

# ASSOCIATIONS OF COVID-19-RELATED CHANGES ACROSS DOMAINS OF CHILDREN'S PHYSICAL ACTIVITY AND DEMOGRAPHIC CHARACTERISTICS



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## INTRODUCTION

- COVID-19-related restrictions have affected many health behaviors such as stay-at-home orders and school closures.
- Children's physical activity has been impacted on multiple levels by the COVID-19 pandemic:
  - Lack of social interaction with peers
  - Increased screen time due to virtual learning
  - Closing of recreational facilities
- **Study objectives:** to assess parent-perceived changes in physical activity among children ages 9 – 11 years old during the pandemic (fall 2020), and to determine bivariate associations between changes in physical activity and demographic characteristics.

## METHODS

- **Study Design and Participants :** Parents of elementary school students in Central Texas participating in the Safe TRavel Environment Evaluation in Texas Schools (STREETS) cohort study completed a survey during the 2020 – 2021 school year (during the COVID-19 pandemic).
- **Independent Variable:** Demographic factors assessed included parent self-report of child age, child gender, child race/ethnicity, parent employment status, household educational attainment as a proxy for socioeconomic status, and child school format.
- **Dependent Variables:** Changes in physical activity were assessed through parent self-report of whether their child has more, less, or the same amount of the following:
  - Walking in the neighborhood
  - Biking in the neighborhood
  - Active play indoors
  - Outdoor play
  - Other leisure time physical activity
- **Statistical Methods:** Chi square tests of independence were run to assess the bivariate association between each demographic factor and changes in each domain of physical activity. Significance level was set at  $p < 0.05$ . All analyses conducted in R.

## RESULTS

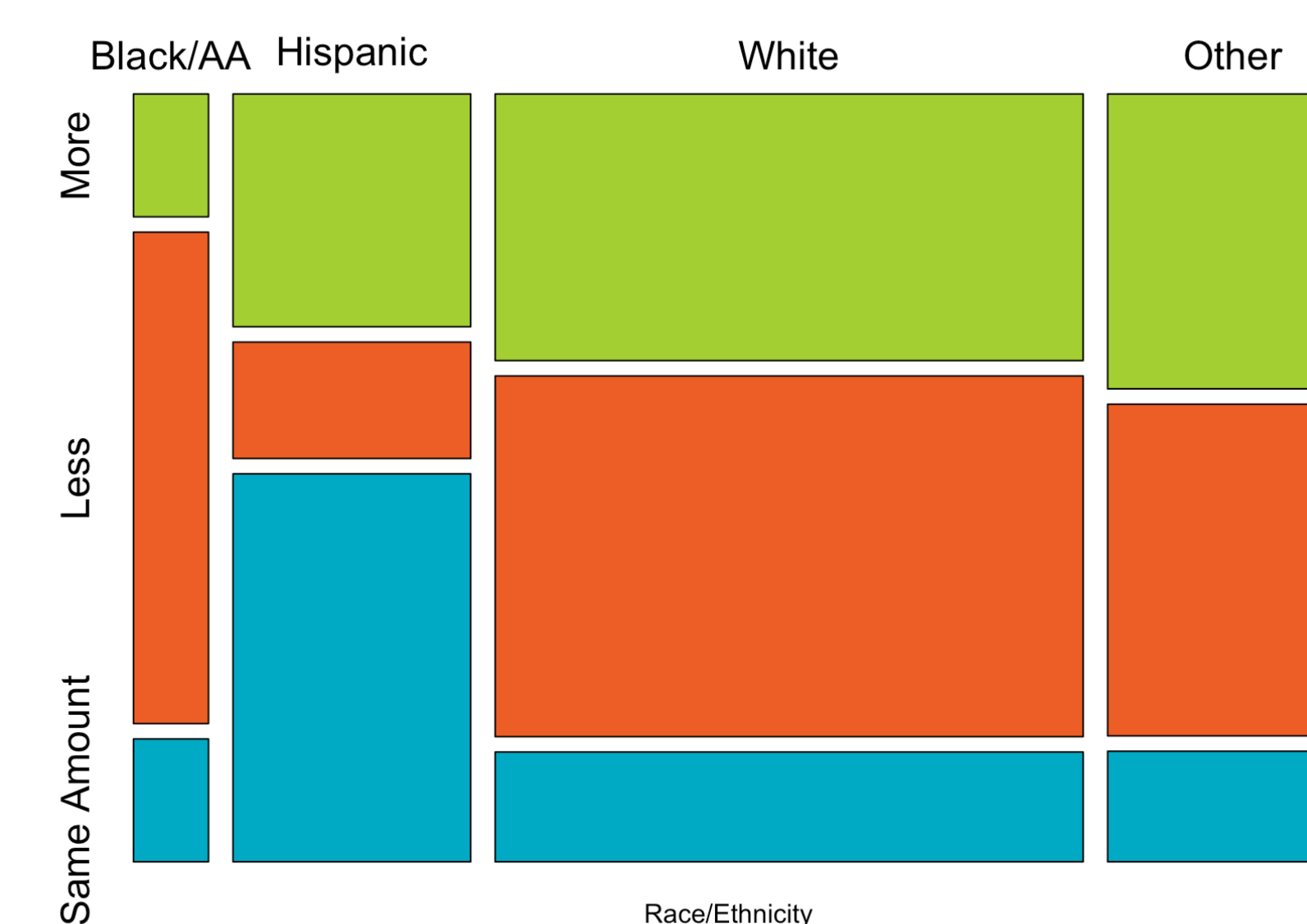
**Table 1: Descriptive Characteristics of STREETS Participants Measured in Fall 2020**

