

# INTERACTIVE HIV DATA VISUALIZATION AND GEOGRAPHIC HEAT MAP CLUSTER ANALYSIS USING AN ONLINE DASHBOARD

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## INTRODUCTION

There is a growing need to utilize available HIV data to rapidly identify challenges faced by HIV patients as it affects HIV treatment outcomes and retention in care. The ability to identify, rapidly visualize, and analyze HIV new patient data based on geographic location helps in monitoring the effectiveness of telehealth options in the management of HIV patients. A visual interactive HIV data map will also enable a more targeted and rapid deployment of community outreach programs, testing and provision of transportation services to worse affected areas.

## METHODOLOGY

- This dashboard was created using the Microsoft Power Business Intelligence (Power BI) due to its cost-effectiveness and relative ease of use and maintenance.
- The data source for the dashboard is the de-identified patient data extracted from the electronic medical record system weekly, cleaned with a python script and uploaded through a Microsoft gateway server to the dashboard.
- The charts, map and tables are fully interactive and modeled to the uploaded data.
- This allows the entire dashboard to change and display the results of the selected variable.
- The geospatial data is displayed by ArcGIS Maps for Microsoft Power BI.

## RESULTS

2,038 patients were seen at MAO in 2019. 262 had both a telehealth visit and outpatient clinic visit and 1776 were seen only as outpatients at the clinic. 75% were African Americans, 21% Caucasian, 2% Hispanic and 1% other races. The 45-65 age group constituted the majority of the patients followed by the 25-44 age group and patients above 65 were the least in number. The darker sections the map indicates areas with the greatest concentration of patients. Montgomery County accounts for 41% of the patients followed by Houston County (13%) and Dallas County (5%). 88% of the HIV positive patients had a viral load less than 200 and 6% had CD4 count less than 200. Since the dashboard is interactive, any variable can be selected to observe the corresponding change in demographic features, viral load suppression rate and CD4 count.

## CONCLUSION

The development of this data-sharing platform has provided an easily accessible common source of information for outreach workers to identify locations where more testing and community awareness events are needed. Also, medical providers and clinic administrators can monitor treatment outcomes by age, gender, risk factors and patient location.

## ACKNOWLEDGEMENTS

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