

**Comparison of Stores'**  
**Footprints From 2018 to 2020**  
**During Black Friday**

Negin Zarbakhsh  
PhD Student, University  
College Dublin

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# Project Overview

**Data Collection:** Safe Graph Pattern data from October 2018 to December 2020 were analyzed for four brands, including Target, Walmart, Best Buy, and Amazon in Oklahoma City, as well as Census data. We selected these brands because electrical devices are one of the most likely items to be purchased during Black Friday.

**Results: Brands' Footprint:** On Thanksgiving day in 2020, stores were closed due to the COVID-19 pandemic, and the analysis showed the stores' visit impacts based on the figures of 2018 and 2019. According to hourly visit distribution analysis, 12 p.m. until 17 p.m. was the best time to plan retail promotional campaigns during Black Friday days. COVID-19 epidemic in 2020 led to fewer activities during the closure time of stores, probably showing fewer people at the workplaces compared to 2019 or 2018.

**Competitor Analysis:** According to the graph representation of same-brand visits, Walmart is probably Target's and Best Buy's biggest competitor.

**Amazon Distribution Activities:** In 2020, there were fewer people in stores, so we were particularly interested to see how online shopping impacted the store traffic. There has been a significant increase in activities at Amazon's distribution centers from 2018 to 2020, which is likely an indication of an increase in employees. Because these centers were busier during Black Friday, we analyzed the demographic features of the visitors during a normal month (October) and Black Friday. The Census Track analysis shows that there were no significant changes in visitors' demographic characteristics.

# Overview

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SAFEGRAPH

Data  
Collection



United States  
**Census**  
Bureau

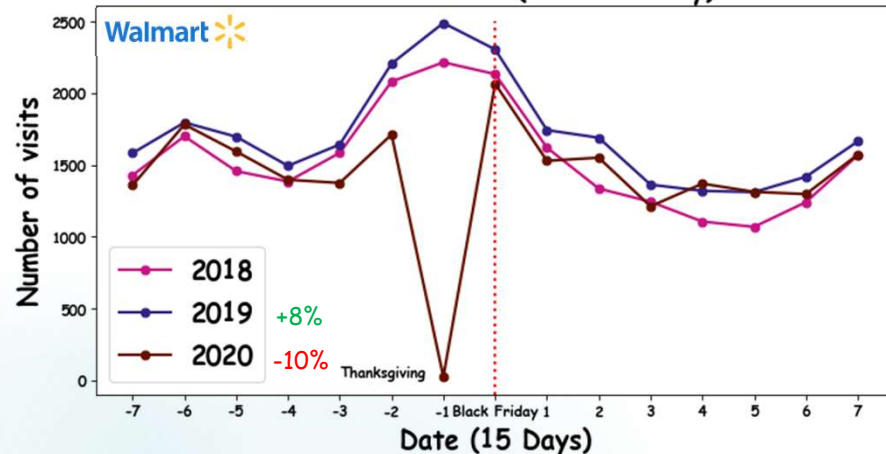
Brand	POI Count
	4
	3
	6
	6

Year	Date
2018	 (11/23/2018) 16 Nov' - 30 Nov'
2019	 (11/29/2019) 22 Nov' - 6 Dec'
2020	 (11/27/2020) 20 Nov', 4 Dec'

