



**WEST PHILLY
PROMISE
NEIGHBORHOOD**

**Strong Children. Strong Families.
Strong Schools. Strong Communities.**

Generating Robust Estimates for Visualizing
Essential Worker Disparities for use in a Data
Dashboard

Promise Neighborhood Background

- The West Philly Promise Neighborhood is a 5-year place-based multi-sectorial initiative
- As part of this grant, 3 waves of population-representative surveys were or are to be collected
- As a part of the Data and Research Core, we applied for and received

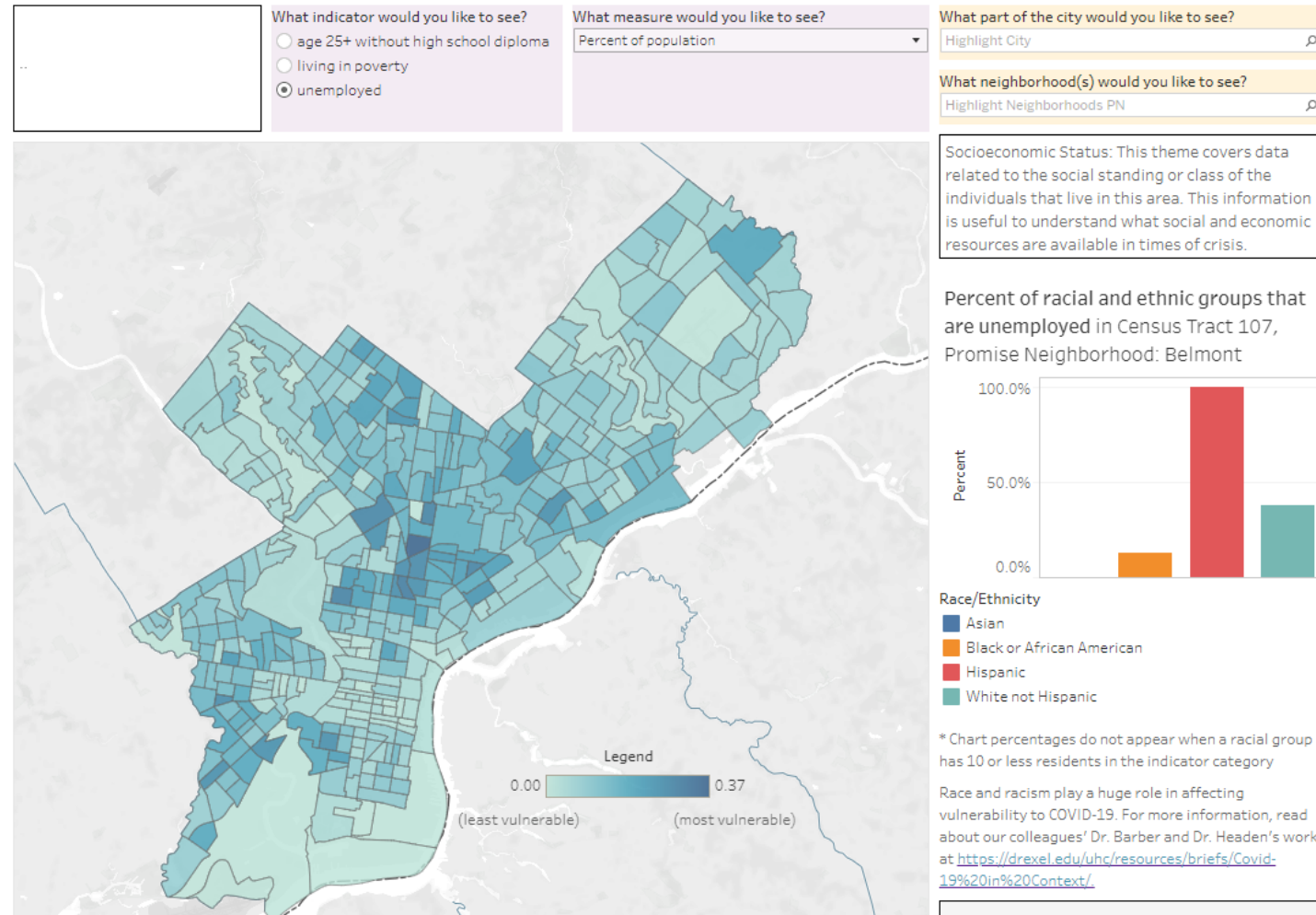


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The Vulnerability Indicators Dashboard