	N (%)
<b>Child age in years</b>	
9	31 (28.9)
10	58 (54.2)
11	18 (16.8)
<b>Child sex</b>	
Male	48 (44.9)
Female	59 (55.1)
<b>Child race/ethnicity</b>	
White, non-Hispanic	47 (46.1)
Hispanic/Latino	27 (26.5)
Black/African American	7 (6.9)
Multiple race/ethnicity or other	21 (20.5)
<b>Household educational attainment</b>	
Less than high school	8 (8.2)
High school or GED	10 (10.3)
Some college	6 (6.2)
College degree	31 (32.0)
Graduate or professional degree	39 (40.1)
<b>Parent work status</b>	
Employed	74 (74.7)
Stay at home parent or unemployed	25 (25.3)
<b>School format</b>	
In person	34 (31.8)
Virtual	73 (68.2)
<b>Changes in walking in neighborhood</b>	
More during COVID-19	39 (41.9)
Same amount as before COVID-19	32 (34.4)
Less during COVID-19	22 (23.7)
<b>Changes in biking in neighborhood</b>	
More during COVID-19	41 (42.7)
Same amount as before COVID-19	34 (35.4)
Less during COVID-19	21 (21.9)
<b>Changes in active indoor play</b>	
More during COVID-19	41 (43.6)
Same amount as before COVID-19	37 (39.4)
Less during COVID-19	16 (17.0)
<b>Changes in outdoor play</b>	
More during COVID-19	37 (40.2)
Same amount as before COVID-19	23 (25.0)
Less during COVID-19	32 (34.8)
<b>Changes in other leisure physical activity</b>	
More during COVID-19	22 (25.3)
Same amount as before COVID-19	39 (44.8)
Less during COVID-19	26 (29.9)