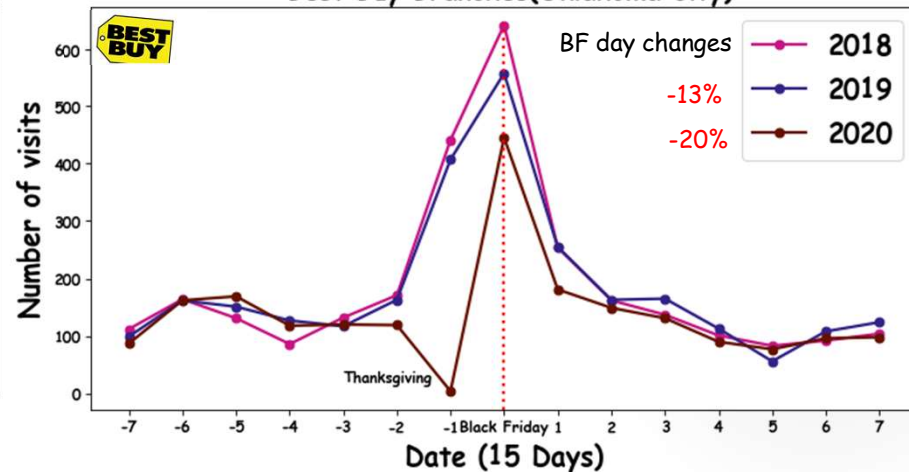
# Black Friday Stores' Footprint

2

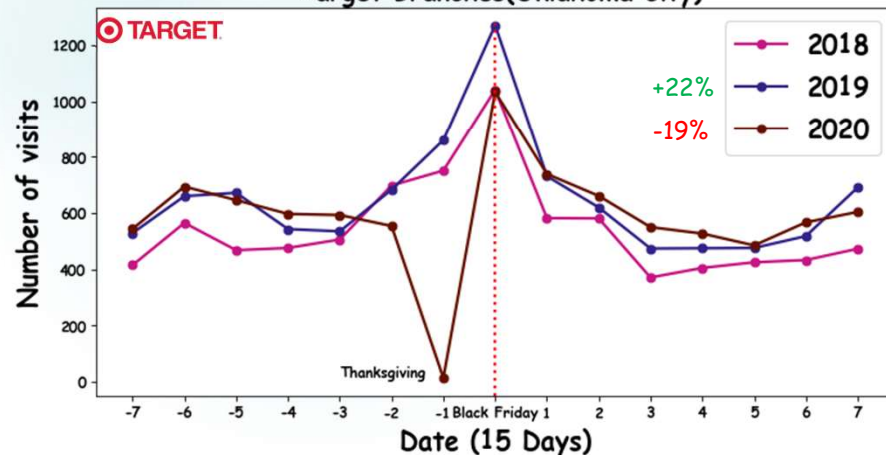
Walmart Branches(Oklahoma City)



Best Buy Branches(Oklahoma City)



Target Branches(Oklahoma City)



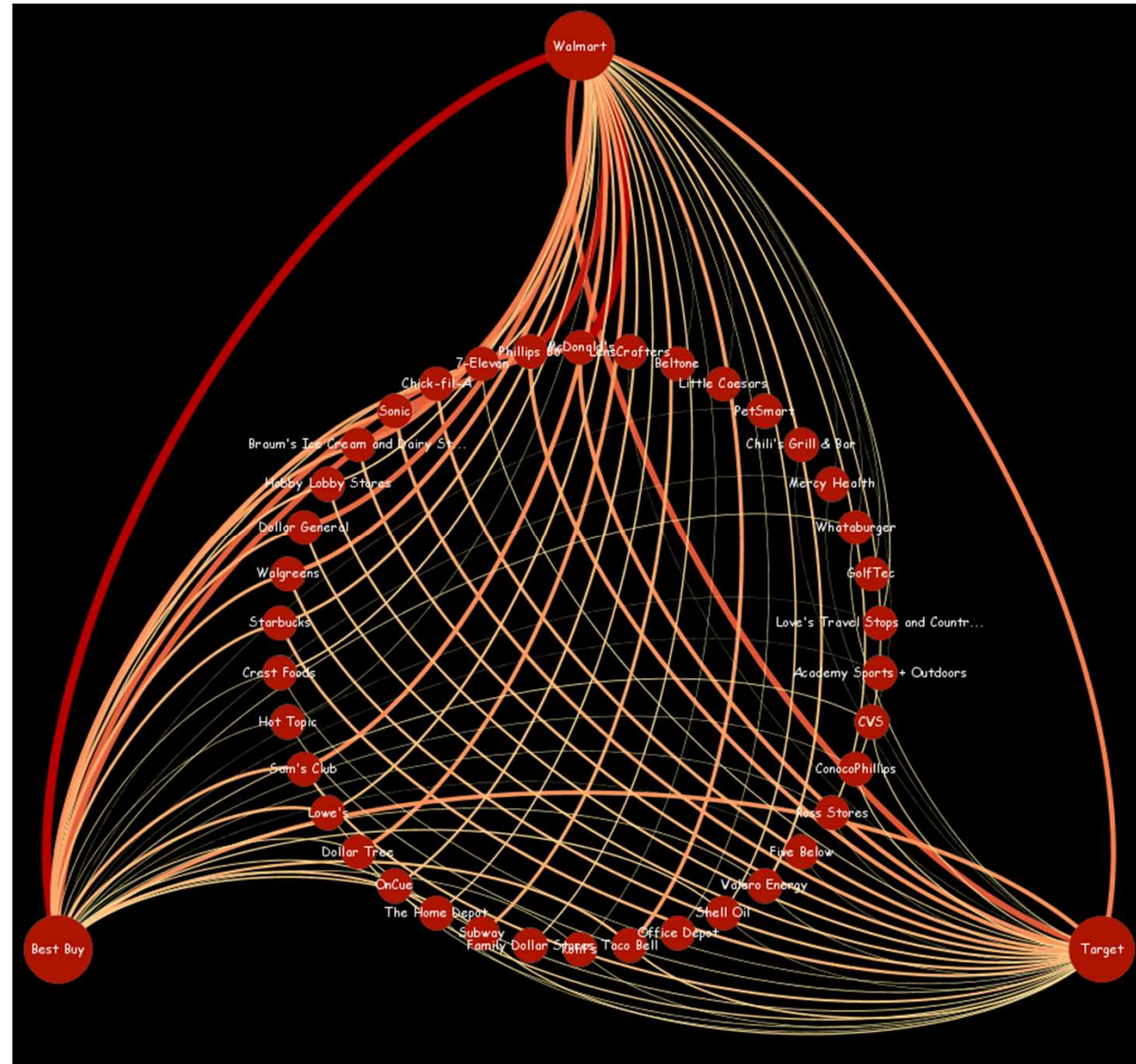
- ✓ In 2020, Walmart, Target, and Best Buy were closed on Thanksgiving day due to COVID-19.
- ✓ On Black Friday 2020, Walmart witnessed the lowest drop in store visits compared to Target and Best Buy.