Philadelphia Vulnerability to COVID-19: Socioeconomic Status



- Funded by a small Drexel Rapid Response Grant
- Interactive online dashboard built using Tableau and GIS software
- Maps areas of Philadelphia that will experience highest burden of COVID-19 and its economic impacts
- Shows pre-COVID-19 vulnerabilities and likely hotspots for impacts of COVID-19

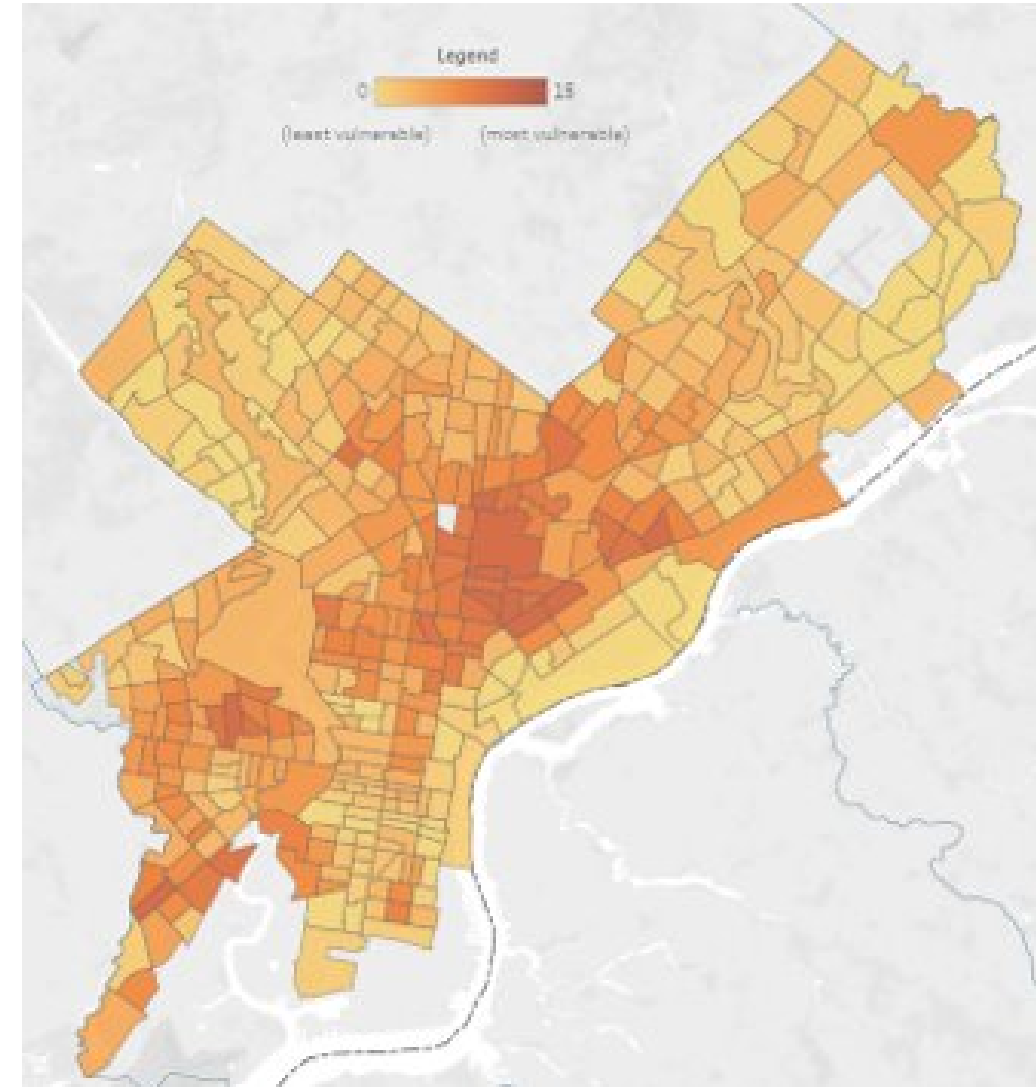


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Describing disparities in the context of COVID-19: Essential Workers Dashboard

- As a part of these efforts, we were interested in creating an essential workers dashboard using the ACS PUMS dataset
- We sought a method to generate accurate confidence intervals using the ACS Replicate weights



Selecting Essential Worker Categories

- Upon the basis of previous work in areas such as Massachusetts and New York we devised the following essential worker categories
 - Food service
 - Hospital
 - Outpatient healthcare
 - Retail
 - Trucking, warehouse, and postal service
 - Nursing home and residential care
 - Facilities services
 - Social assistance
 - Transit
 - Other Manufacturing



What data is on the dashboard?

Essential Workers

- Industry
- Race/ethnicity
- Pay
- Where essential workers live



How did we decide what to
include on the dashboard?



Jackknife Resampling

- Because the PUMS dataset uses a proportionally representative sample with small sample size per unit, we were interested in characterizing robust standard errors
- Jackknife resampling, as recommended by IPUMS USA, was used to generate replicate standard errors:

