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Exploring the impact of COVID-19 pandemic on American life and research questions

Method

1. Consider every sequence of 1440 minutes with each minute classified as an activity type or travel type
2. Compare all sequences with each other and compute pairwise dissimilarity indicators (there are many such as Euclidean and Ward for clustering observations)
3. Apply a clustering technique that groups sequences by similar dissimilarity scores -> low dissimilarity sequences are grouped together
4. Decide on the number of clusters that is optimally representing the data using a criterion of within group similarity and across groups dissimilarity

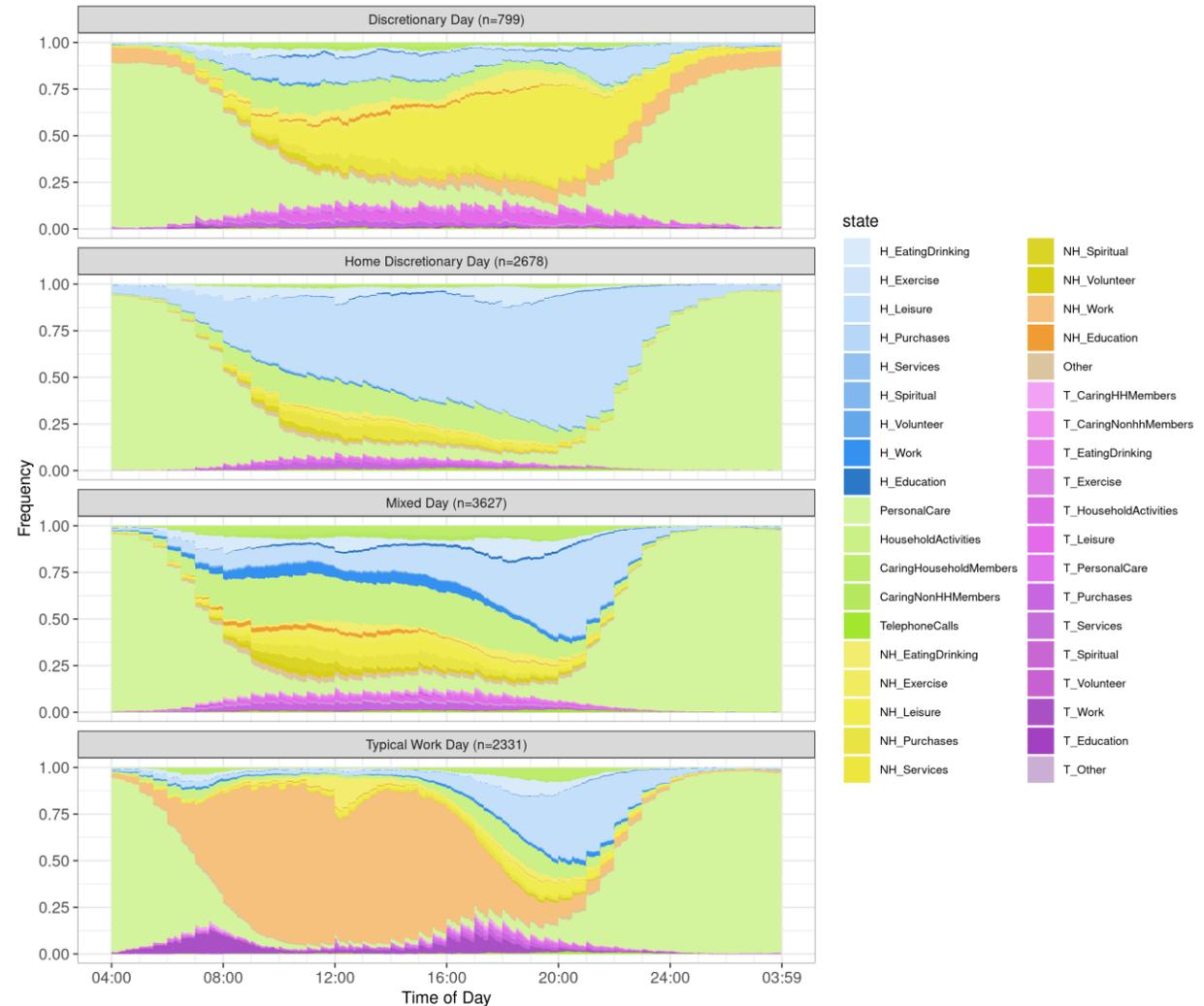
Year 2019

American Time Use Survey

YEAR 2019 Daily Time Allocation to Activities at Home and Outside Home Plus Travel

Typical Patterns Heterogeneity!

