Gentrification and Racial Population Change and the Impact on Older Adult Cognitive Decline in Upper Manhattan

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Introduction

- Racial disparities in cognitive decline are well documented in the United States[1], and are likely caused by structural racism[2]
- Gentrification is a manifestation of structural racism and is defined by the influx of relatively advantaged residents into an under-resourced, disinvested neighborhood[3]
- Gentrification often leads to neighborhood development and displacement and isolation of existing residents
- Gentrification is under-studied in public health research, particularly as it pertains to cognitive aging
- Gentrification is associated with increased risk of anxiety, depression, psychological distress, and self-reported chronic health conditions[4]
- Depression is associated with later cognitive decline[5], presenting a potential mediated pathway between gentrification processes and cognitive decline in older adults

Goals and Hypothesis

Goals:
- Visualize gentrification metric in New York City
- Assess a potential gentrification metric for use in ongoing cognitive research
- Explore the relationship between an economic gentrification metric and Black population change

Hypothesis:
- The proposed gentrification metric will be linearly associated with Black population change, however will not account for all of the variation in Black population change

Metric & Data

Drexel Gentrification Metric:
- Gentrification measure developed by researchers at Drexel for use in longitudinal public health research
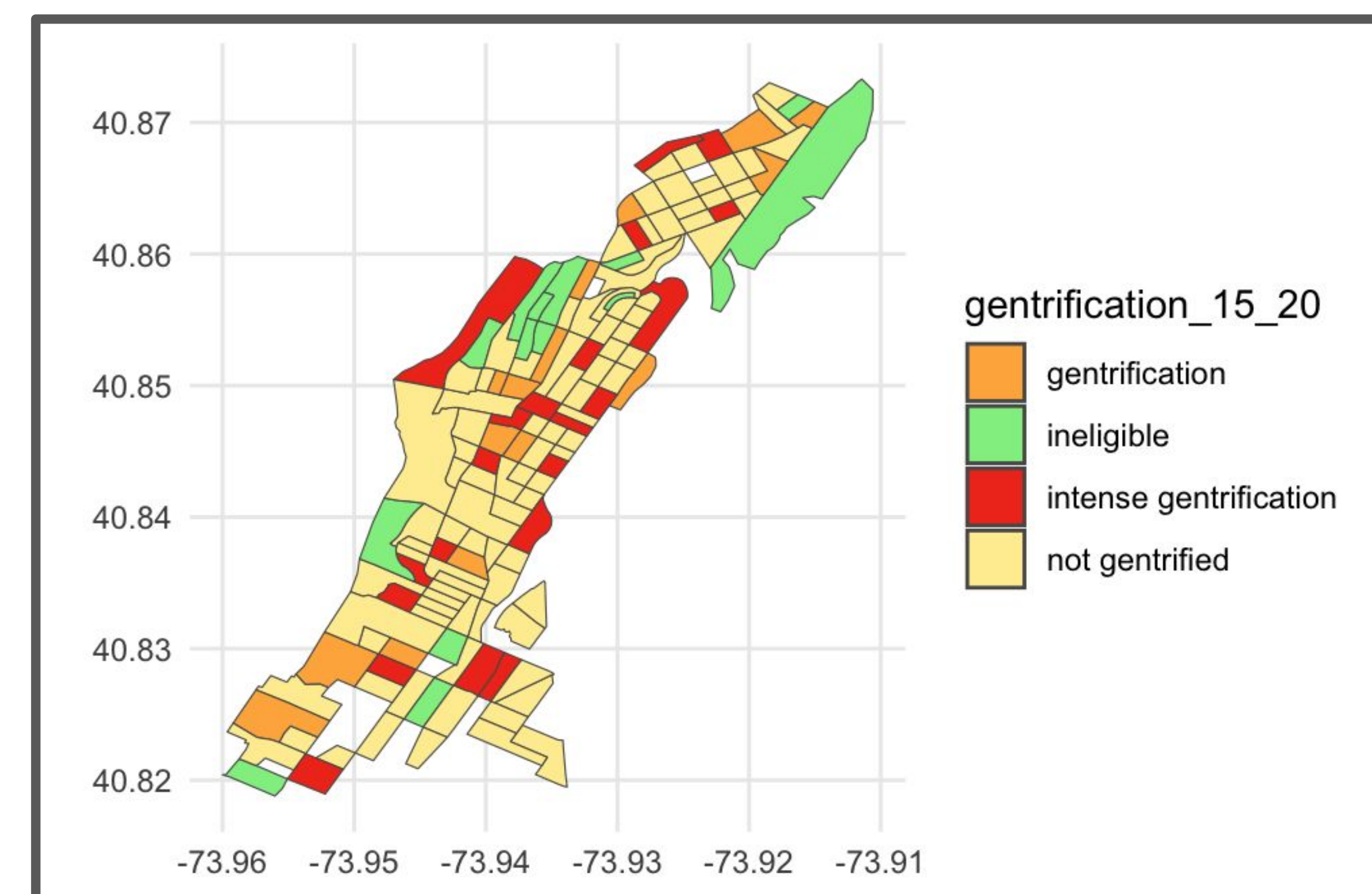- Calculated from median household income, educational attainment, gross rent, and home value[6]