$$SE(X) = \sqrt{\frac{4}{80} \sum_{r=1}^{80} (X_r - X)^2}$$

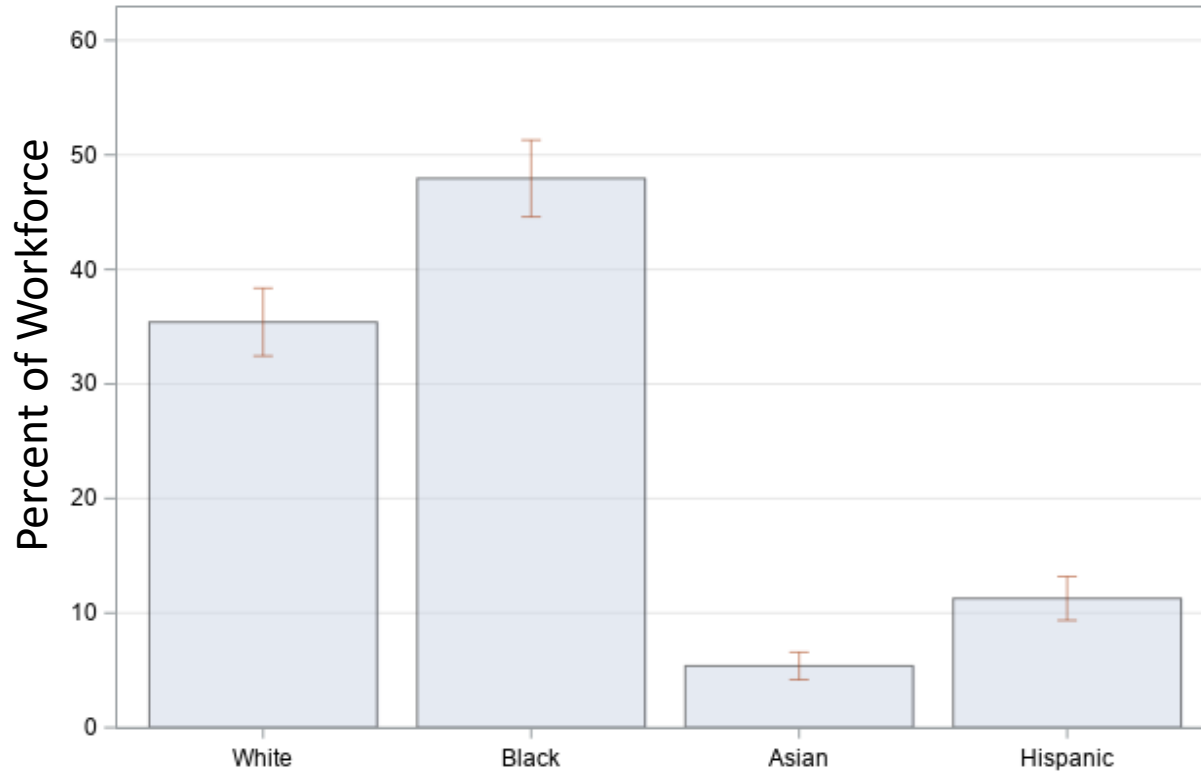


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