

Social determinants of health and COVID-19: Results from the RISC-Montréal project

Jack Jedwab (*ACS-Metropolis*)
Simona Bignami (*Université de Montréal*)
Principal Investigators, RISC Montréal
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Land Acknowledgement

The University of Montréal is situated on land where, long before the arrival of the French, people of many Indigenous nations came together and interacted. We wish to acknowledge these nations, their descendants and the spirit of fraternity that presided over the signing in 1701 of the Great Peace of Montreal, a treaty that fostered peaceful relationships between France, its Indigenous allies and the Haudenosaunee federation (pronunciation: O-di-no-sho-ni). The spirit of fraternity that inspired this treaty serves as a model for our own university community.

Introduction

- The initial aim of the RISC-Montreal (Risk and Immunity Situation of COVID-19) project was to compare the seroprevalence (from natural infection and vaccination) among residents of Montreal North with corresponding information collected from residents in other parts of the Montreal Island.
- The rationale for this study was that the comparison of COVID-19 risk profiles as determined by beliefs, attitudes and behaviours and respondents' sociodemographic characteristics will help to increase our understanding of the relationship between COVID-19 infection and individual, household and community characteristics.
- That which follows provides descriptive evidence as collected by RISC-Montreal about the intersection between selected social determinants of health and actual, measured seroprevalence. This is important because self-reported seroprevalence is itself influenced by the same covariates.
- **We want to thank the CITF for their support towards the realization of this project.**

Data collection and analytical sample for RISC-Montreal

- The data collection process for the RISC-Montreal project entailed two steps: a detailed online survey and a blood serum test.
- The first step was a digitally administered questionnaire about attitudes & behaviors related to COVID-19 and associated public health measures. For all household members, the questionnaire asked about the respondents' socio-demographic, socio-economic background as well as a number of health-related questions (such as chronic conditions and smoking, drinking or eating habits known to impact COVID-19). Survey data collection occurred between August 9th 2021 and November 11th 2022. **A total of 2449 households, spanning 5542 individuals, participated in the online survey.**
- The second step was the voluntary provision of a dried blood sample, which was then tested for COVID-19 antibodies. The principal respondent of each household indicated interest in the serological part of the study. A dried blood sample kit was sent to the volunteer, who self-administered the test at home and then sent the blood sample back. **A total of 1773 respondents volunteered to participate in the serological part of the study, and 1451 dried blood samples were received.**