But usual commuters and the “stay at home” discretionary days are somewhat stable



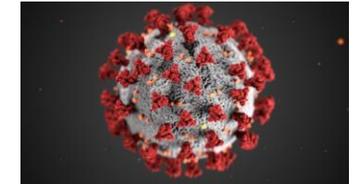
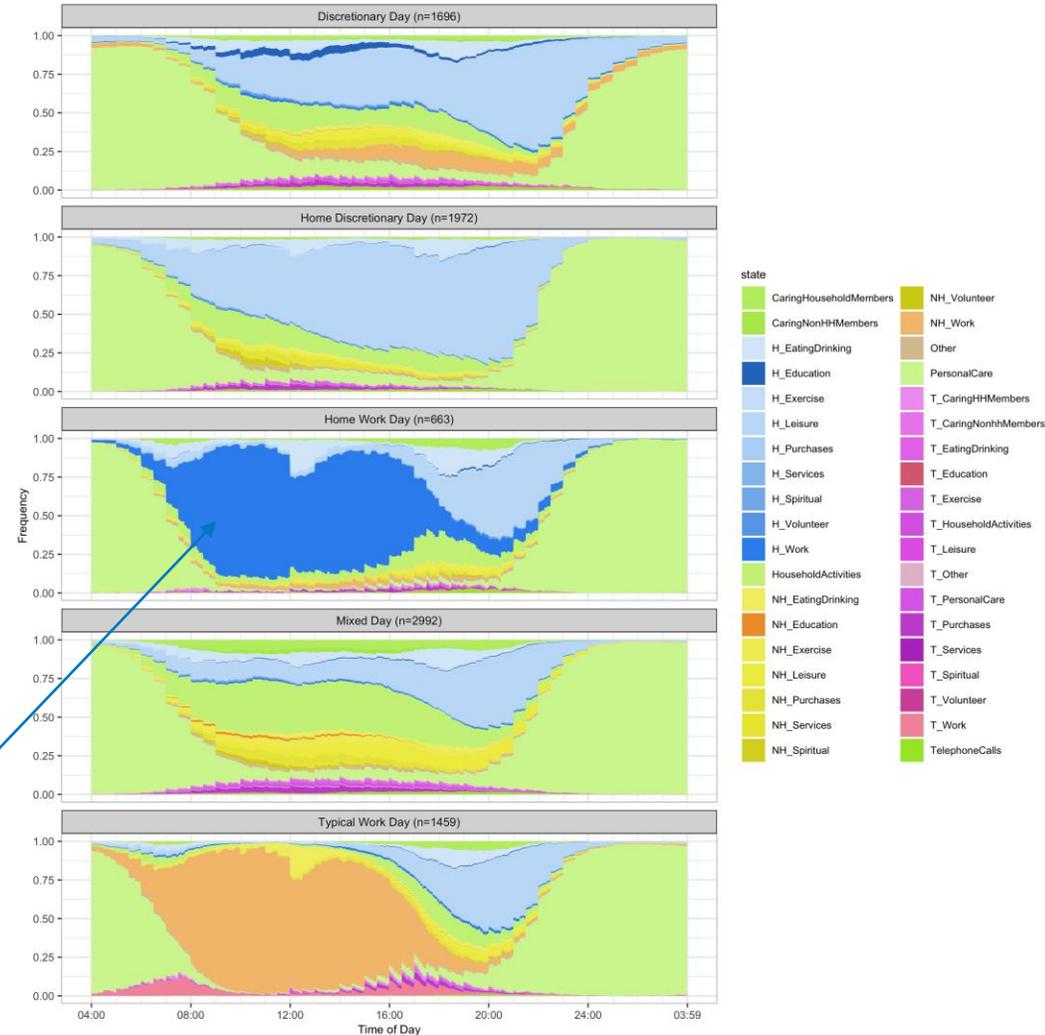
Year 2020

ONE year later – 1st COVID year!

YEAR 2020 Daily Time Allocation to Activities at Home and Outside Home Plus Travel

The typical commuters are still here! Essential workers released from some constraints

New type of life! But people have out of home activities and look at the purple travel !!



