

# Unequal culture: Effect of pandemic restrictions on the income segregation and diversity of museum visitors in the Boston Area

*Keywords: COVID-19, museum, income segregation, urban mobility, social inclusion*

## Extended Abstract

Museums are the cornerstones of cultural life in cities, and they provide numerous economic and social benefits to the communities. Museums contribute to the local economy by creating jobs, attracting tourists, and generating revenue through ticket sales and donations. Museums are important in promoting social inclusion by providing opportunities for marginalized groups to engage in cultural activities and offering programs and services that cater to people with disabilities, low-income families, and other underserved communities. They also positively affect local businesses, such as restaurants and cafes, by attracting visitors to the area. However, the imposed restrictions during the COVID-19 pandemic affected the museums the most. Unable to attract local and foreign visitors, museums and art venues had to reduce their opening hours to a minimum, often resulting in long-term closing times. This, in turn, affected the mobility of people and reduced the number of physical encounters, reducing the total visit time for local businesses, which partially relied on attracting museum visitors. The lack of support from the government and community, as well as strict COVID-19 policies, could lead to the changes in income segregation of museum visitors, affecting social and economic outcomes (Abramson et al., 1995), and ultimately rendering culture inaccessible for some demographic groups (Brook et al., 2020).

Various large-scale approaches, such as using social media data (Wang et al., 2018), location data (Gonzalez, et al., 2008, Moro, et al. 2021), and credit card data (Dong et al., 2020) have been used to understand the patterns and diversity of encounters in urban settings. This paper studies how the pandemic affected visitation patterns of art and science-related points-of-interest (POIs) in the Boston and Cambridge areas. Using a privacy-preserving large-scale dataset provided by Spectus and covering the mobility of 4% of individuals in Boston and Cambridge, we analyze the duration and visitation patterns across the 11 most popular museums in the area.

We find that the income diversity of museum visitors increased during the pandemic and preserved so till the 4th quarter of 2022, despite the aggregated mobility in this area recovering to the pre-pandemic level (Yabe et al., 2022). We find that while all the museums increased the total visitation time, this happened largely due to attracting more high-income visitors in 2022 compared to 2019, leading to the increased segregation of these POIs. Museums like Harvard Art Museum and Warren Anatomical Museum attracted predominately high-income visitors in 2022, increasing the proportion of time spent by high-income visitors by 84% and 89%, respectively, contributing to the increasing segregation of the museum. At the same time, such POIs as the Museum of African American History and the USS Constitution Museum attracted predominantly visitors of low-income groups (131% and 2378% increase in visit duration, respectively) in 2022, largely contributing to the segregation of the POI.

Our analysis of visiting time of POIs around museums shows the lack of correlation between the segregation score of the selected museum POIs and the average segregation score of other cultural POIs in the radius of 2 miles away in 2019 (red) and 2022 (blue) and suggests that museums' own characteristics and COVID-19 restriction policies have a substantial effect on shaping segregation.

Our findings suggest that the COVID-19 pandemic and imposed restrictions could have long-lasting negative effects on cultural life and segregation of art venues and further spillover effects on small businesses and other POIs in the area. Our findings can provide guidance for reducing the income segregation of museum visitors and increasing diversity and social inclusion by testing various policy interventions in museums as COVID-19 policies become less strict and public venues open up.

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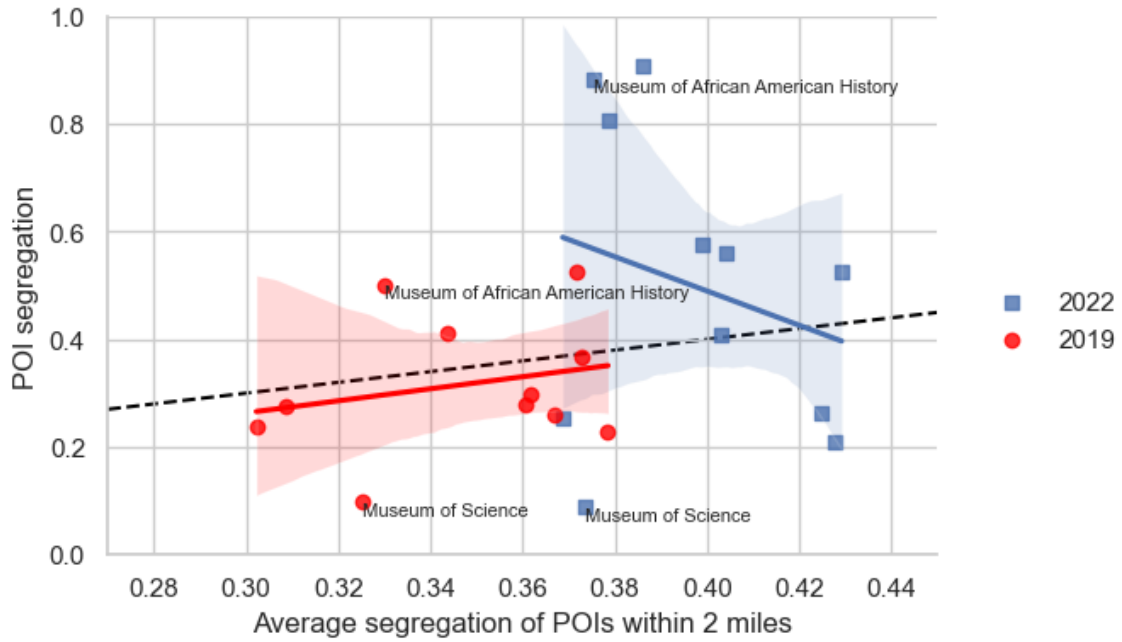


Figure 1: Lack of correlation between the segregation score of the selected museum POIs and the average segregation score of other cultural POIs in the radius of 2 miles away in 2019 (red) and 2022 (blue). This suggests that museums' characteristics and COVID-19 restriction policies have a substantial effect on shaping segregation.