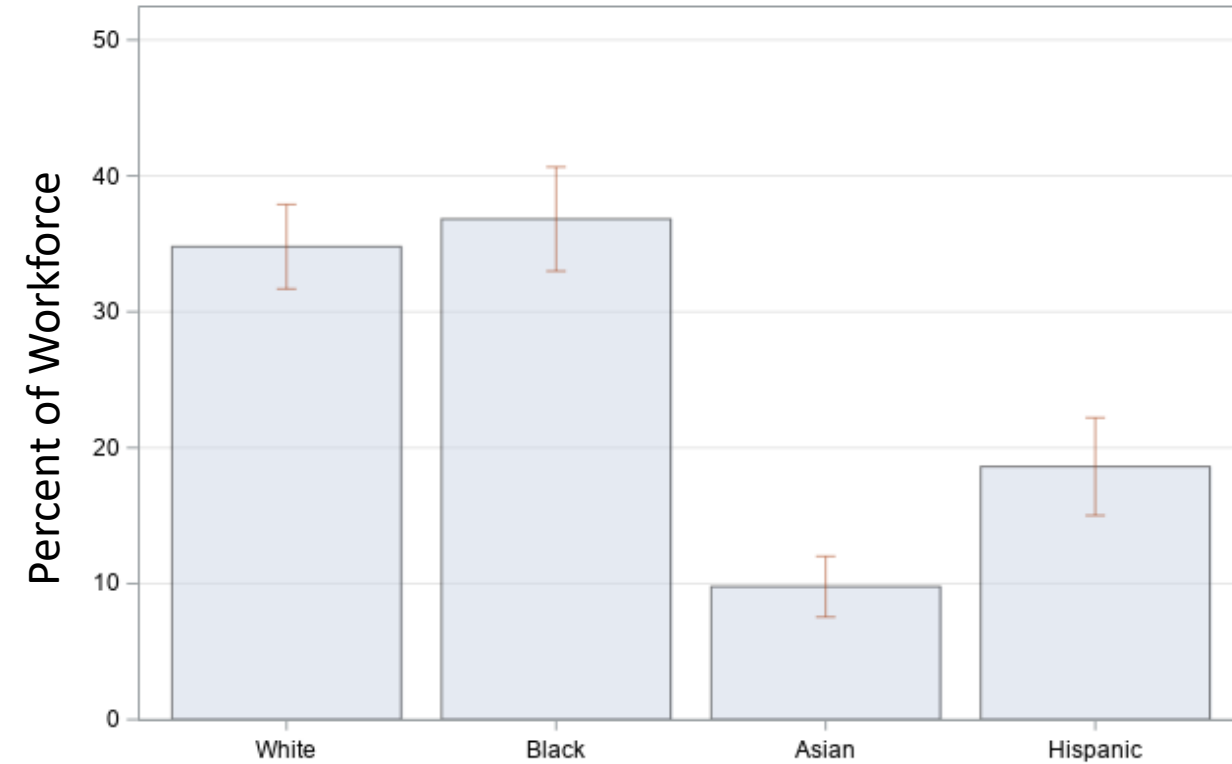
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Comparing Essential Worker Distribution by Race

