

# HIV/AIDS Diagnoses by Neighborhood, Sex, and Race/Ethnicity in NYC

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## 1 ABSTRACT

HIV/AIDS is one of the challenges facing public health in the world. We identified through this research which is the neighborhood in New York City most affected by this problem, the neighborhood with the highest number of HIV cases between 2011 and 2014 was Bedford Stuyvesant - Crown Heights, associated with African-American, also the male gender represents the highest percentage of patients diagnosed with HIV.

Additional Key Words and Phrases: HIV, AIDS, NYC, race, ethnicity

## 2 INTRODUCTION

Previously diseases such as HIV/AIDS were associated with gender or a specific community, but over time this perception has changed. The negative effects of HIV stigma may extend beyond those who are HIV-positive, to people who are perceived to be at risk of HIV [4]. In NYC, great efforts are being made to fight the HIV pandemic [8], for this, research must be carried out in the mainly affected areas, these results will help develop campaigns for communities at high risk [11]. NYC is recognized worldwide for the great diversity in its population [2], with this research seeks to identify whether HIV affects minority groups or not, there is a clear difference.

## 3 METHODOLOGY

### 3.1 Data Sources

NYCOpenData [3] provides free data from New York City, HIV/AIDS data from the HIV Surveillance Annual Report, this data is provided by Department of Health and Mental Hygiene. The dataset has 18 columns and with a total the 6005 rows. On the other hand, We also use data from the NYC DOHMH Department of Health and Mental Hygiene [9], which includes information on new HIV and AIDS diagnoses in New York City from 2010 to 2013. Age group, race/ethnicity, and United Hospital Fund (UHF) neighborhood are used to categorize reported cases and case rates (per 100,000 population).

### 3.2 Analysis

HIV/AIDS pandemic not only affects low-income countries, places like NYC are also affected, the public data published by NYCOpenData has available a collection of quantitative data on new cases of HIV/AIDS in NYC. Through the exploration of these data we sought to quantify the number of HIV cases by neighborhood in the city, the corresponding race and ethnicity of these patients, we can identify the most affected groups, visualizing the results through pie graph, bar graph, etc. This methodology makes it possible to identify geographically where the largest number of patients with HIV live, which are the neighborhoods to which detection and prevention campaigns should be directed.

## 4 RESULTS

In this section, the results corresponding to the analysis of the two datasets mentioned above will be shown, in the discussion a more detailed analysis of the results will be carried out. Tableau was the tool used to make the graphs of this research. Figure 1, used the data corresponding to the diagnoses of HIV/AIDS patients in 2011 to 2014, classified by age ranges.

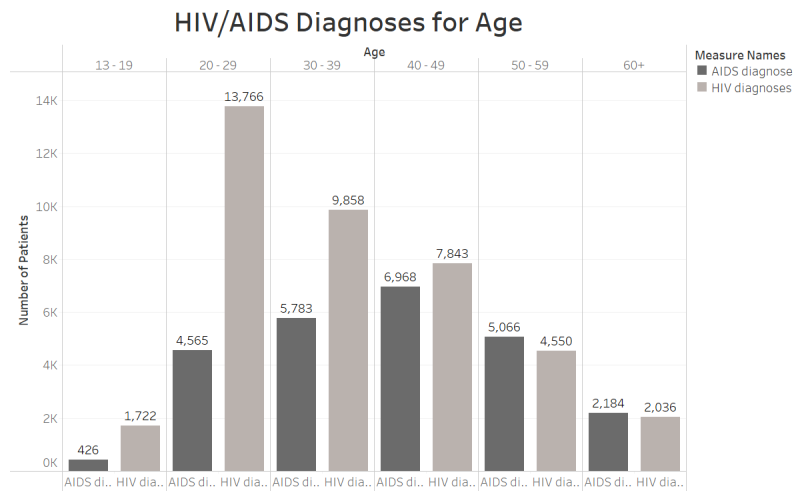


Fig. 1. Total number of HIV Diagnoses for Age Range. Color shows details about sex.

In Figure 2, a double bar graph was made by neighborhoods by number of cases diagnosed with HIV and AIDS between the years 2011 and 2014.