Data:
- American Communities Survey 5-year estimates (2010-2019) at the Census Block Group level

## Data and Results: Gentrification in NYC
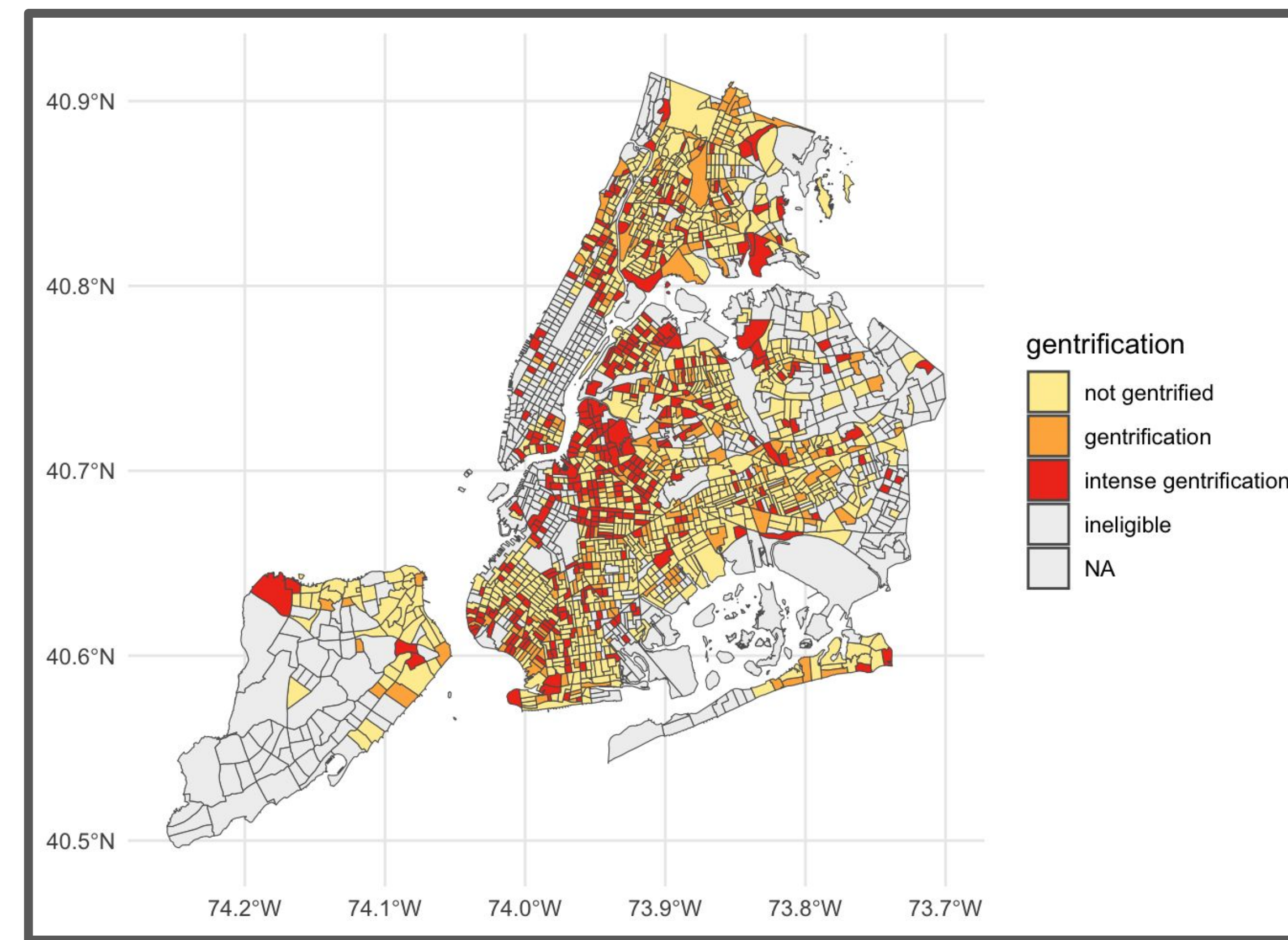
Gentrification in NYC between 2010 and 2015