Challenges from testing during an ever-evolving pandemic

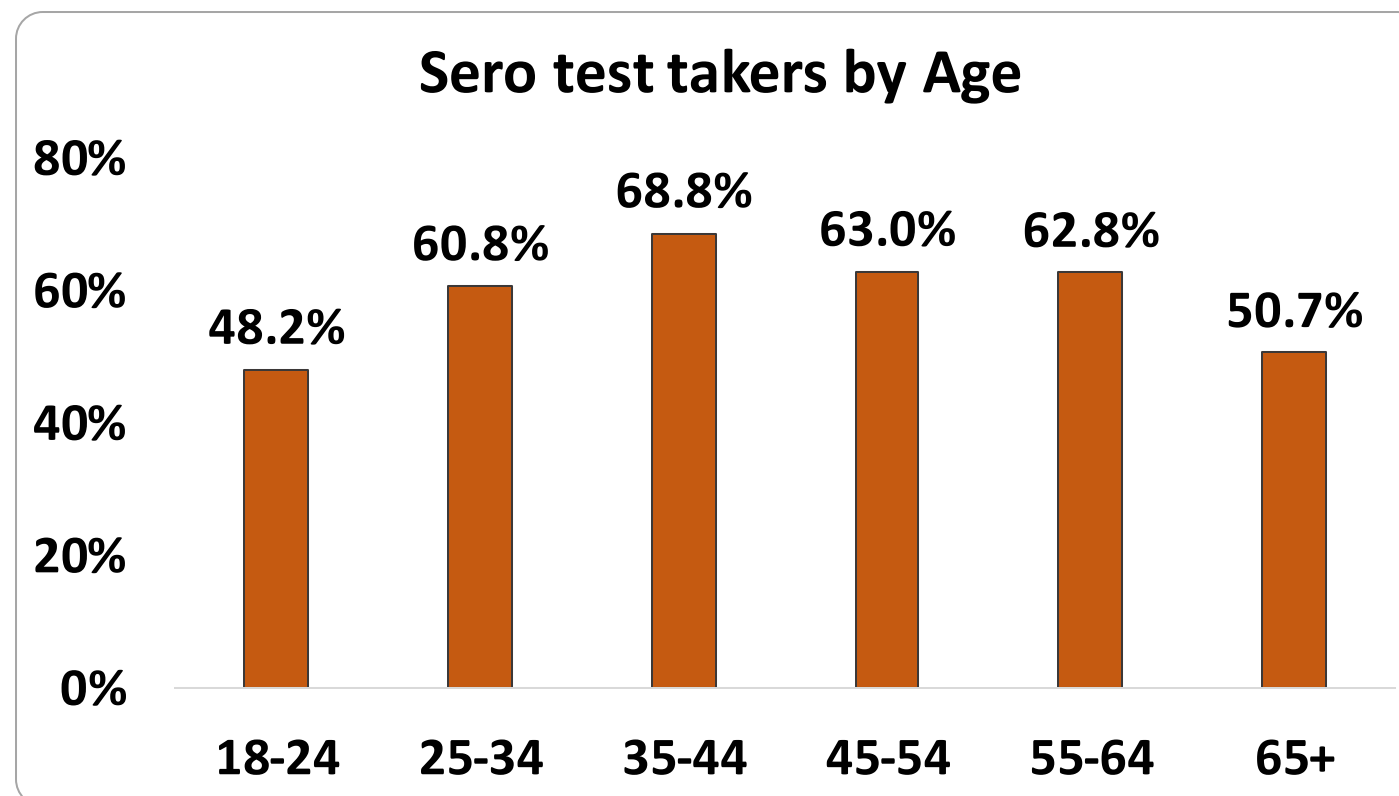
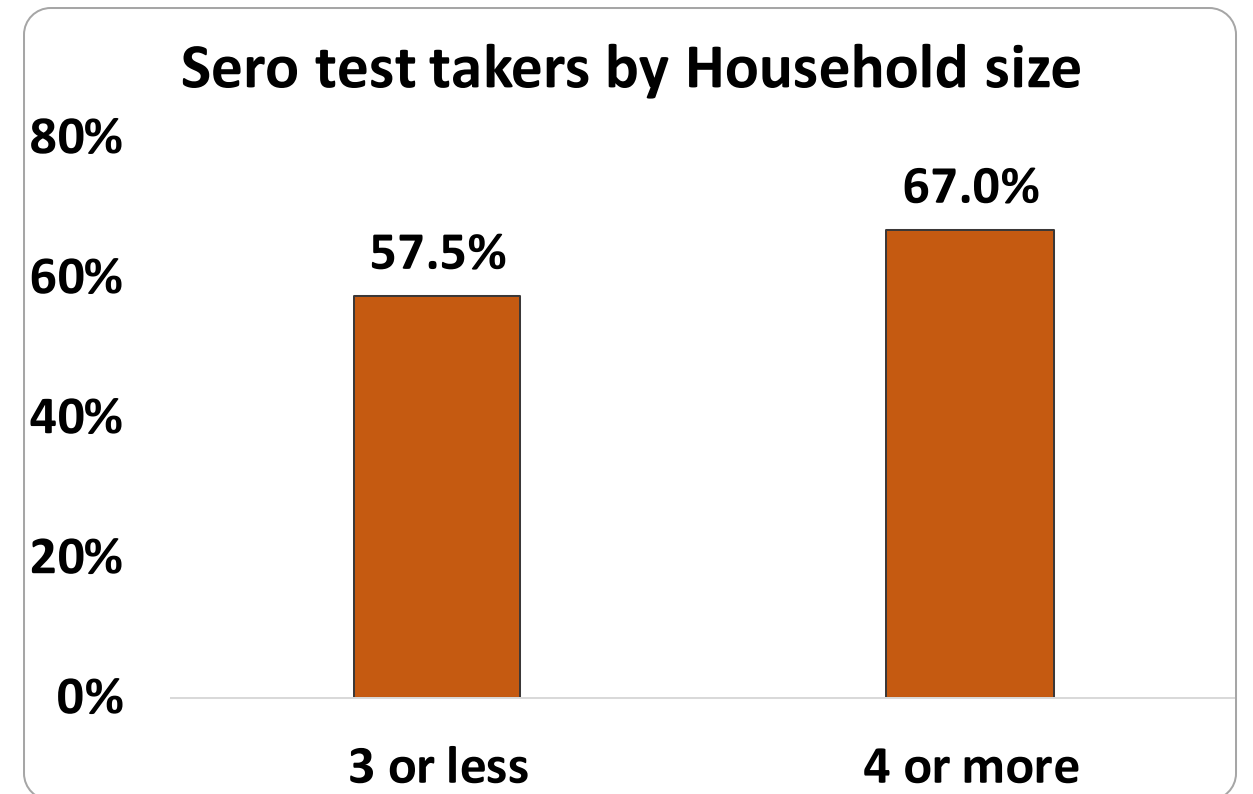
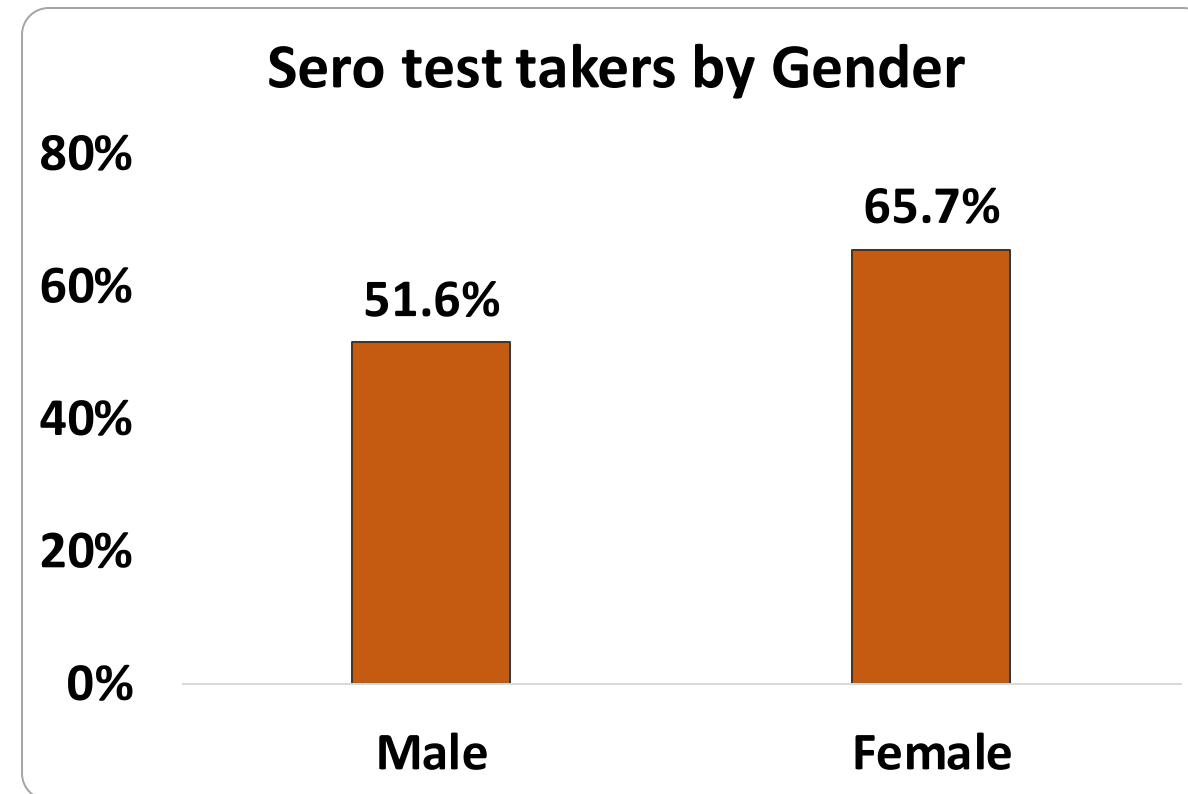
- Over the period of our study there has been considerable evolution in the spread of the contagion, access to testing (particularly with the availability of home tests), and attitudes towards testing. As the pandemic evolved, there were also noteworthy shifts in perception around immunity, which in turn affects the analysis and interpretation of data collected in regards to perceptions one's likelihood of getting the contagion.
- From the start of data collection, we encountered obstacles to testing as certain socio-demographic groups appeared to be more reticent to take the dried blood spot test (DBS). Over the course of the pandemic, that reticence waned considerably as reflected in our increased ability to meet our testing targets. Nonetheless as we shall observe in the next section the reticence of certain groups to take the DBS test modified the socio-demographic characteristics of our sero sample