So, if people do not go to their workplace what do they do?

Many activities at home and work from homes

But also traveling in any hour of a day!

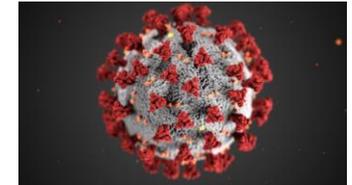
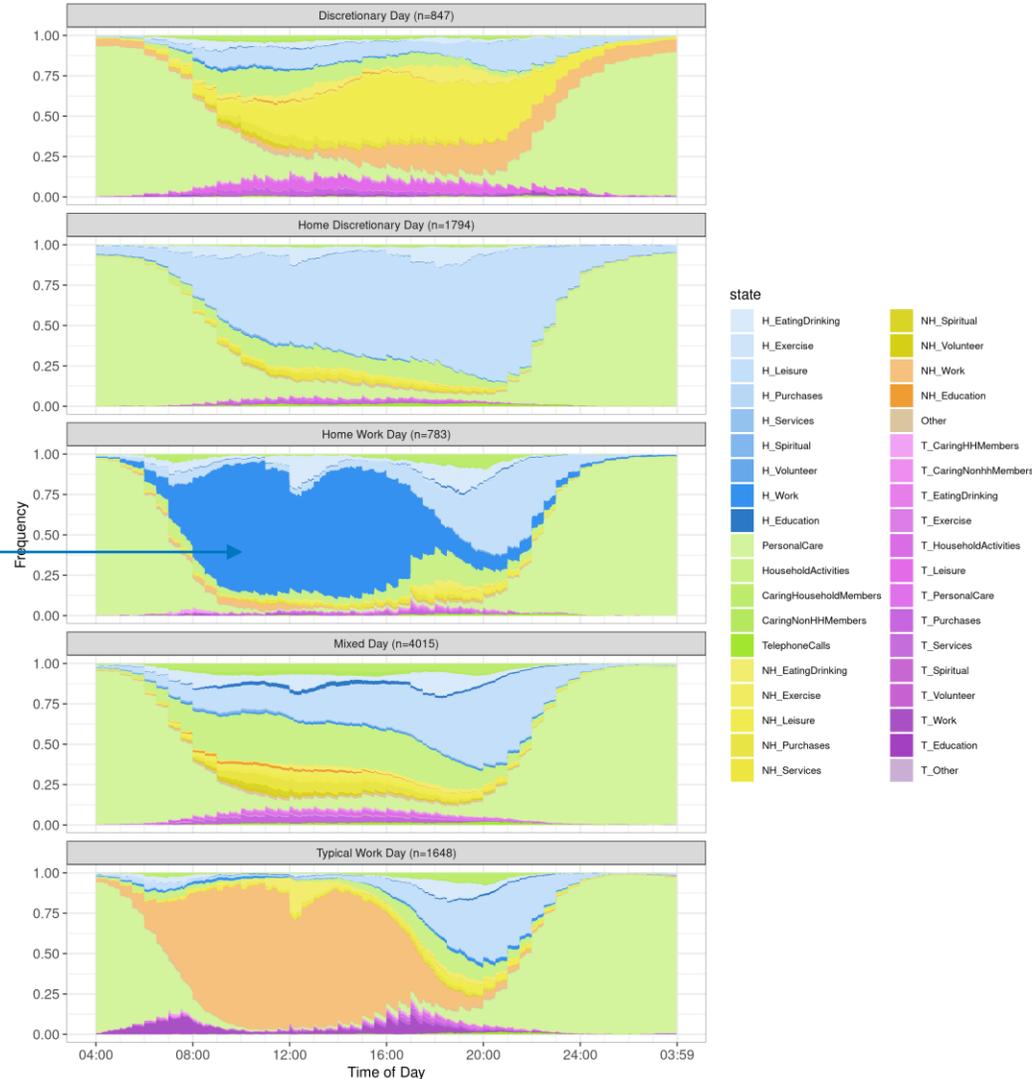
Year 2021

ONE year later -2nd COVID year!

YEAR 2021 Daily Time Allocation to Activities at Home and Outside Home Plus Travel

New type of life continues!
But people have out of home activities and look at the purple travel !!