Gentrification in Upper Manhattan between 2010 and 2015

Data and Results: Linear Regression

- Between 2010 and 2019, 4,645 census block groups were eligible for gentrification
- 3,129 did not experience gentrification, 879 experienced gentrification, and 637 experienced intense gentrification
- The mean change in proportion of Black residents was -0.01447906
- The regression analysis showed that the **proportion of Black residents decreased by 0.023764 for each level of gentrification (p = 8.60e-11)**
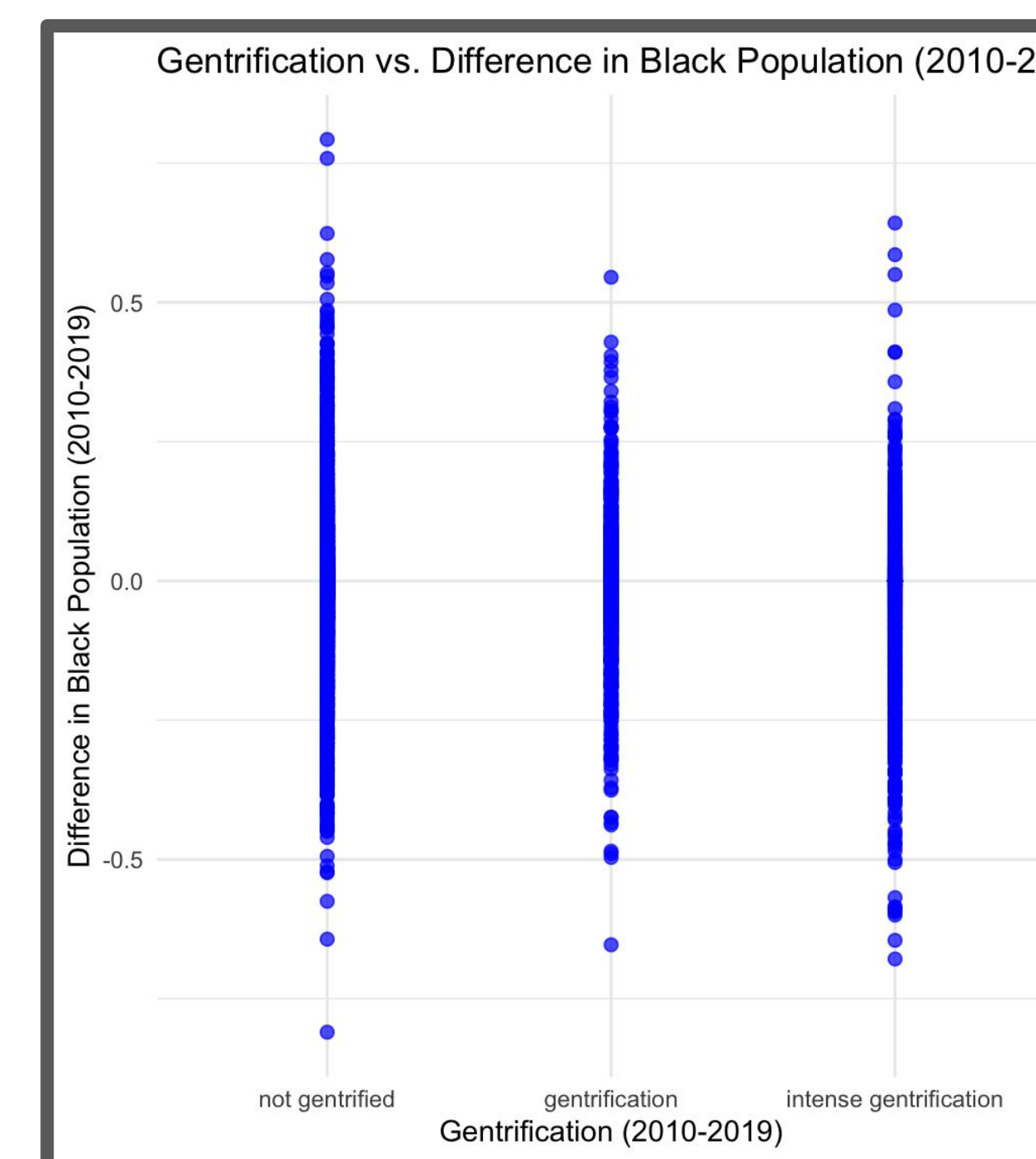
Conclusions & Limitations