# Competitor Analysis

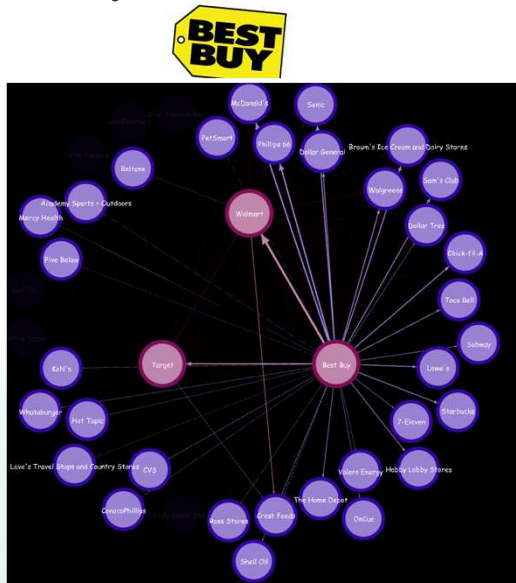
## Competitor Network:

- ✓ **Nodes:** Brands.
- ✓ **Edges:** Two brands are connected if they are visited in the same month (Black Friday).
- ✓ **Edge Weight:** Number of visits
- ✓ **Network Type:** Directed Network.