Outpatient Healthcare Workers



Food Retail Workers



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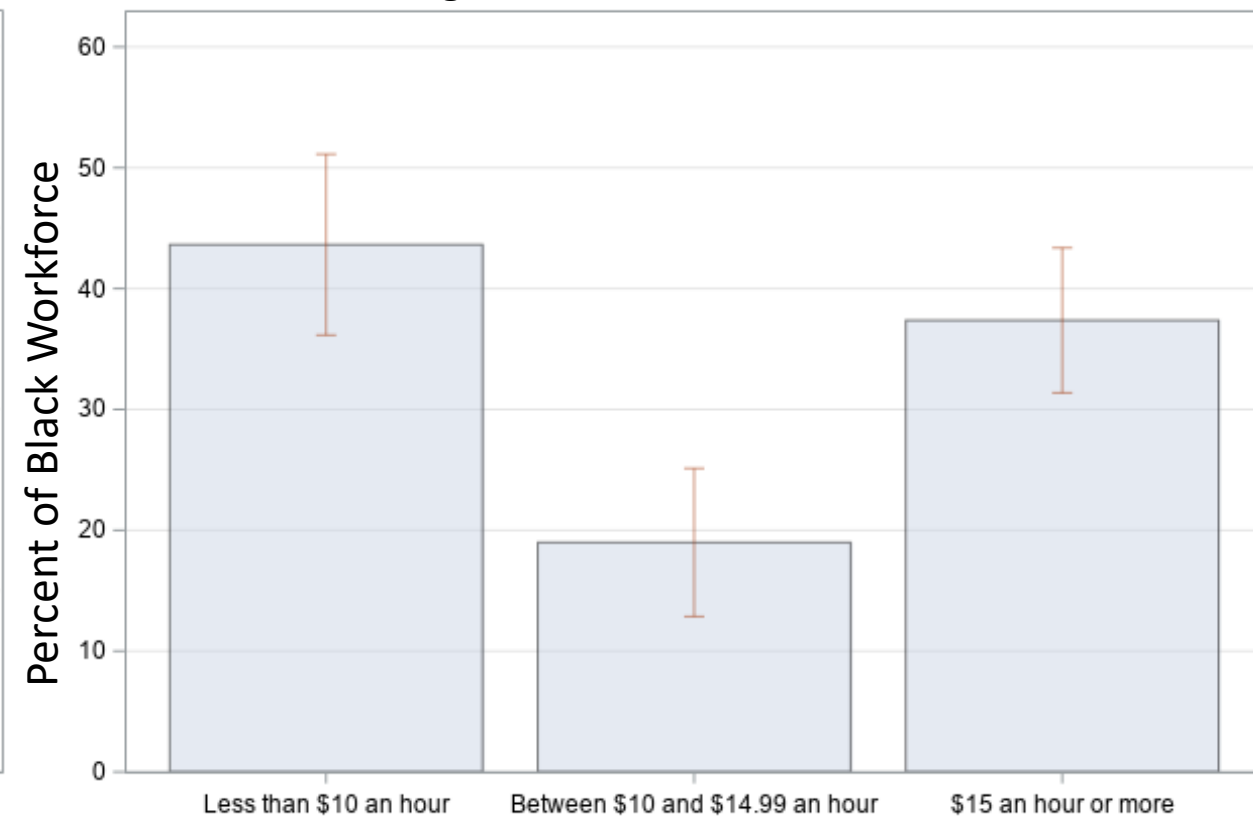
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Comparing Essential Worker Distribution by income (stratified by Race)