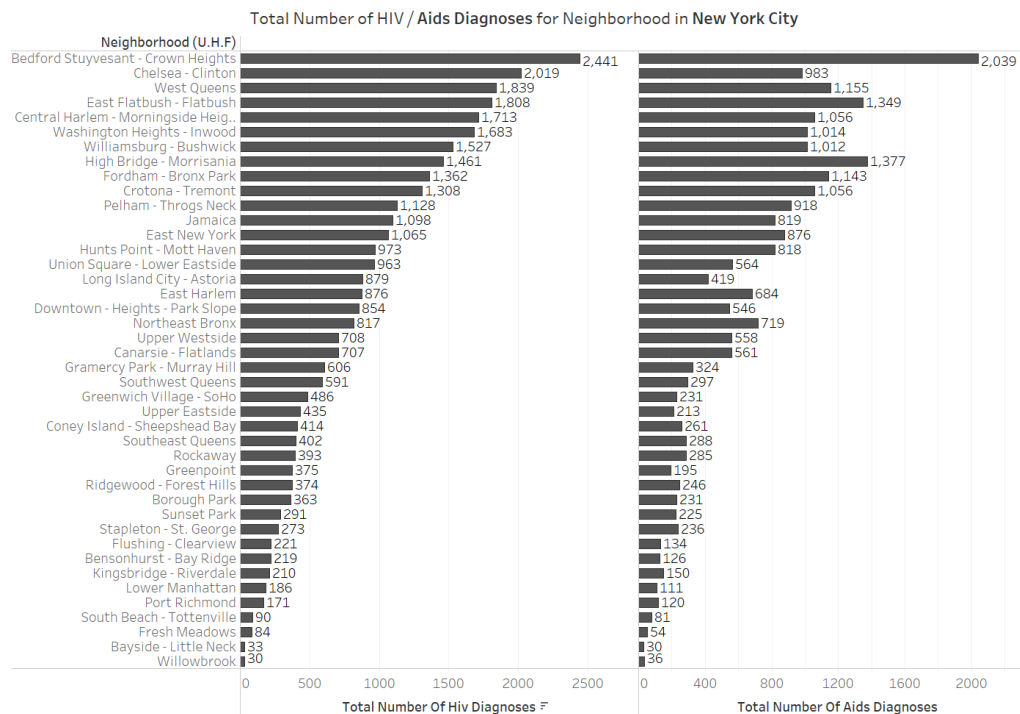


Fig. 2. Number of patients with HIV/AIDS by neighborhoods in New York City (2011 - 2014).

On the other hand, to visualize HIV patients by gender, a pie chart was used Figure 3.

