

SPATIAL ACCESS TO REPRODUCTIVE RESOURCES IN SUFFOLK COUNTY, MA

Assessing Potential Factors for the High Teen Pregnancy Rates Among People of Hispanic or Latino Origin

INTRODUCTION

Unintended pregnancy accounts for 51% of all pregnancies in the United States, and 47% of all pregnancies in Massachusetts. This is higher than many other developed countries. Among teens, the rate of unintended pregnancies is particularly high; eight in ten teen pregnancies are unplanned.¹ Teen pregnancy is a large public health concern as teen mothers are less likely to receive a high school diploma than women who did not give birth as a teen² and children of teen mothers are more likely to be disadvantaged as they grow up.³ While the rate of teen pregnancies in Massachusetts is among the lowest in the country, at 12 births per 1,000, there are disparities among different races and ethnic backgrounds. In Massachusetts in 2013, Hispanics had seven times the rates of teen pregnancy as whites, at 40.8 births per 1000 women aged 15-19.⁴ In Suffolk County, which encompasses Revere, Chelsea, Boston, and Winthrop, this is also the trend (Table 1).

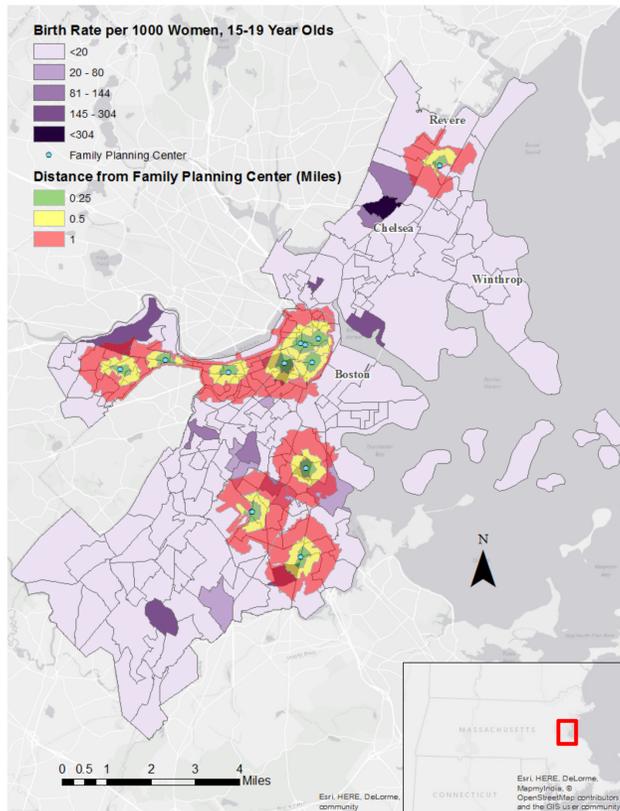
Table 1. Teen Birth Rates (per 1000 women aged 15-19) in Suffolk County⁴

Town	Overall	White, non-Hispanic	Black non-Hispanic	Hispanic
Boston	12.2	1.8	19	31.8
Chelsea	45.9	0	-	56.6
Revere	25.8	9.6	-	53.5
Winthrop	<12.2	-	-	-