Trucking, Warehouse, and Postal Workers



Trucking, Warehouse, and Postal Workers



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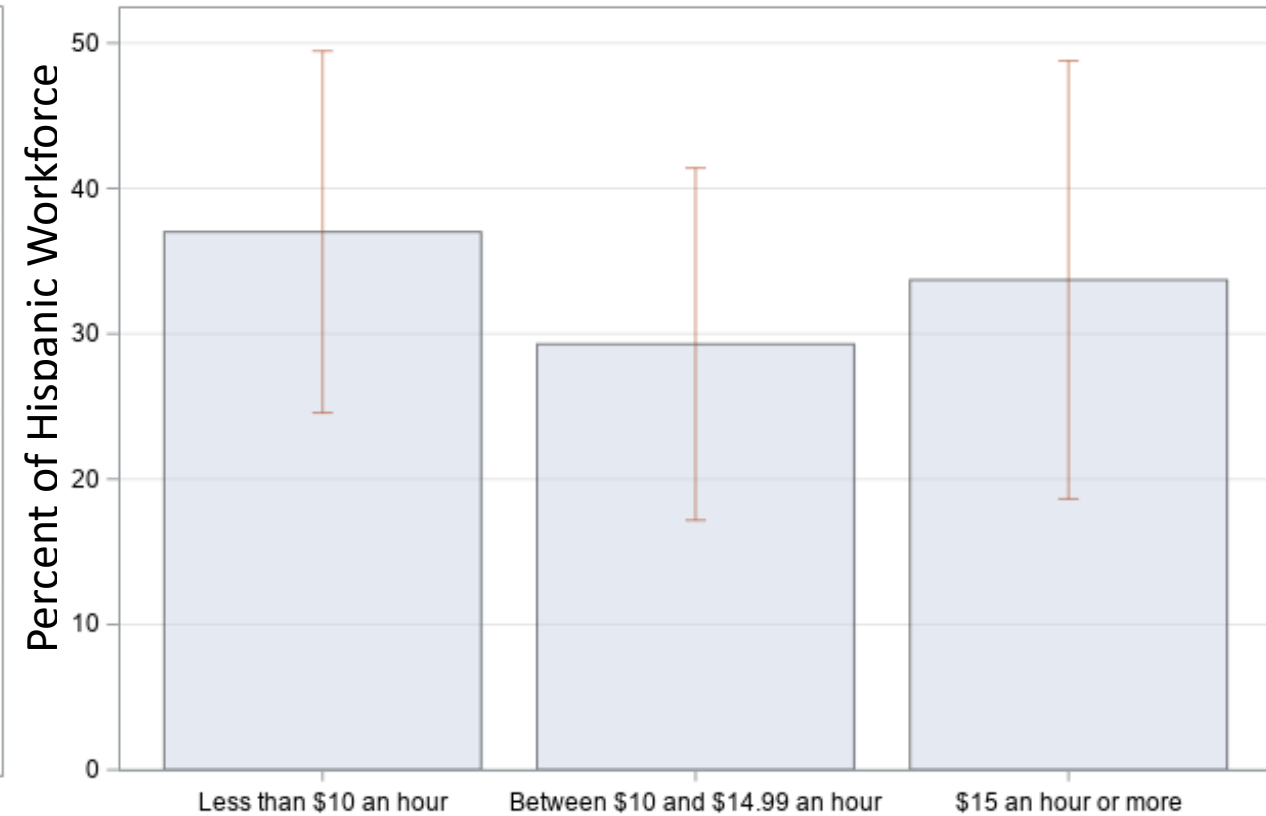
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Comparing Essential Worker Distribution by income (stratified by Race) Continued