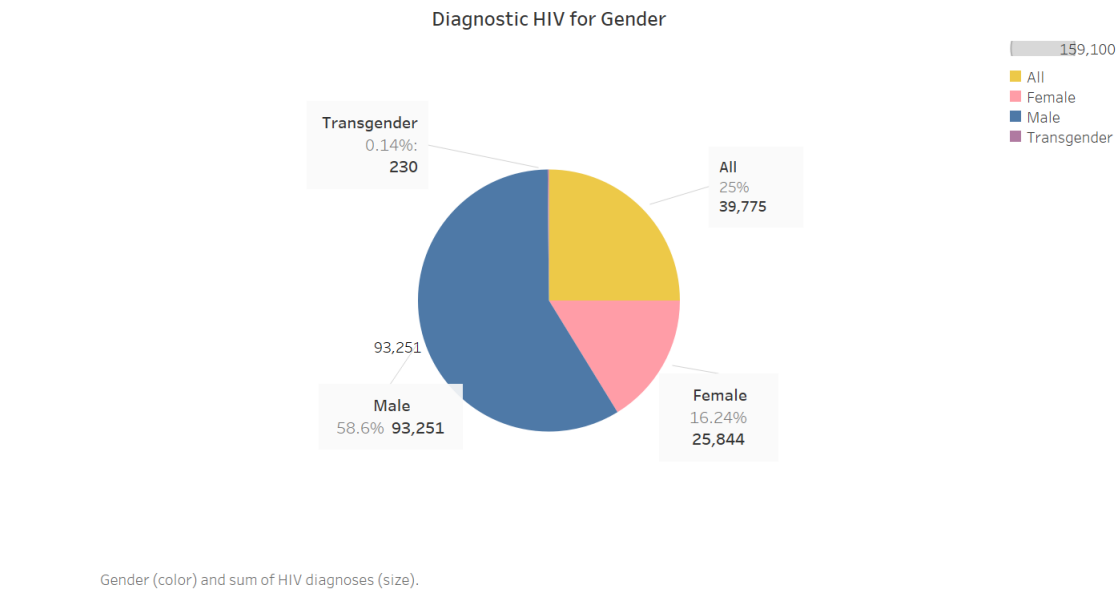


Fig. 3. Total number of HIV Diagnoses for Gender. Color shows details about sex.

In the Figure 4, to visualize the number of patients diagnosed with HIV by race/ethnicity, a tree map graph was implemented.

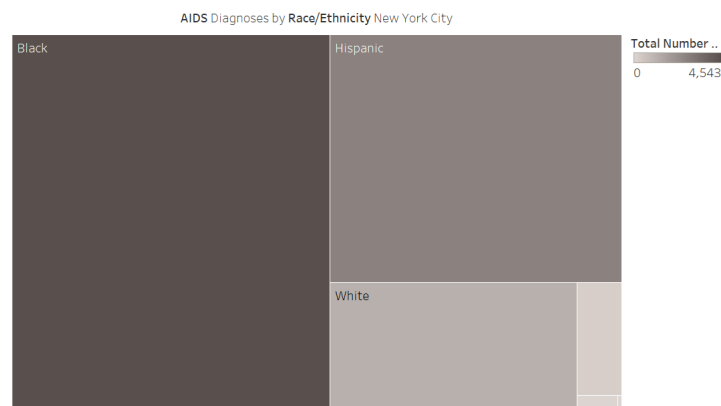


Fig. 4. Race/Ethnicity. Color shows sum of total number of Aids Diagnoses. Size shows sum of Total Number of Aids Diagnoses.

Finally, in the Figure 5, to identify the cases of deaths by neighborhoods, a bar graph is used.

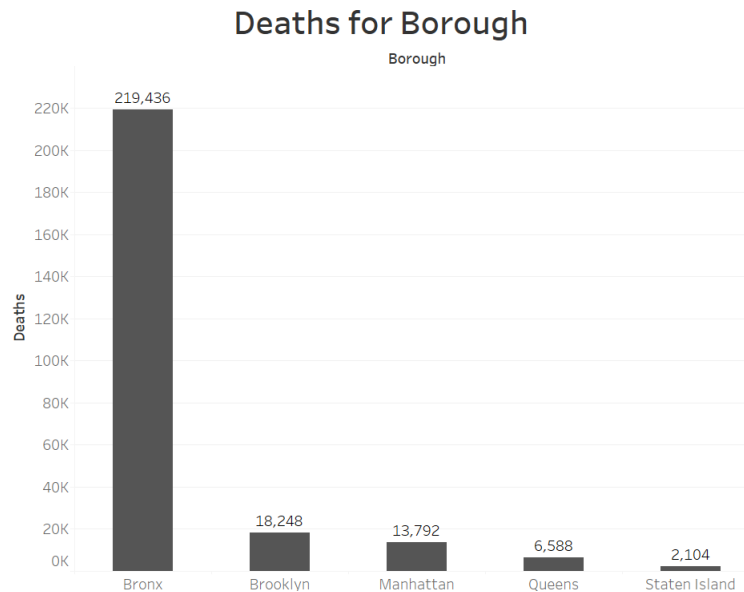


Fig. 5. Deaths for each Borough.

## 5 DISCUSSION

HIV (Human Immunodeficiency Virus) has different stages [10], in Figure 1 we can see that the highest age range where HIV is diagnosed in the first stage is between 20-29 years as AIDS is the last phase of HIV we can see that the diagnosis is at an older age between 40-49 years.