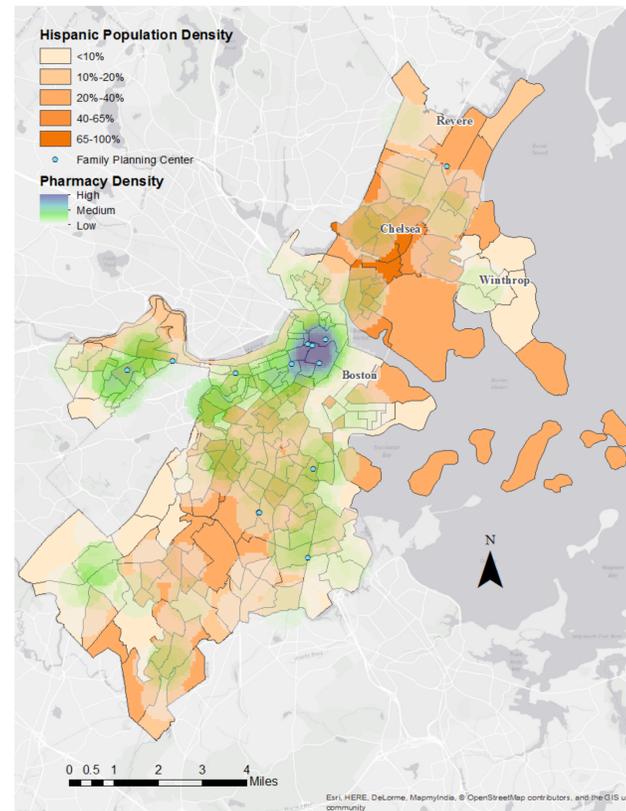
One health resource that helps prevent unintended pregnancies is the family planning center. Family planning centers offer a variety of services to avoid pregnancy. In 2012 in Massachusetts, family planning services helped prevent roughly 11,400 unplanned births and 7,800 abortions.¹ Despite this, the rate of pregnancy among Hispanic teens aged 15-19 is high; spatial access to family planning clinics may be a related. One study suggested that the increased access to or availability of family planning clinics made teens more likely to delay sexual activity.⁵ Another study found that teen girls of lower socioeconomic status, who are more at risk for unintended pregnancy,¹ were more likely to use family planning clinics if the clinics were closer to their home.⁶ Another option for reproductive health resources is pharmacies. Access to pharmacies may also contribute to the rates of teen pregnancy.

The goal of this project is to explore possible distance to family planning centers as a spatial variable contributing to the higher rates of pregnancies among Hispanic teens in Suffolk County, Massachusetts.

1. WALK DISTANCE TO FAMILY PLANNING CENTERS AND TEEN BIRTH RATES, 2013



2. PHARMACY DENSITY AND HISPANIC POPULATION, 2013



METHODS

Variables and Datasets

- The primary variable of interest was family planning center locations. Family planning center locations were obtained from *Reference USA* using the NAICS code 621410. Another variable of interest was pharmacy locations, NAICS code 446110. These locations were geocoded using latitude and longitude coordinates.
- Data for teen birth rates, population and poverty were obtained from *American FactFinder* through the U.S. Census Bureau. Teen birth rates were obtained from the 2013 ACS 5-year estimate dataset. Population and Hispanic origin came from the 2010 SF1 100% dataset. Percent of population below the poverty level was used as an indicator of socioeconomic status. Data for percent of the population below the poverty level came from the 2013 ACS 5-year estimate dataset.
- Shapefiles for the Suffolk County census tracts and centerlines were

obtained from TIGER Products through the U.S. Census Bureau. The shapefile for Suffolk County census tracts was joined to the variables described above. The centerlines shapefile was used in mapping distance from family planning centers. The Suffolk County boundary was obtained from Mass GIS. Basemaps came from ESRI.

Tools

- Network Analyst Point Distance was used to map 0.25, 0.5, and 1 mile distance from family planning centers. The distances were chosen based on the assumption of reasonable walking distances. Assuming that the average person walks at a speed of three miles per hour, a one mile walk takes 20 minutes. Walking distance was used because it was assumed that teenagers do not own cars.
- Spatial Analyst Point Density was used for density of pharmacies.

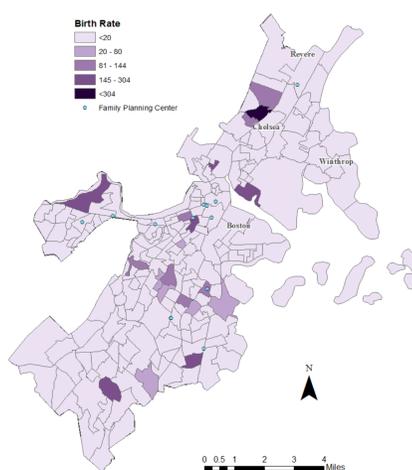
Coordinate System

- NAD 1983 StatePlane Massachusetts FIPS 2001 (US Feet)