Results from the RISC-Montréal project



WHO TOOK THE SERO TEST?

1451 respondents
(59%)

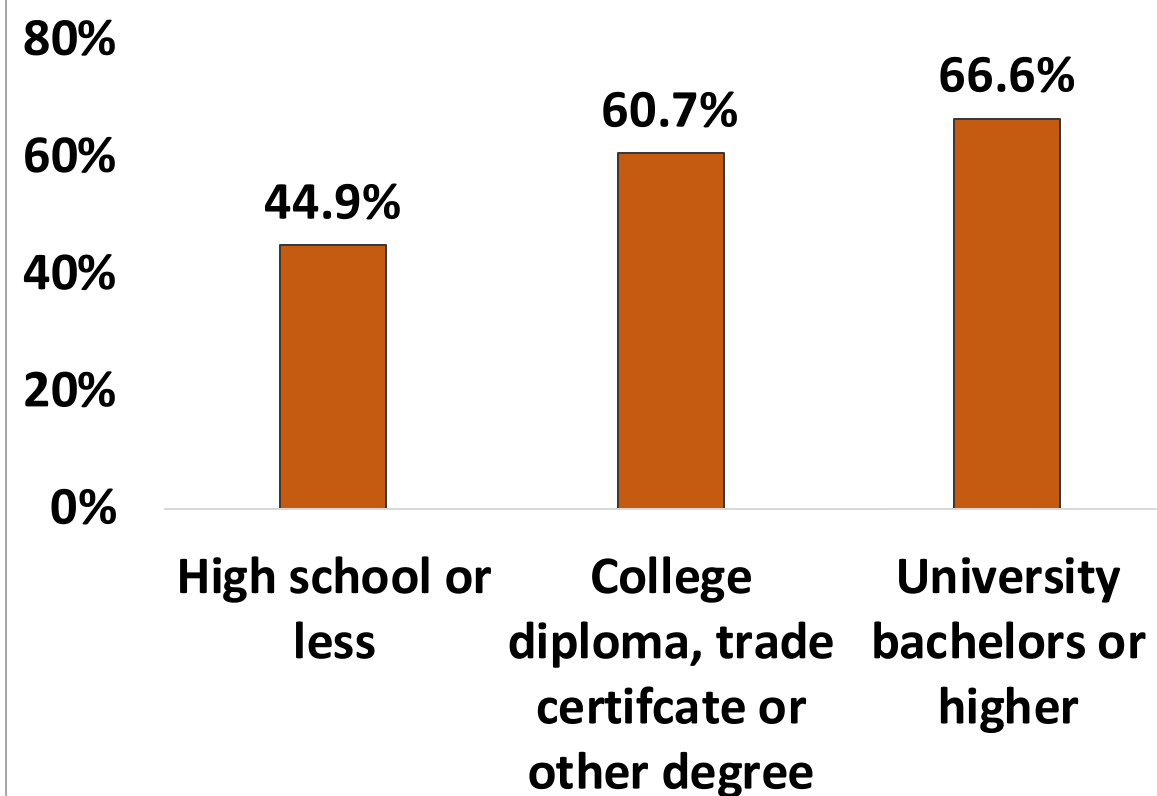


- Higher % of female respondents
- Respondents in larger households
- Respondents Age 35-64