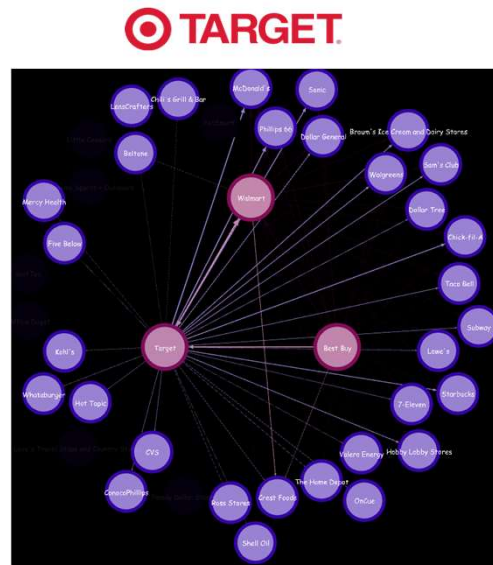


# Competitor Analysis (Black Friday)

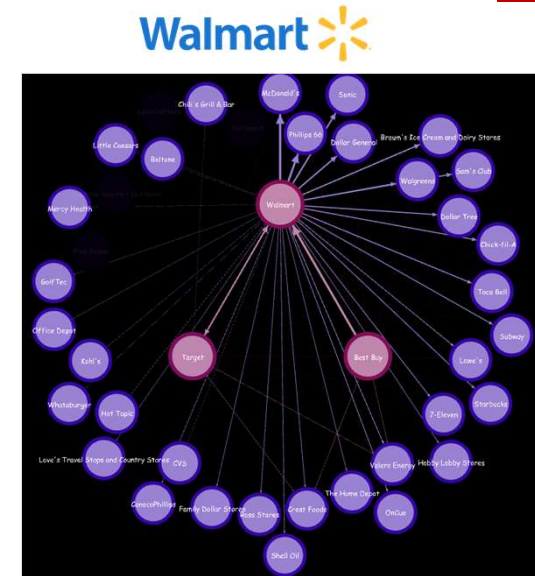
4



**Walmart (12%)**  
 McDonald's (8%)  
 Phillips 66 (8%)  
 Sonic (6%)  
**Target (6%)**  
 Braum's Ice Cream and Dairy Stores (5%)  
 Chick-fil-A (5%)  
 Walgreens (5%)  
 Sam's Club (5%)  
 Dollar General (4%)



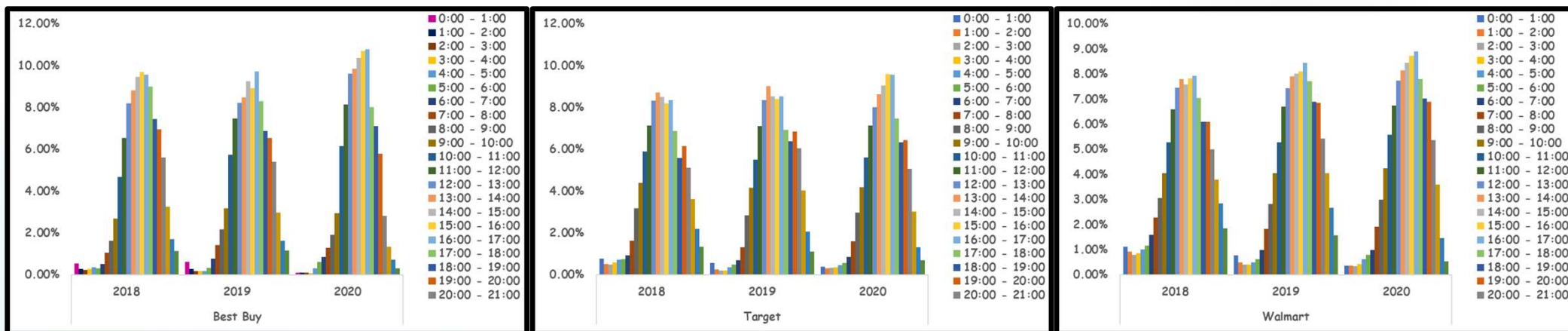
**Walmart (12%)**  
 McDonald's (8%)  
 Phillips 66 (7%)  
 Sonic (6%)  
 Chick-fil-A (5%)  
 Starbucks  
 Braum's Ice Cream and Dairy Stores (5%)  
 Walgreens (5%)  
 Sam's Club (4%)  
 Hobby Lobby Stores (4%)



McDonald's (10%)  
 Phillips 66 (9%)  
 Sonic (6%)  
 Dollar General (6%)  
 Braum's Ice Cream and Dairy Stores (5%)  
**Target (5%)**  
 Walgreens (5%)  
 Sam's Club (5%)  
 Dollar Tree (4%)  
 Chick-fil-A (4%)

# Visit Distribution by Hour on Black Friday Day

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- ✓ On Black Friday day, the hourly distribution shows 12 pm to 17 pm (top 10% of number of store visits) is the busiest time across all 3 brands, and stores can plan their promotional activities accordingly.
- ✓ In 2020 (🦠), activities in closure time of the stores decreased which probably shows the fewer employees compared to 2019 and 2018.

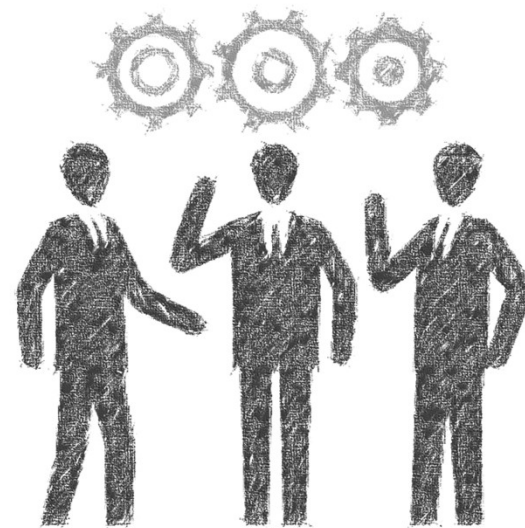


How does online shopping affect the visits to these brands?