RESULTS

- There were 28,105 women aged 15-19 in Suffolk County, MA. Among these, there were 313 births.
- Map 1:** The highest rate of teen pregnancy is in Chelsea, MA with 553 births per 1000 women aged 15-19 (Census tract 160601) (1a). The Network Analyst Point Distant tool provided 0.25, 0.5, and 1 mile walk distance rings (1b). This tool identifies that many of the areas with high birth rates among women aged 15-19 years, were further than one mile away from family planning centers.
- Using select by attribute and location, 51% of people of Hispanic or Latino origin live within one mile of a family planning center, while 66.8% of non Hispanics live within one mile of family planning center.
- Map 2:** The density of people of Hispanic of Latino origin was highest in Chelsea (2a) where birth rates among women aged 15-19 were the highest (1a). In addition to poor spatial access to family planning centers, there is also a lack of pharmacies in the area. The highest density

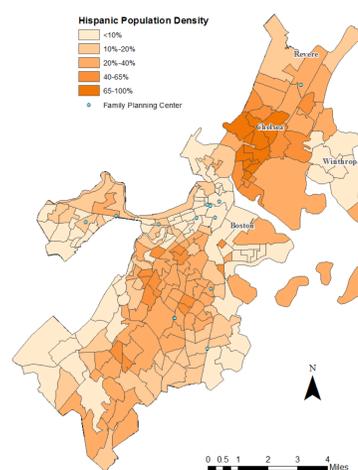
1a Birth Rate per 1000 Women, 15-19 Years Old, by Census Tract



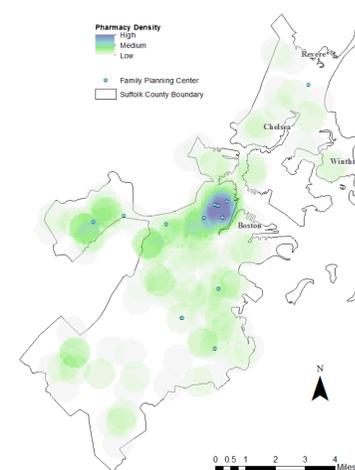
1b Walking Distance from Family Planning Centers



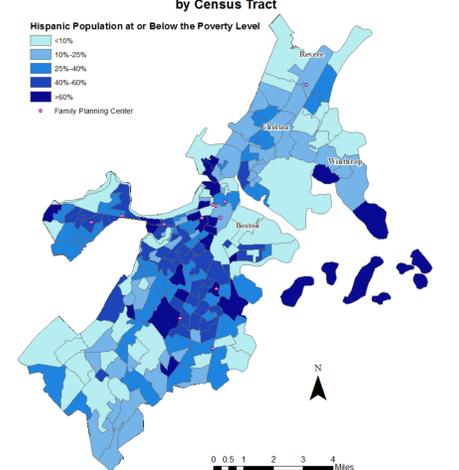
2a Hispanic Population Density, by Census Tract



2b Pharmacy Density



3 Percentage of Hispanic Population at or Below the Poverty Level, by Census Tract



of pharmacies is located in Boston (2b).

- Map 3:** The percent of people of Hispanic or Latino origin living below the poverty level is greatest in Boston.

DISCUSSION

Health Implications

- This analysis identifies areas with high need for access to reproductive resources for women aged 15-19 in Suffolk County, MA. Many teens who gave birth in Suffolk County do not have access to family planning centers because they live further than one mile from a family planning center. In addition the areas where the Hispanic population density is highest, there are less pharmacies, particularly in Chelsea. This demonstrates a disparity in access to reproductive resources among women of Hispanic or Latino origin, which may be another explanation for the high rates of teen pregnancy among this group.
- Poverty levels among the Hispanic population is not as high in the areas of high teen birth rates as I would have expected. In areas where the rates of teen pregnancy are high and there is spatial access to family planning centers, the percentage of people of Hispanic or Latino origin living below the poverty level is high. This may contribute to those birth rates.
- This analysis supports funding of existing family planning centers and developing family centers in areas where existing centers are not spatially accessible.

Limitations

- Data on the teen birth rates for women of Hispanic or Latino origin was unavailable.
- Teen birth rate was used, not pregnancy rate.

Further Research

- Statistical modeling
- Unintended pregnancy among women aged 20 and older

SOURCES

Cartographer: Halli Benson

Class: PH 207

Source: MassGIS; U.S. Census Bureau; Reference USA; ESRI Basemap

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