The typical commuters are still here! Essential workers plus people released from some constraints

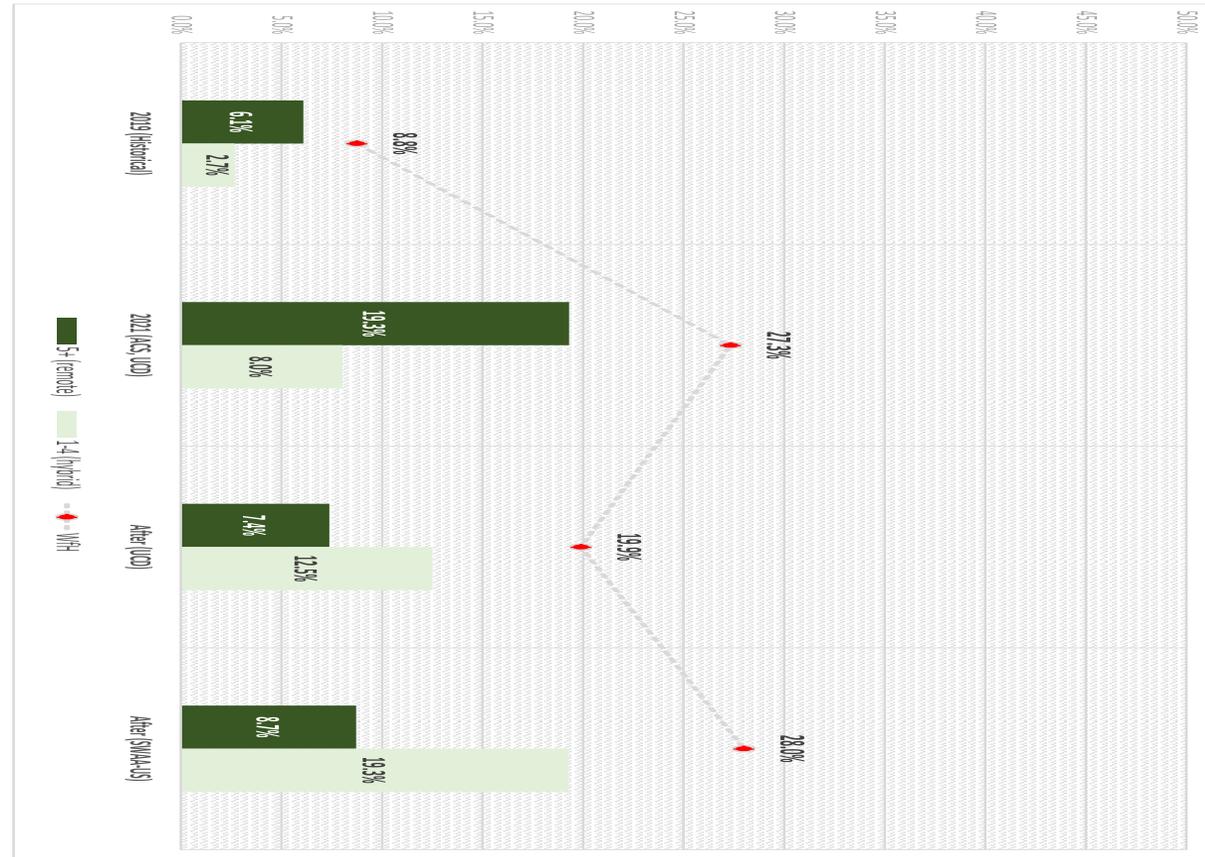


So, if people do not go to their workplace what do they do?

Similar to 2020 but work from home continues

What should we expect to happen?