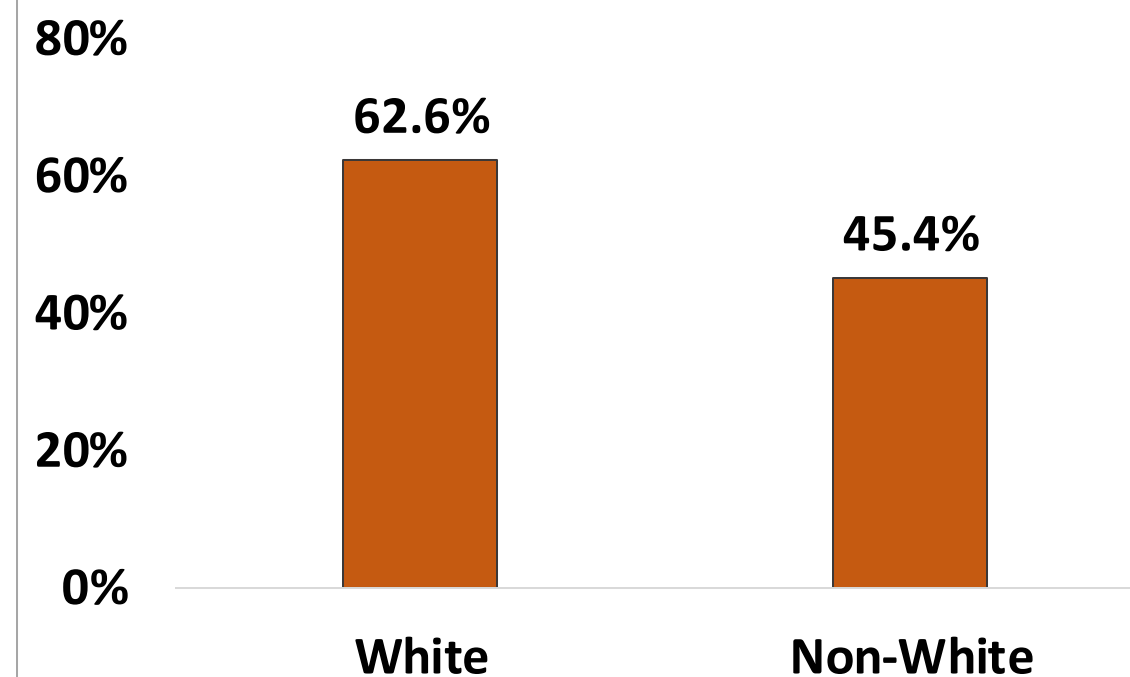
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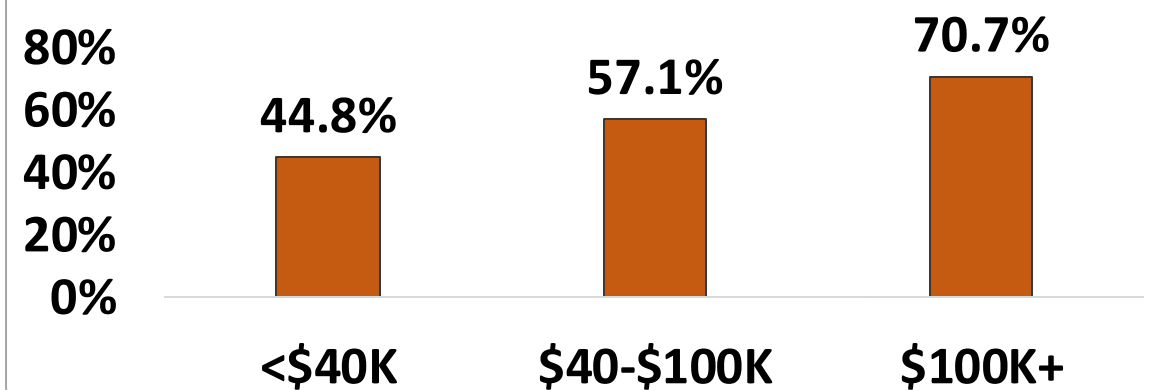
Sero test takers by Education level



Sero test takers by White vs Non-White



Sero test takers by Household income level



- Only 45% of the respondents with high school degree or less participated in the serological test
- Household income directly proportional to participation in the test
- More of White respondents than Non-White

Groups that had higher drop off rates following the survey....

Respondents who took the survey but did not volunteer for the DBS test were predominantly from the following groups

- ***men***
- ***youth (18-24)***
- ***above the age of 65***
- ***high school education or less,***
- ***identifying as visible minorities***
- ***in lower income households***

