Covid-19 Pandemic, Demographic Factors and Time Spent Outside of the Home

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Background

The Covid-19 pandemic, and the subsequent nationwide quarantine, greatly impacted the amount of time people spend outside of their home. Previous research has shown that there are demographic, socioeconomic, and geographic differences in the amount of time people spent outside of the home during the pandemic. In this project I investigate the impact of the Covid-19 pandemic and other factors on the amount of time people in the U.S. spend outside of their home.

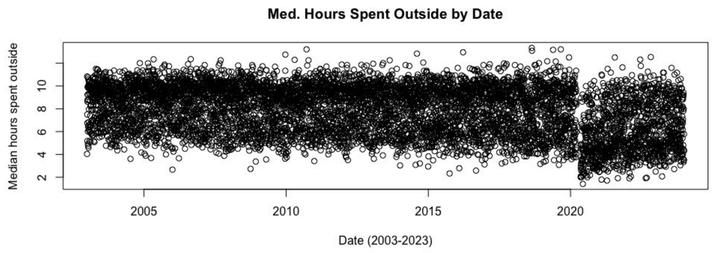
Research Question

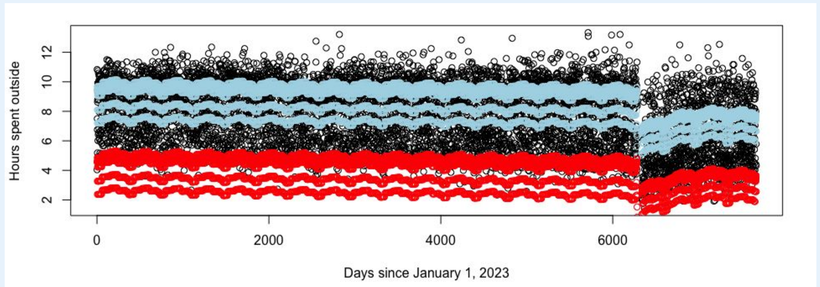
- Has the amount of time adults and children in the U.S. spend outside of their home returned to pre-March 13th 2020 levels in 2023?
- What factors are related to the amount of time a person spends outside of their home?

Note: “Outside” means outside of the person’s own home or yard.

Data

Source: The data is from The Bureau of Labor Statistics’ American Time Use Survey (ATUS), which measures the amount of time people spend doing various activities.
Population: The population for the study is the civilian noninstitutional population, aged 15 and older, and residing in households in the U.S.
Sample: The sampling method is a stratified three-stage sample.
Data Collection: An eligible person from each household is randomly selected to be the designated person for ATUS and is randomly assigned a day of the week about which to report. The data is collected through phone interviews.
Time Range: The data collected is from January 1, 2003 to December 31, 2023. It is important to note that due to the Covid-19 pandemic, there was no data collected from March 18 to May 9, 2020.





The plot shows the median hours spent outside by date, overlaid with predictions made by my final model. The predictions are for a 46 year old married white woman in a 3 person household with no kids or elders in the home. The blue line is the predictions for if she is employed and working in management operations, the red line is if she is unemployed.

Modeling and Analysis

I used multiple regression models to analyze the impact of the Covid-19 pandemic and individual characteristics of respondents on the total hours people spend outside of their home or yard. I started with a model that only has predictors related to time. Then I tried a model that includes all predictors and the interactions of every predictor with the PostCovid predictor. I used the stepwise procedure to create a model with only the predictors that are most significant. I chose this as my final model because it has the best BIC with compromising Adjusted R^2. Finally, I compared my final model with a model that is identical except it does not include a predictor for Covid-19.

Model	Number of Predictors	Adjusted R^2	BIC
Model with only predictors relating to time	7	0.05706	1195780
Model with all predictors and all predictors interacted with Covid	22	0.2197	1159057
Final model	18	0.219	1157238
Final model without Covid predictor			

Conclusion