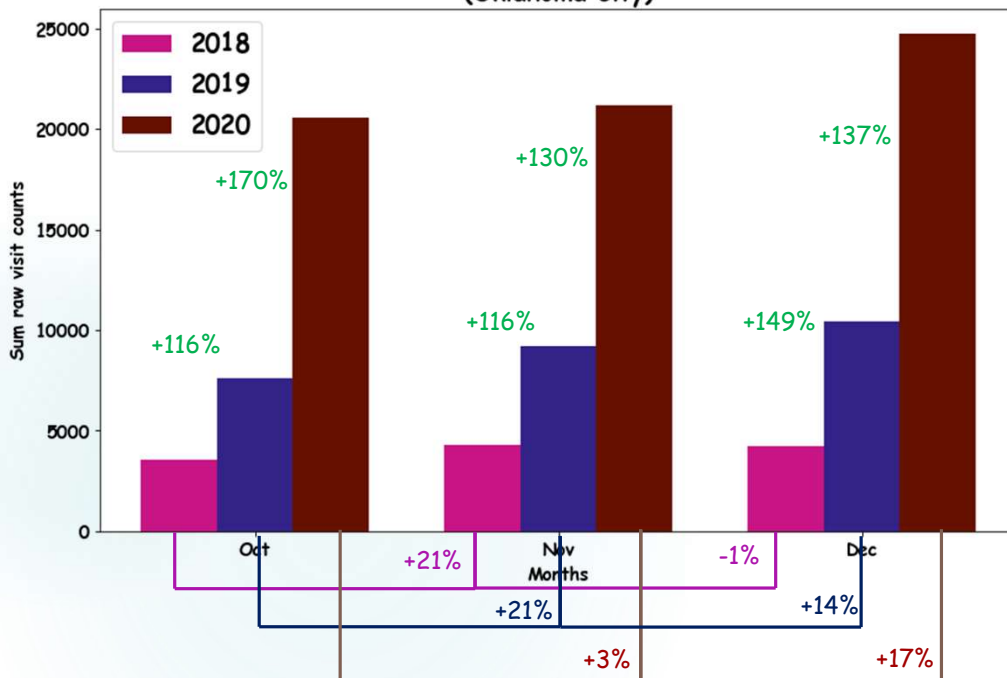


# A month before & after Black Friday in **amazon** Distribution POIs

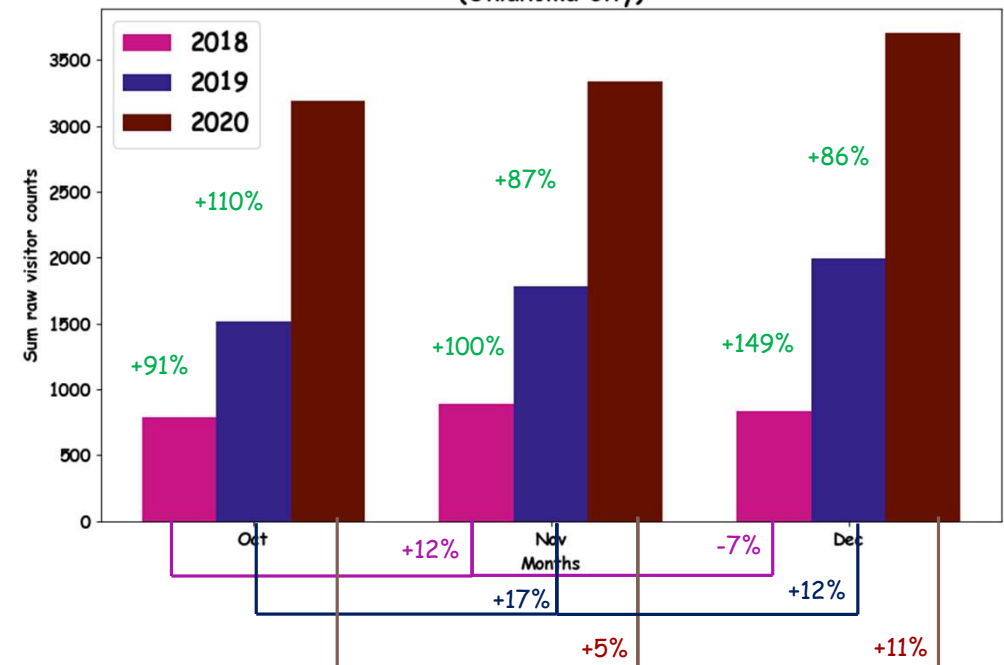


# Activities at Distribution Centers

Amazon Employee Footprints in Distribution Wearhouses (Oklahoma City)