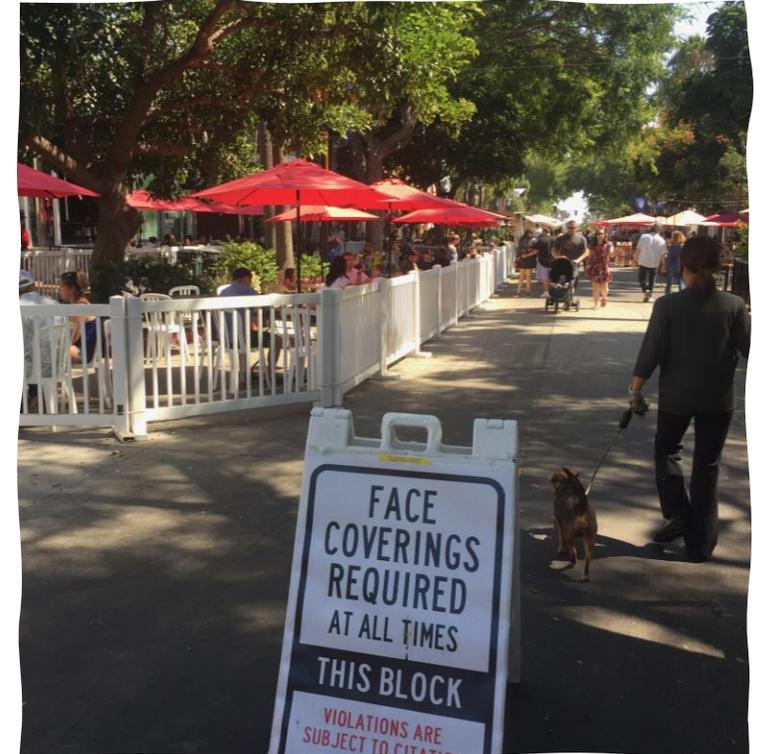
Dr. Hsi-Hwa Hu at SCAG prepared this graph looking at multiple surveys, distinguished between 5-day work from home and hybrid workers -> the claim is that we will have more variety of work patterns as we adjust to the pandemic impacts

