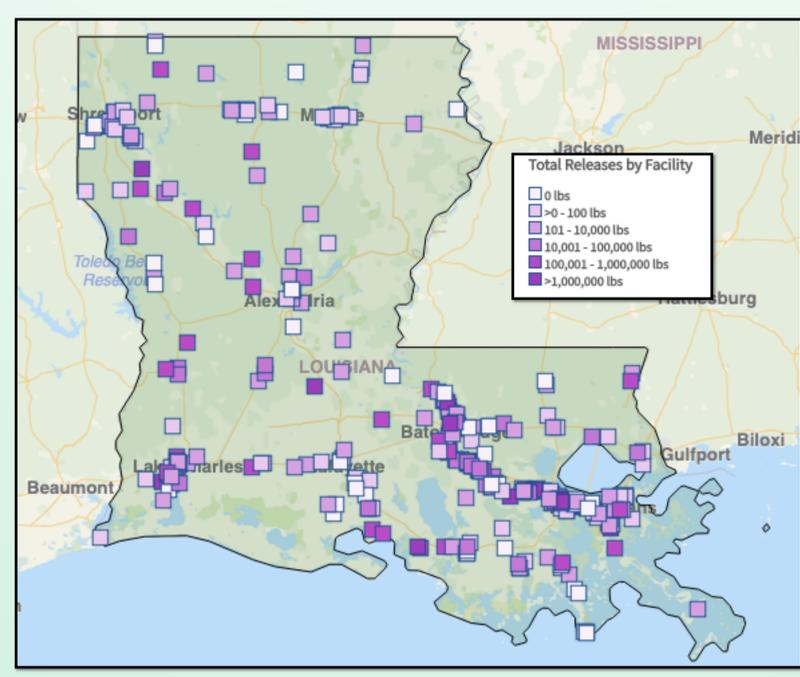
Objectives

- To determine the association between the amount of emissions released and fetal health outcomes in Louisiana
- To determine the association between White, Black, and Hispanic demographics and fetal health outcomes in Louisiana

Methods

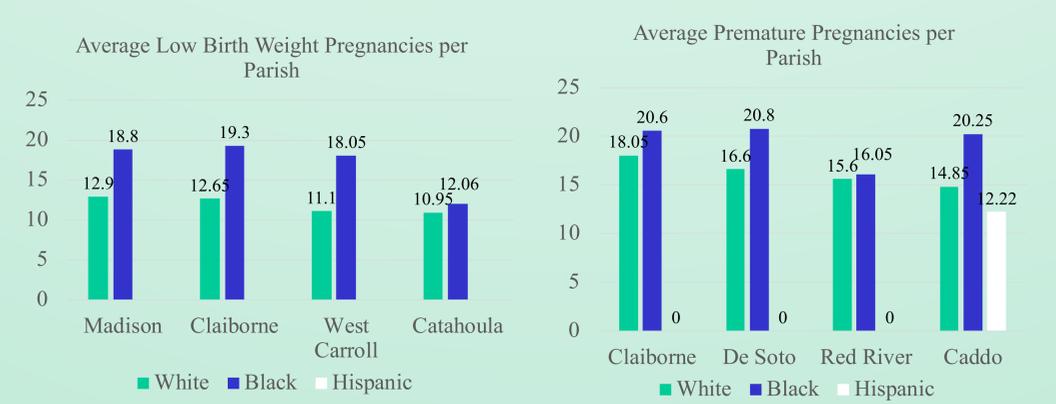
1. The average amount of chemicals that affect reproductive health was calculated over a ten-year span for each parish in Louisiana
2. The average percent of fetal health outcomes per parish was calculated through the years of 2012-2017
3. The average percent of fetal health outcomes for each demographic per parish was calculated through the years of 2012-2017
4. Bivariate analysis was used to analyze the significance between emissions and both fetal health outcomes per parish and demographic
5. Univariate analysis was used to analyze the association between demographics and fetal health outcomes
6. A p value of <0.05 was considered to be significant

Chemicals Released



The amount of emissions released in Louisiana from the years 2007-2018 that correlates to the reproductive health outcomes. (Figure 1)

Average Fetal Health Outcomes



The average percent of fetal health outcomes per parish for each demographic was taken. Black and Hispanic populations were compared to the White population because on average the population had the best birth outcomes. The graphs only display the parishes with the top 5 average percent of fetal health outcomes. (Figure 2)

Results

Table 1: Results from T-Test (Bivariate Analysis)	Mean	95% CI Mean	p Value
Study Variable			
LBW*PreM	-0.0733	-0.0780- 0.0687	.0001
Emission*PreMavgW	271862	436408- 620143	0.0016
Emission*PreMavgB	271857	107311- 43640	0.0016
Emission*PreMavgH	281257	84957.5- 477556	0.006
Emission*LBWavgW	271865	107318- 436411	0.0016
Emission*LBWavgB	271857	107311- 436404	0.0016
Emission*LBWavgH	308561	94249.0- 522872	0.0059

Table 2: Results from Linear Regression (Univariate Analysis)	p Value
Study Variable	
PreM	0.0053
LBW	0.8064
LBWavgW	0.5076
LBWavgB	0.5902
LBWavgH	0.9517
PreMavgW	0.5462
PreMavgB	0.5989
PreMavgH	0.6945

LBW= Low Birth Weight PreM= Premature B=Black H= Hispanic W=White

Conclusions

- By using the T-Test, there was a significance found between the averages of emissions and fetal health outcomes across all demographics in Louisiana
- The Linear Regression showed no association between fetal health outcomes and demographics except for premature outcomes
- Regulation and monitoring should be put into place to decrease the amount of emissions released every year
- Limitations:
 - Hispanics population only 5% in Louisiana
 - Sample size