Trucking, Warehouse, and Postal Workers



Trucking, Warehouse, and Postal Workers

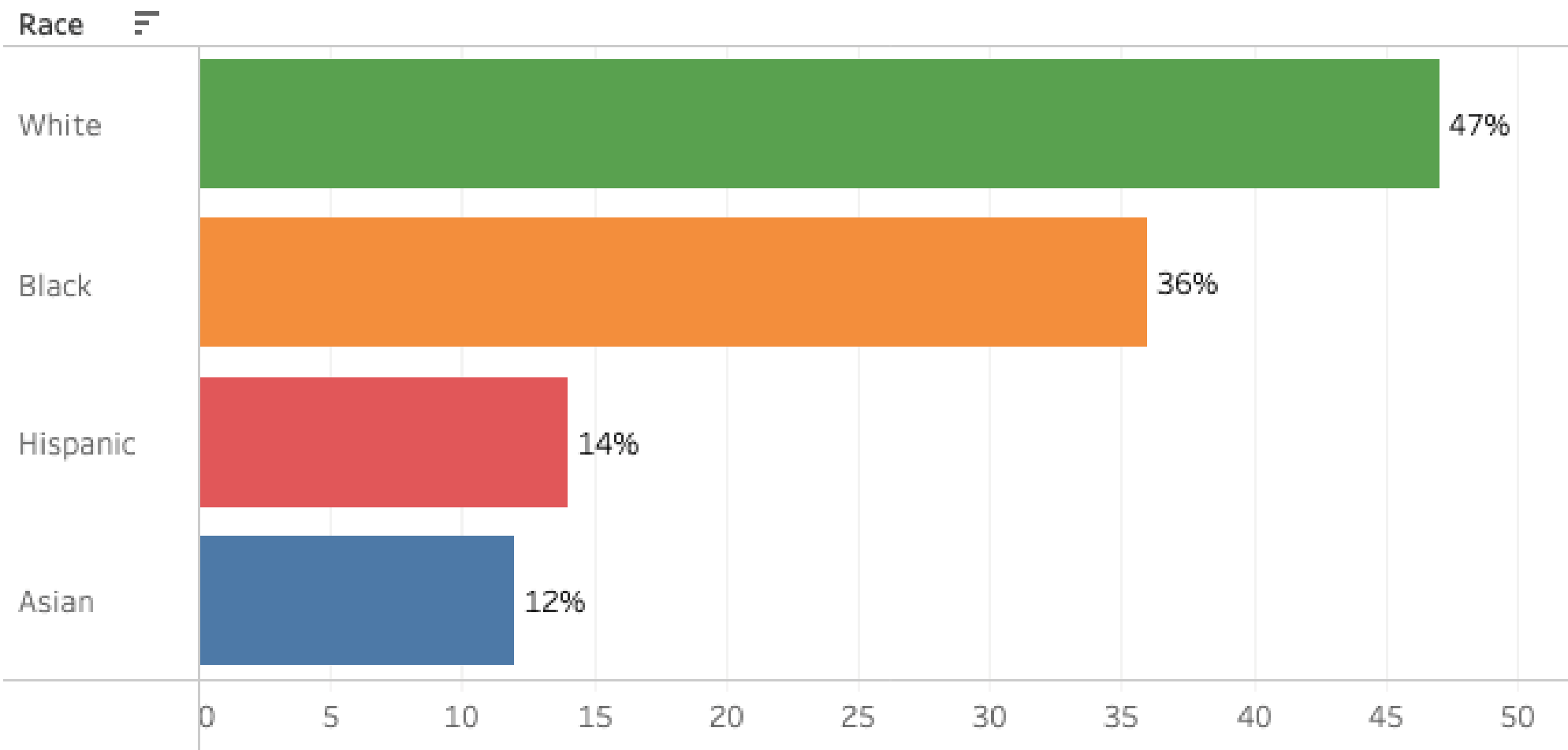


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Essential Workers by Race and Ethnicity