- The linear relationship between economic gentrification level and change in the proportion of Black residents aligns with what we know about the historical relationship between neighborhood change and race in the United States.
- This suggests that the proposed gentrification metric accurately identifies neighborhoods in NYC in which Black residents are experiencing disproportionate displacement.
- This analysis only looked at one time period between 2010-2019 and may not be generalizable to different periods and locations outside of NYC
- There are many other factors that contribute to the differences in Black resident changeover 2010-2019 that are left unexplained by the gentrification metric

Student Contributions & Competencies

- This original analysis was done completely by Lillian Eisner with mentorship and oversight from Dr. John Pamplin
- This analysis is part of a larger research project directed by Dr. John Pamplin, which combines gentrification data in NYC with novel cognitive data from the Washington Heights/Inwood Columbia Aging Project (WHICAP)

Competency	How I applied it…
Describe a public health problem in terms of magnitude, person, time, and place	Reviewed literature and ongoing study to describe the potential impact of gentrification on older adults
Identify key sources of data for epidemiologic purposes	Utilized data from the American Communities Survey to construct gentrification measures

Acknowledgements

Citations

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3. Iyanda AE, Lu Y. Perceived Impact of Gentrification on Health and Well-Being: Exploring Social Capital and Coping Strategies in Gentrifying Neighborhoods. Prof Geogr. 2021. doi:10.1080/00330124.2021.1924806
4. Tran LD, Rice TH, Ong PM, Banerjee S, Liou J, Ponce NA. Impact of gentrification on adult mental health. Health Serv Res. 2020. doi:10.1111/1475-6773.13264
5. Holmquist S, Nordström A, Nordström P. The association of depression with subsequent dementia diagnosis: A Swedish nationwide cohort study from 1964 to 2016. PLoS Med. 2020. doi:10.1371/JOURNAL.PMED.1003016
6. Hirsch J A, Schinasi L H. A measure of gentrification for use in longitudinal public health studies based in the United States. Philadelphia, PA: Drexel University Urban Health Collaborative; August 2019