Looking at natural immunity by socio-demographic characteristics



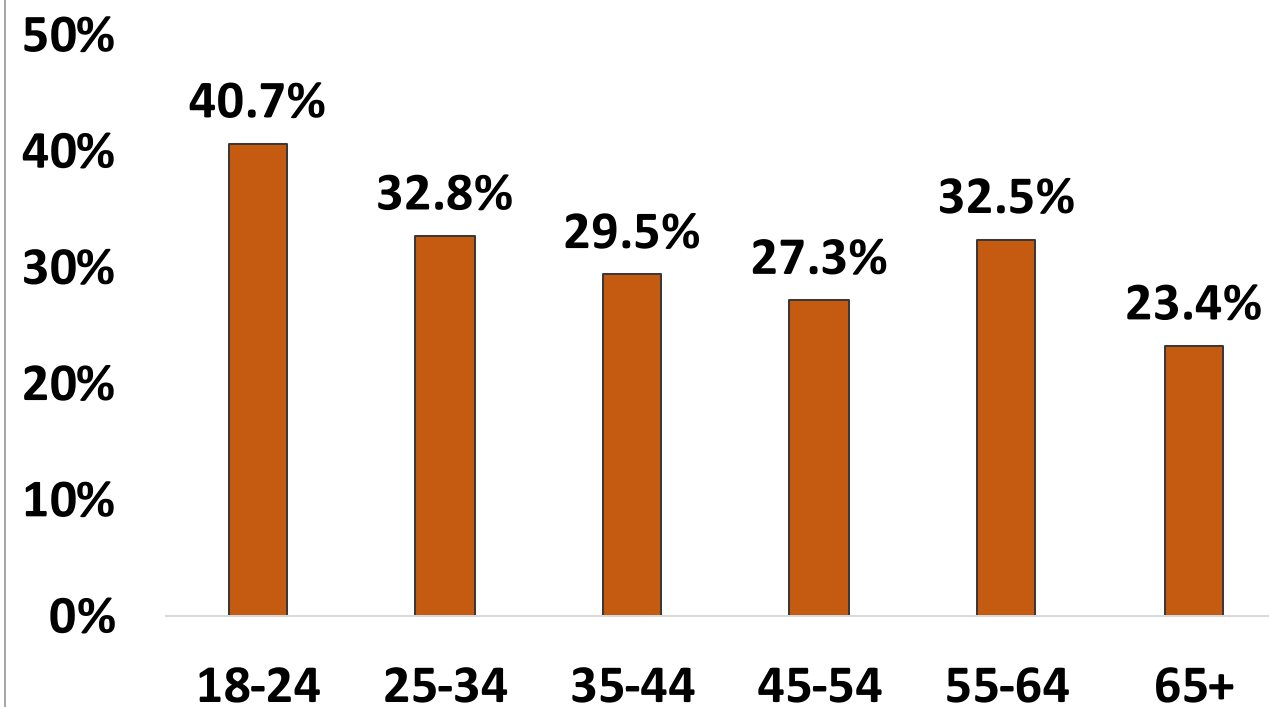
Social Determinants of Health

Social determinants of health refer to a specific group of social and economic factors within the broader determinants of health. These relate to an individual's place in society, such as income, education or employment. Experiences of discrimination, racism and historical trauma are important social determinants of health for certain groups such as Indigenous Peoples, LGBTQ and Black Canadians.

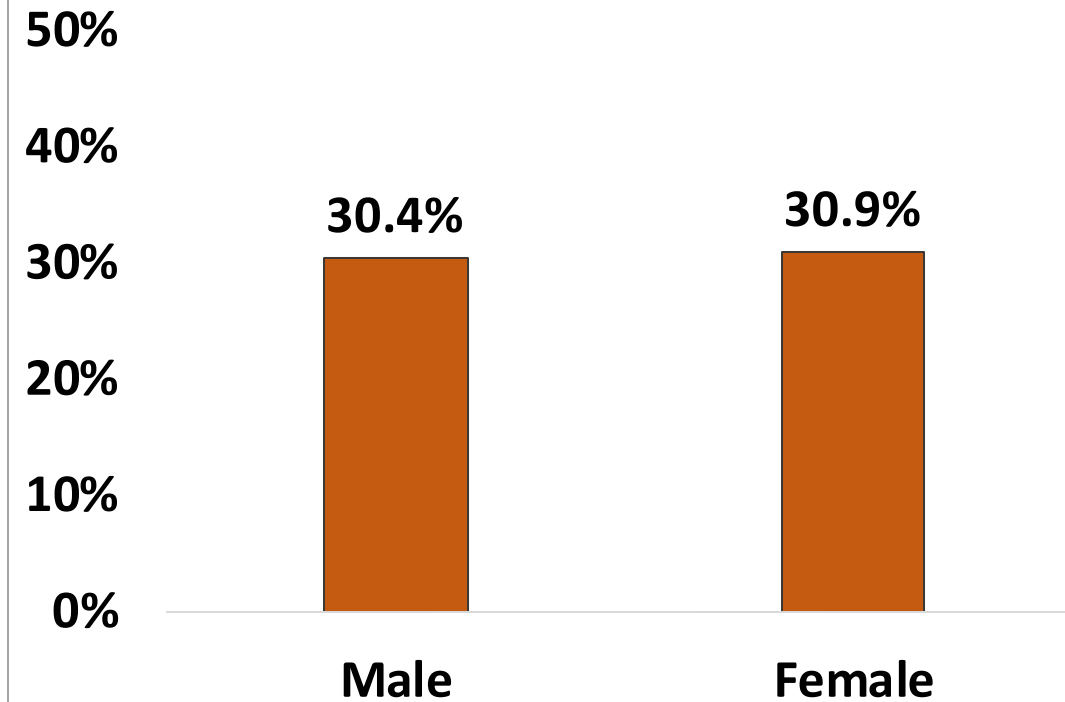
<https://www.canada.ca/en/public-health/services/health-promotion/population-health/what-determines-health.html>

Younger cohorts (18-24) and respondents from a larger household showed higher seroprevalence