Food Service Workers in Philadelphia by Race and Ethnicity

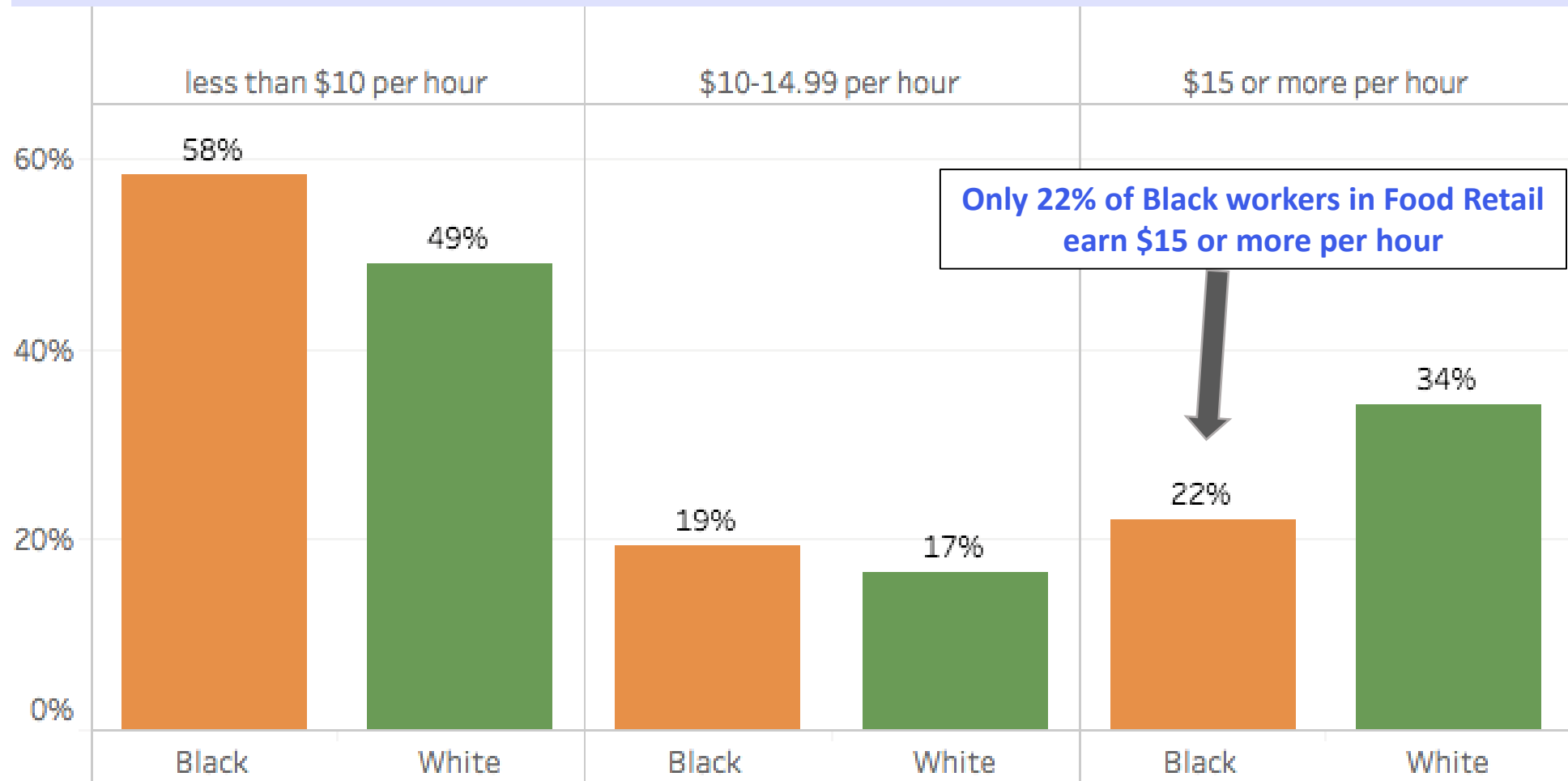


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Dashboard 3: Food Retail Workers Pay by Race

Hourly pay of Workers in Food Retail by Race and Ethnicity



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Concluding Remarks

- Now more than ever, we need to have the capacity to generate information that can be disseminated back to our communities
- It is of critical importance to ensure the accuracy of our work
- When data estimates are not precisely estimated, it may be better to not report them at all, than to report with a disclaimer
- We recommend using some kind of robust estimation method (Jackknife, bootstrap, etc) when estimating health and related social disparities

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[Bit.ly/COVIDIndicators](https://bit.ly/COVIDIndicators)

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References

- https://www.bostonindicators.org/article-pages/2020/april/frontline_workers
- [Full List of Essential Worker Categories](#)