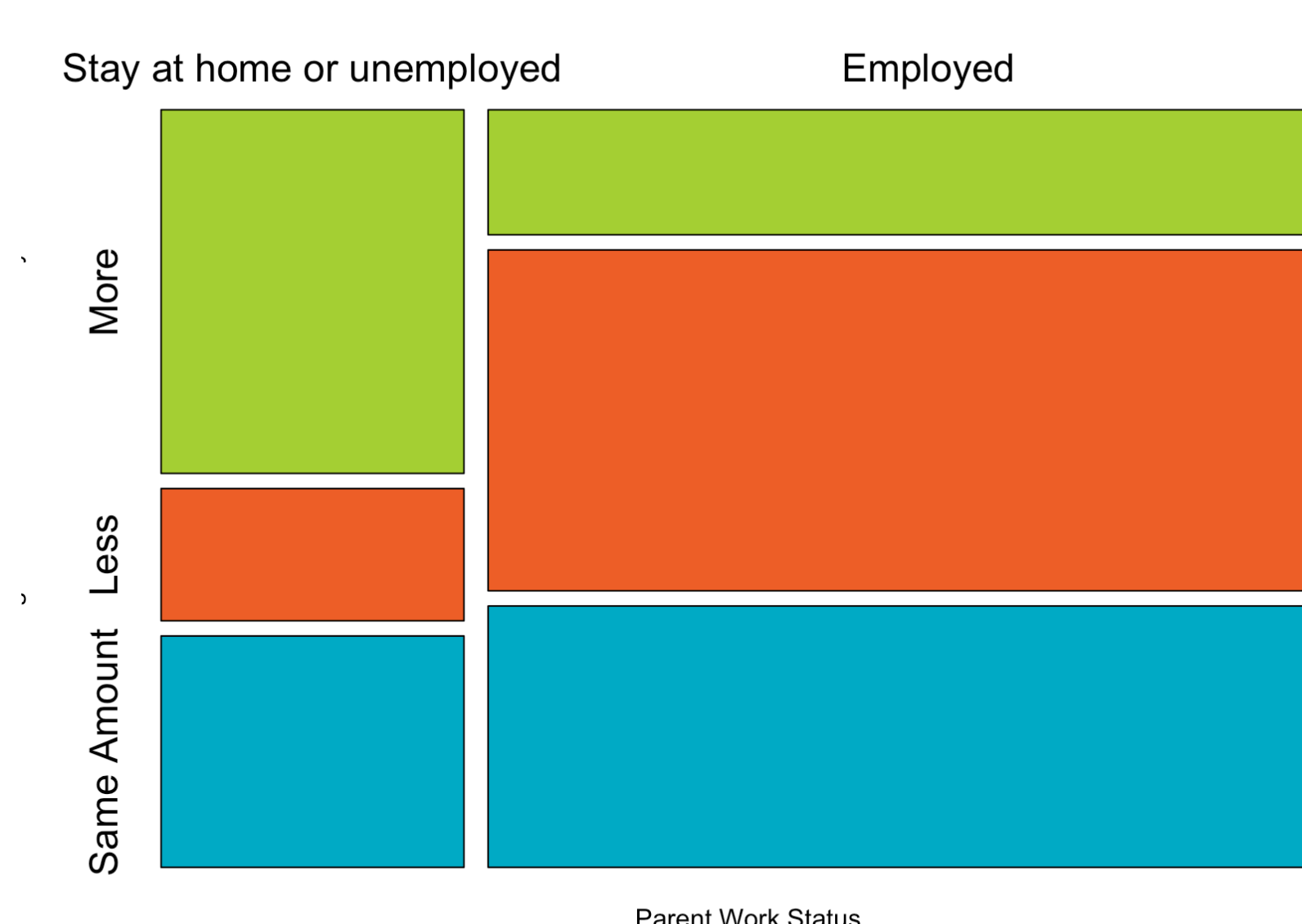
### Bivariate associations of demographic factors and changes in each domain of physical activity

- **Child age:** There were no significant differences in changes in physical activity across children of different ages.
- **Child sex:** There were no significant differences in changes in physical activity between males and females.
- **Child race/ethnicity:** There were significant differences in changes in walking in the neighborhood between racial/ethnic groups (Figure 1)
- **Household educational attainment:** There were no significant differences in changes in physical activity across levels of household education attainment
- **Parent work status:** There were significant differences in changes in outdoor play (Figure 2) between children who had parents who were employed compared to those who were stay-at-home parents or unemployed.
- **School attendance format:** There were significant differences in changes in outdoor play (Figure 3), and other types of physical activity across school attendance format of the children.