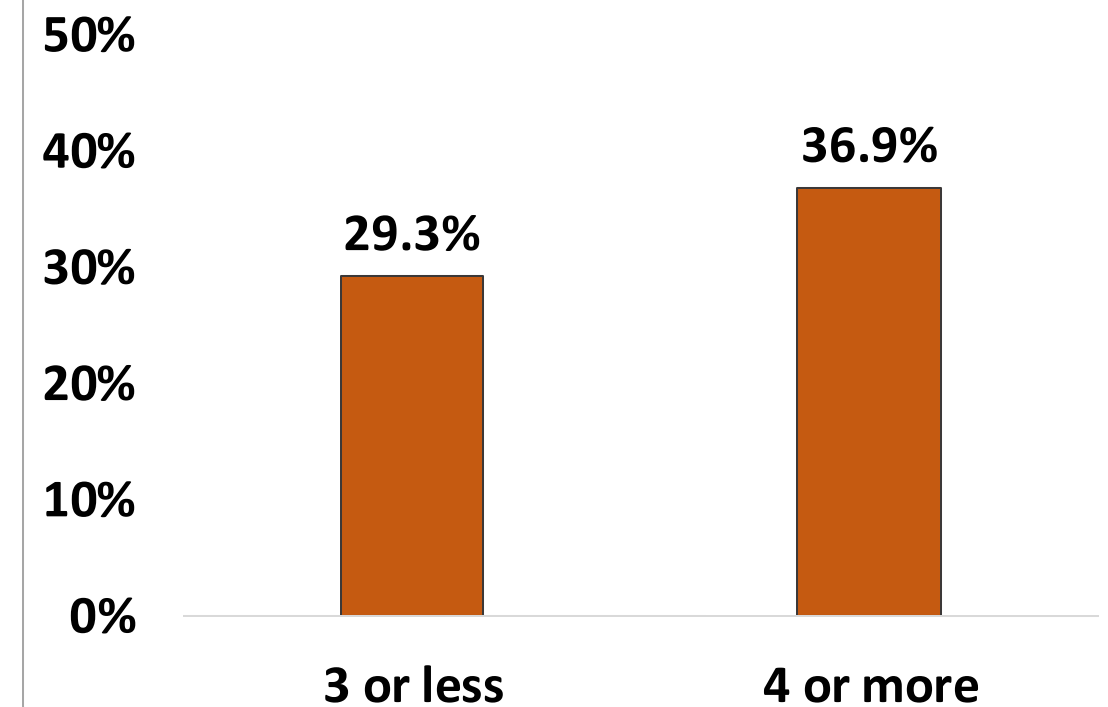
Natural immunity by Age



Natural immunity by Gender

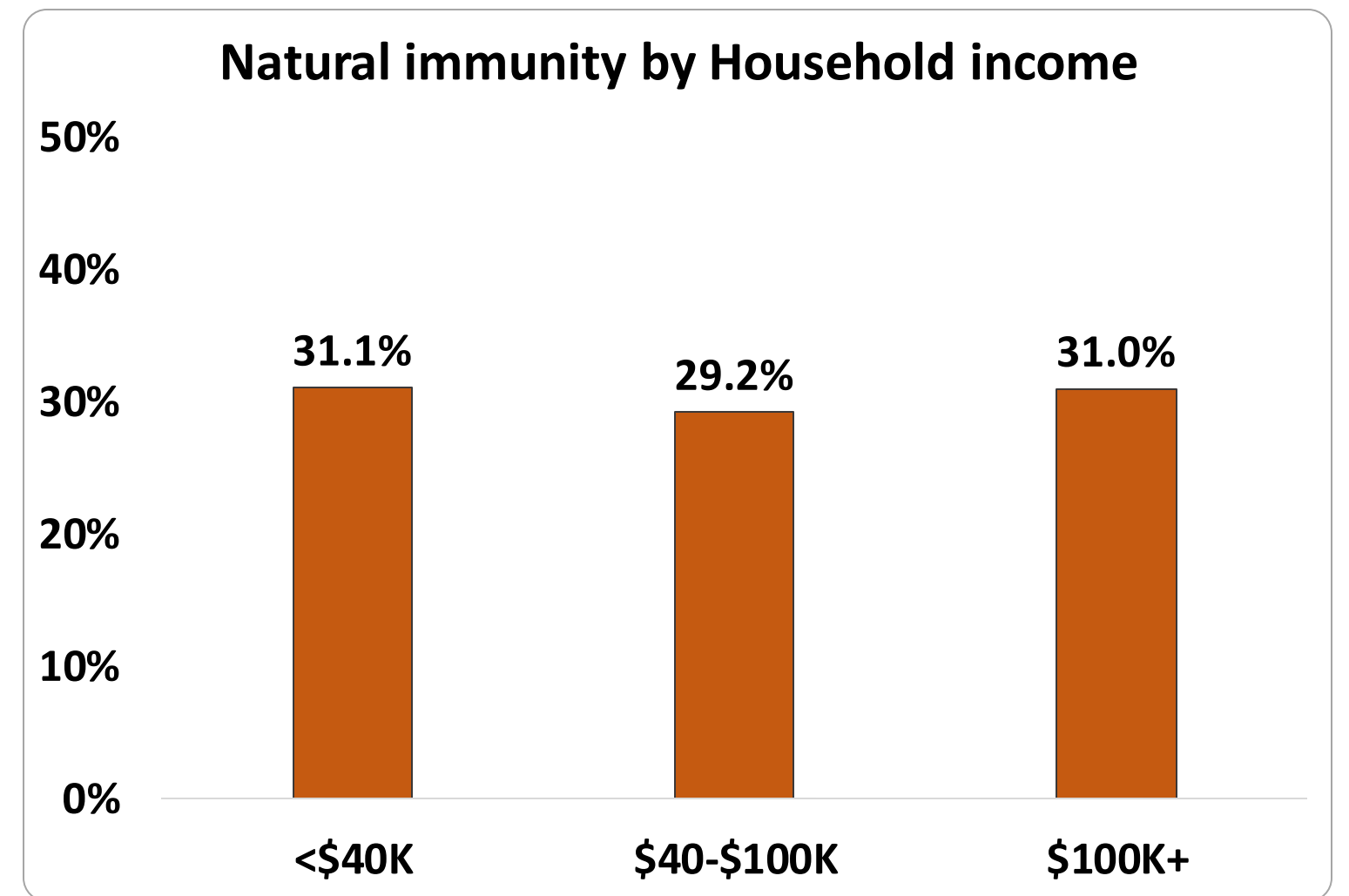
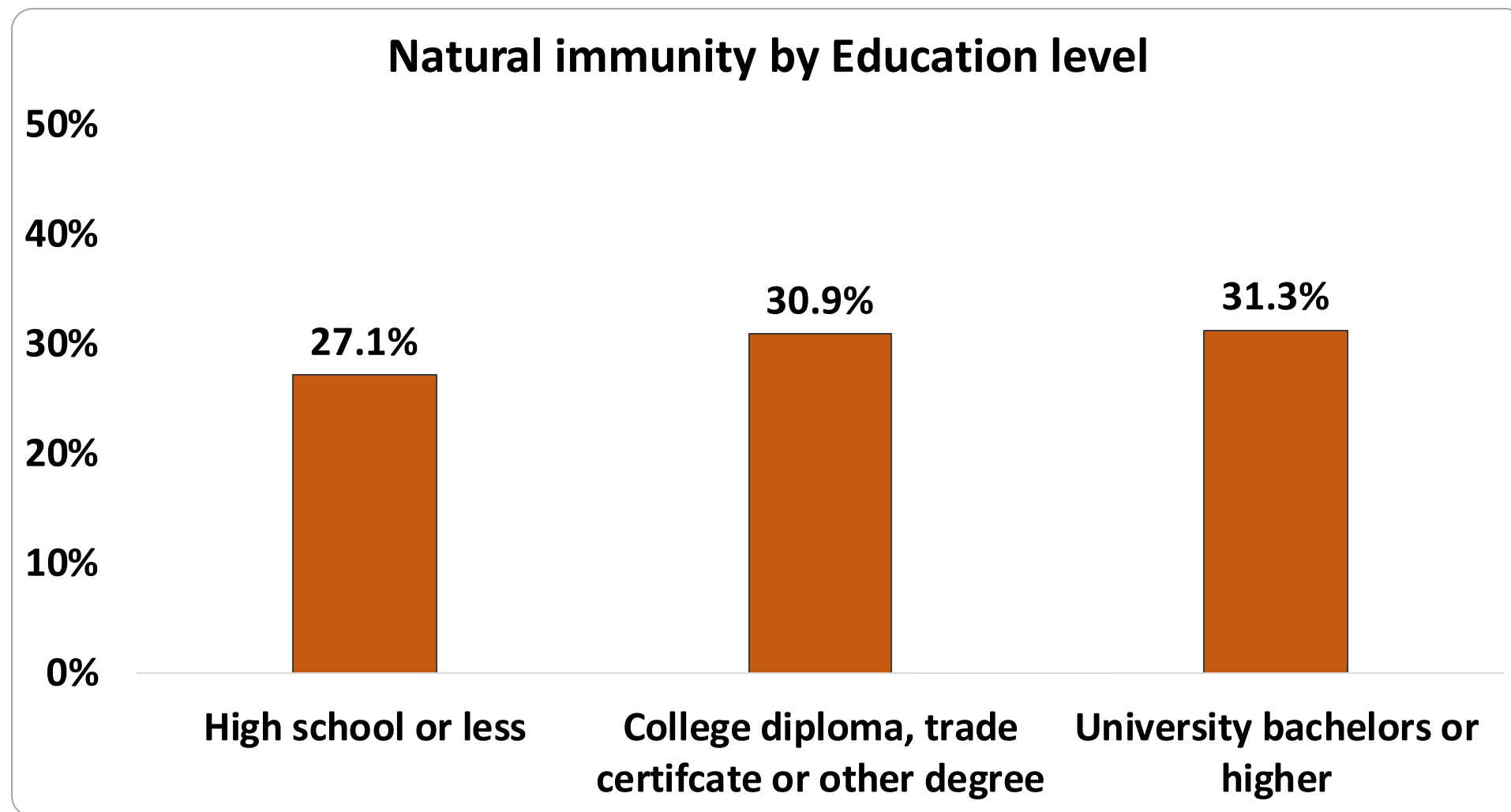