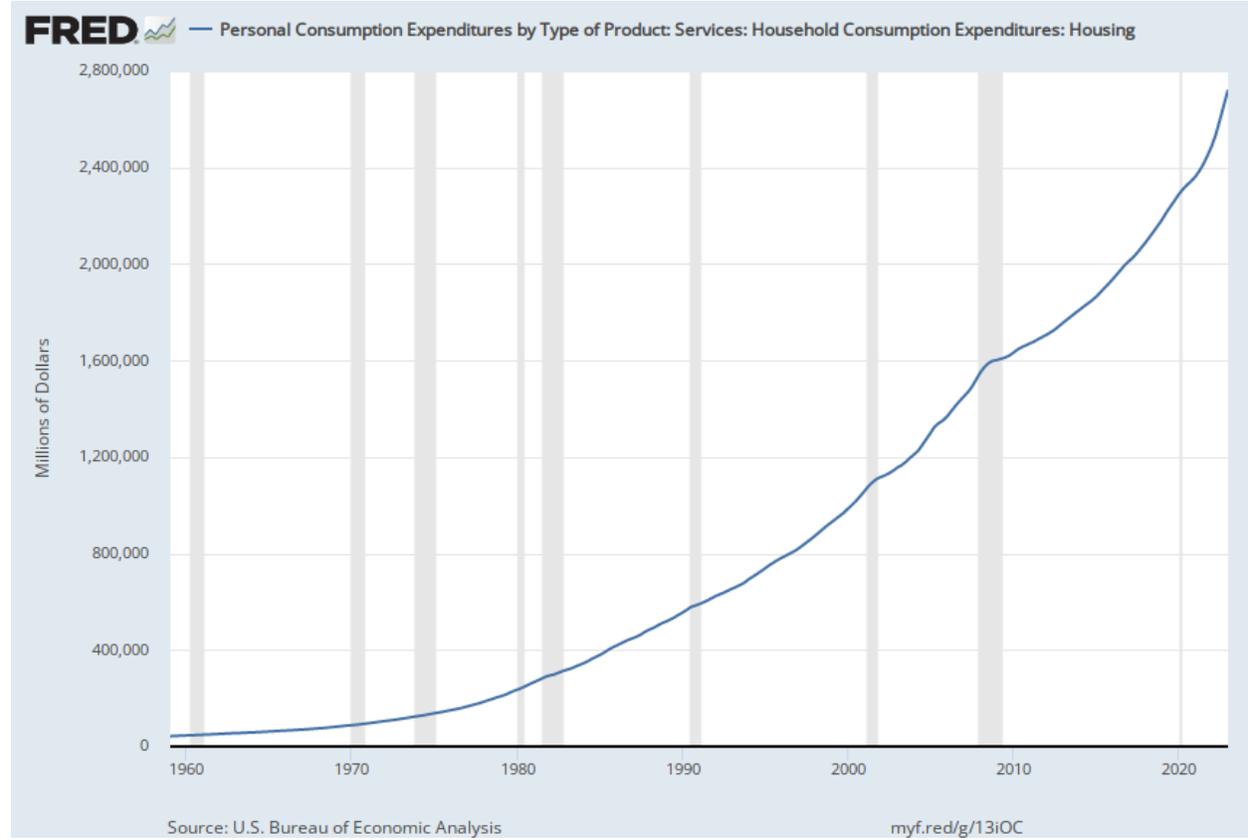
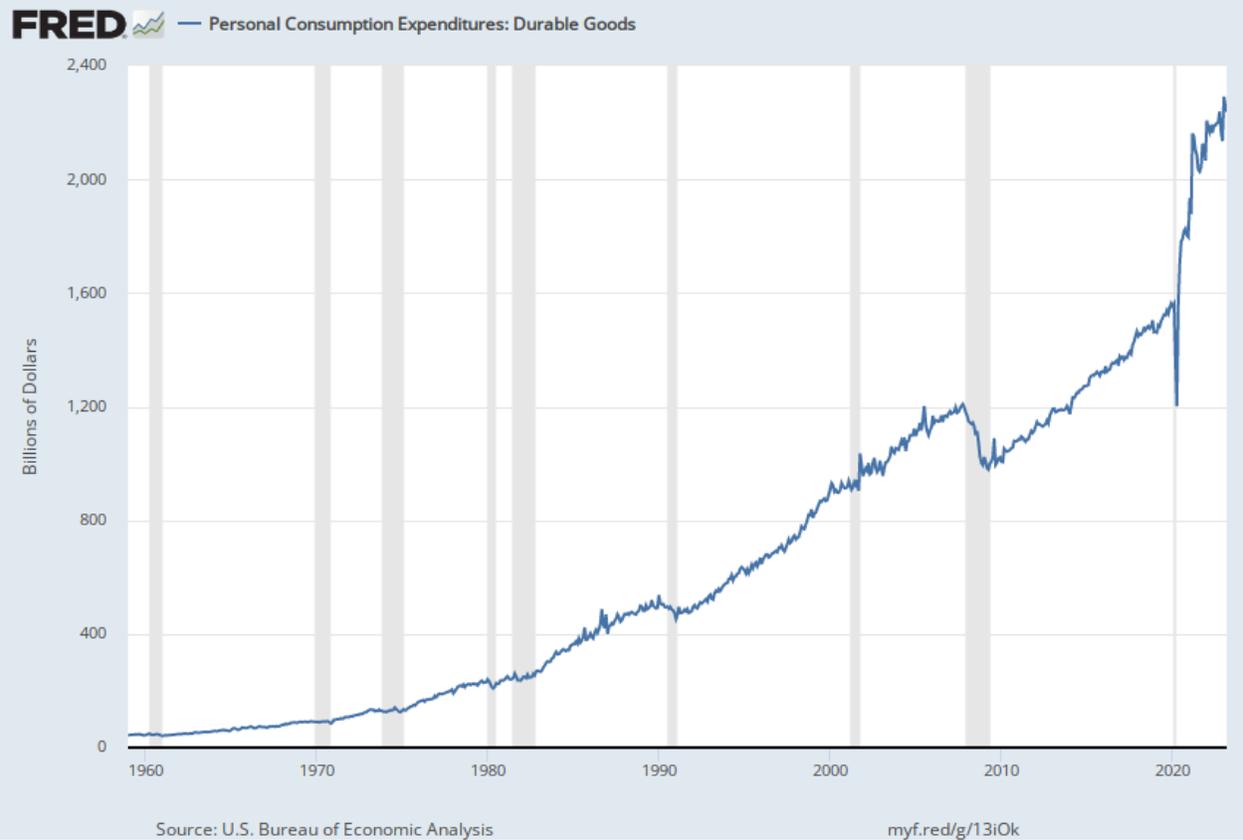


Final Data Summary: % Work Trips by WFH Modes

- Reproduced from: <https://scag.ca.gov/sites/main/files/file-attachments/mtf032923-3-4-work-at-home-data.pdf?1680120038>

Santa Barbara before and after COVID-19 motivated





Durable goods: Large and small appliances, vehicles, furniture, and so forth

Housing on the rise largely unaffected by the pandemic