The results shown in Figure 1 are an indicator that there is a significant number of people who are not being diagnosed on time in an age range between 40 to 49 years, while the diagnosis of HIV is between an age of 20-29 years, these patients are more likely to have an almost normal quality of life with the provision of retrovirus. This result allows these patients to be identified early, but a surveillance program must be developed or maintained with these patients, for the constant supply of medicine.

On the other hand, New York City is comprised of five boroughs [6], there are 59 community districts, as shown in Figure 2, the cases of HIV/AIDS by neighborhood, the neighborhood with the most cases in both categories is Bedford Stuyvesant - Crown Heights and the neighborhood with the lowest number of HIV cases Willobrook.

According to the result shown in the Figure 2 and Figure 4, we can see that there is a relation between the data, since the Bedford Stuyvesant neighborhood corresponds to the center of African-American since the early 20th century, which is related to the fact that out Figure 4 where the most affected people is black. In addition, it can be seen that in neighborhoods where more white people live, such as Greenpoint, Lower Manhattan, sunset Park, etc., the number of people diagnosed with this disease is lower. These results are an indicator that diagnosed people are not accessing timely treatment, either due to lack of knowledge or prevention and control campaigns are not being focused on the most vulnerable areas.

In Figure 3, an pie graph where it is explored which gender is the most affected between the years of 2010 to 2015 diagnosed with HIV disease. We found that there is clear disagreement in the cases but it can be seen that the male gender is the most affected.

Research shown that people who start medicines to treat HIV treatment early have a life expectancy equal to that of a person without this disease [7]. In addition, New York City has a program to provide this treatment for free, but as we can see in the Figure 5, death due to AIDS, it is affecting areas like the Bronx in New York City.

A tree map figure 4 we can see the data in a hierarchical, where it is evident that the most affected race are black people, secondly Hispanics and the least affected are White people.

Every year, the United States government spends billions of dollars to assist people living with or at risk of HIV in the United States and around the world [1]. In Figure 6 we can see that the prevention campaigns have had an effect since the number of diagnosed people has been decreasing, but as we can see in Figure 5 the number of deaths in districts with the Bronx compared to other districts continues to be a difference significant. This district is also known as the highest number of overdose deaths in 2016 [5].

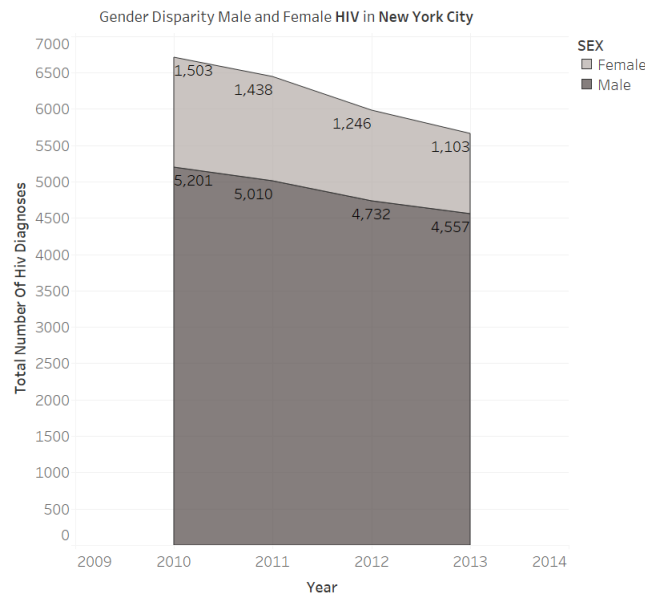


Fig. 6. Total number of HIV Diagnoses for Year.

## 6 CONCLUSIONS

The neighborhood in the New York City between 2011 to 2014 with the highest number of people diagnosed with HIV and AIDS is Bedford Stuyvesand.

The male gender corresponded to 56.6% of patients diagnosed with HIV in the city of NYC, there is a considerable percentage categorized as "All" that due to the data we cannot identify if it corresponds to the male or female sex.

Black men correspond to the largest number of people diagnosed with HIV / AIDS, Hispanics in second place and white people last.

The age range where people with HIV are mostly diagnosed is between 20-29 years, while the age range of people diagnosed with AIDS is in the range of 40-49 years.

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