Amazon Unique Employee Footprints in Distribution Wearhouses (Oklahoma City)



- ✓ Activities in Amazon distribution centers, which are likely indicative of employee numbers, have significantly increased between 2018 and 2020.
- ✓ Distribution centers were more crowded during Black Friday than a month earlier.



amazon

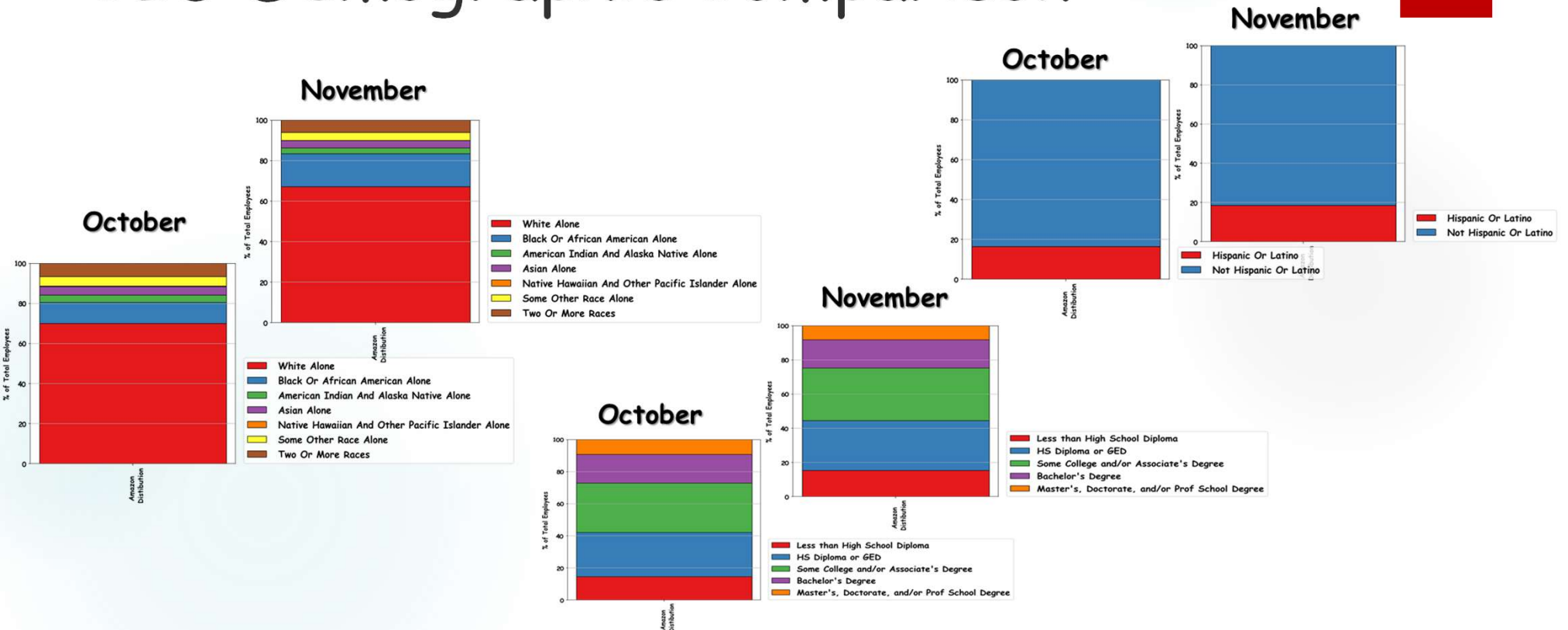
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Demographic features  
During Black Friday  
and one month earlier





# CBG Demographic Comparison



The Census data shows that there were no significant changes in visitors' demographic characteristics before or during Black Friday.

\*Figures are Based On: [https://github.com/ryanfoxsqire/safegraph\\_demo\\_profile](https://github.com/ryanfoxsqire/safegraph_demo_profile)





Thank You!