**Figure 1: Changes in Walking in the Neighborhood from before COVID-19 Pandemic by Race/Ethnicity**

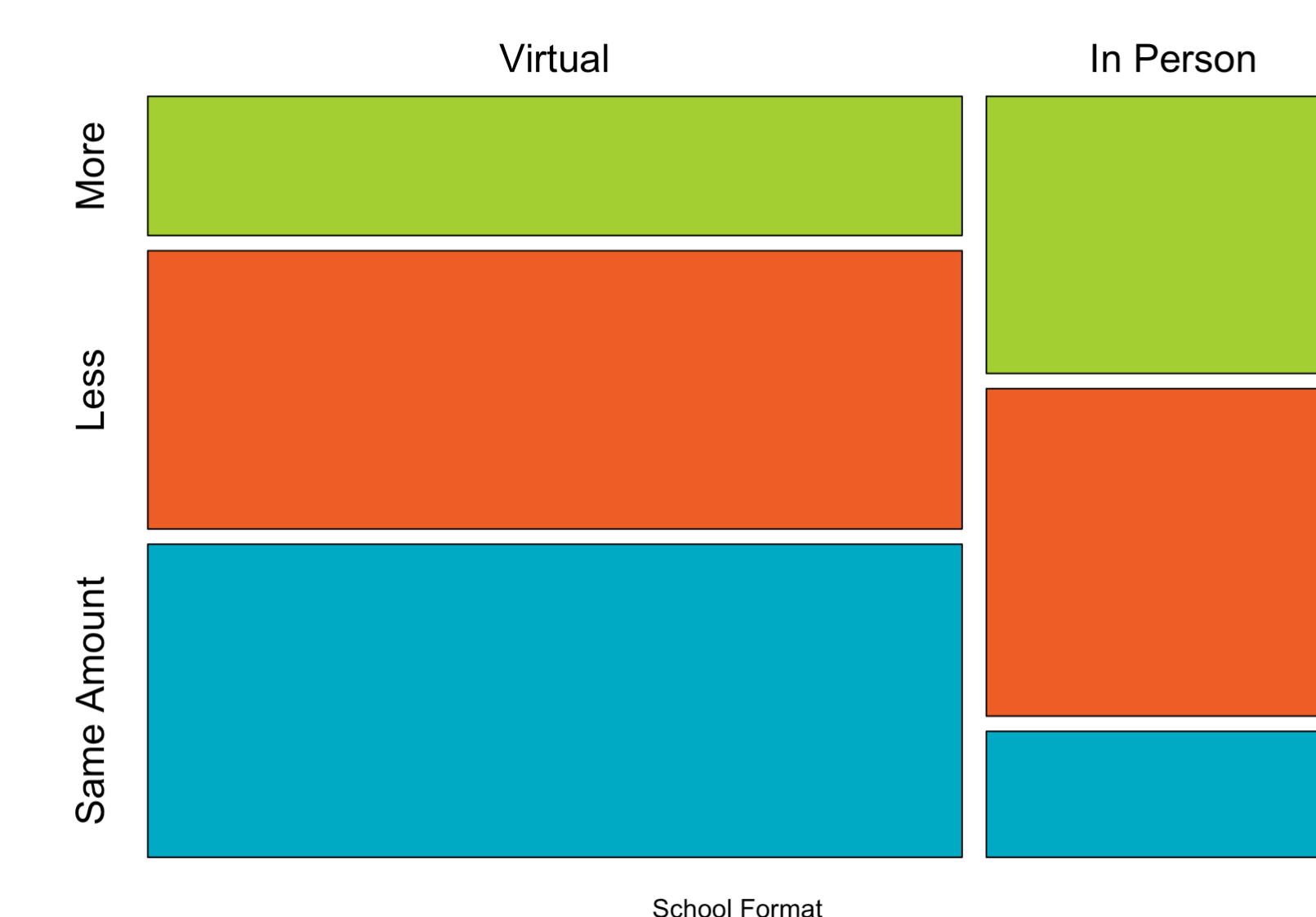


**Figure 2: Changes in Outdoor Play from before COVID-19 Pandemic by Parent Work Status**



Note: The width of bars in figures is representative of the relative number of participants in each group

**Figure 3: Changes in Outdoor Play from before COVID-19 Pandemic by School Attendance**



## CONCLUSION & NEXT STEPS

- **Discussion**
  - There are differences in the changes in walking in the neighborhood by race/ethnicity, with Black/African American children being more likely to engage in less walking compared to before the COVID-19 pandemic.
  - Children who have parents who are not employed were more likely to engage in more outdoor play compared to before the COVID-19 pandemic.
  - Children who attend school in-person more likely to engage in more outdoor play compared to before the COVID-19 pandemic.
- **Limitations**
  - Parent self-report of changes in physical activity
  - Attrition bias due to which participants responded to communication about participating in this measurement period.
  - Incomplete dataset due to the winter storm in Austin, TX and the related closures, power outages, and mail disruptions.
- **Next Steps and Future Research**
  - These findings suggest that changes in children's physical activity differs by demographics due to the COVID-19 pandemic. Future research should address physical activity promotion strategies to diminish these differences.