Natural immunity by Household size



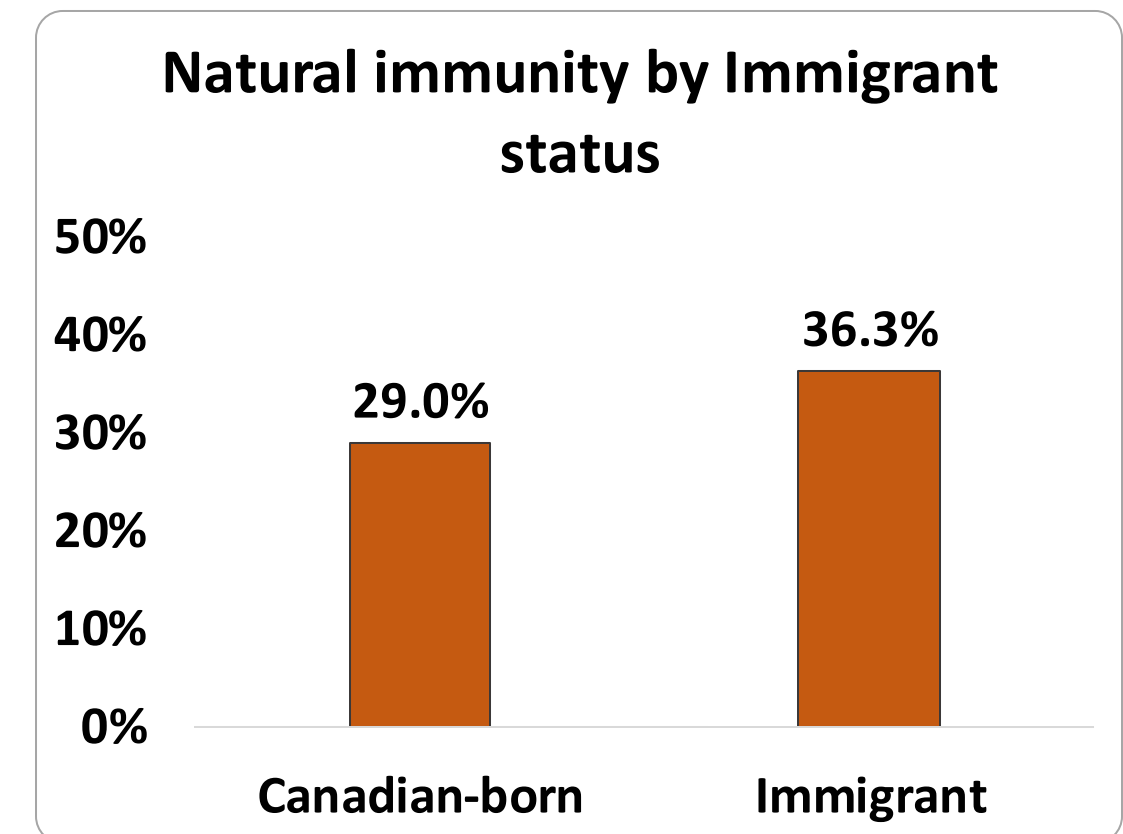
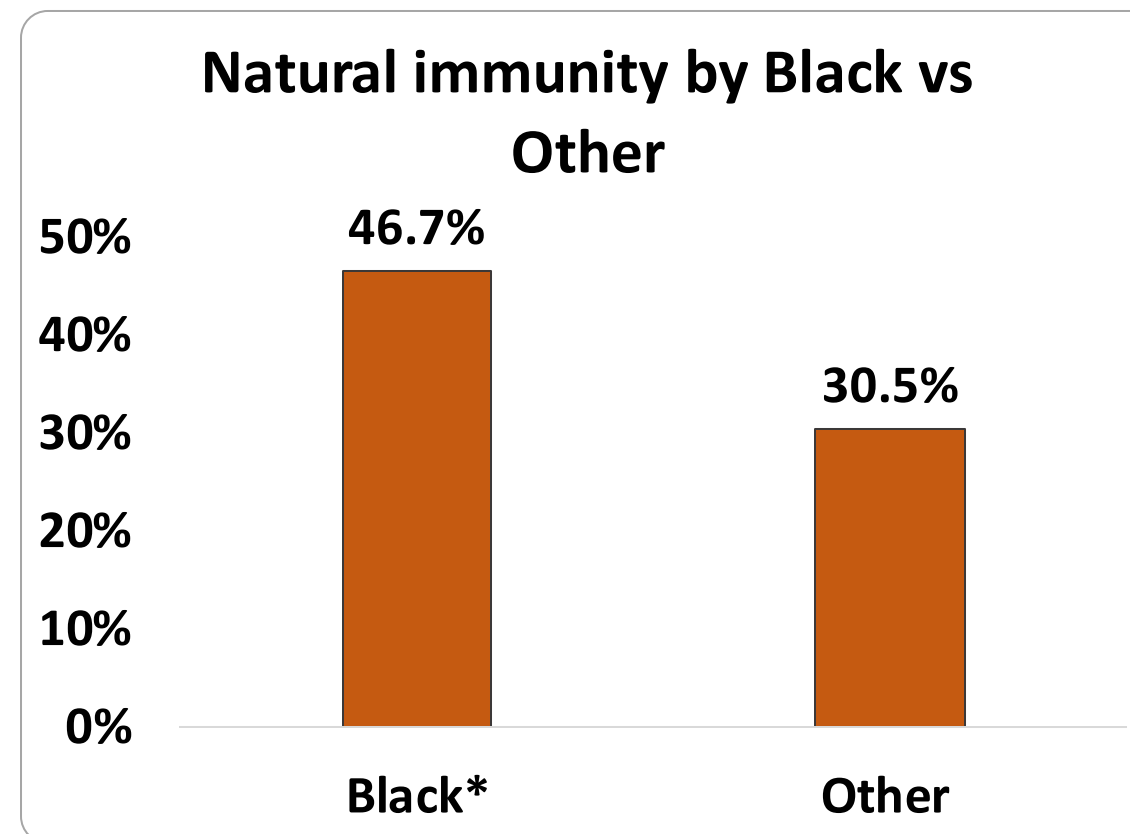
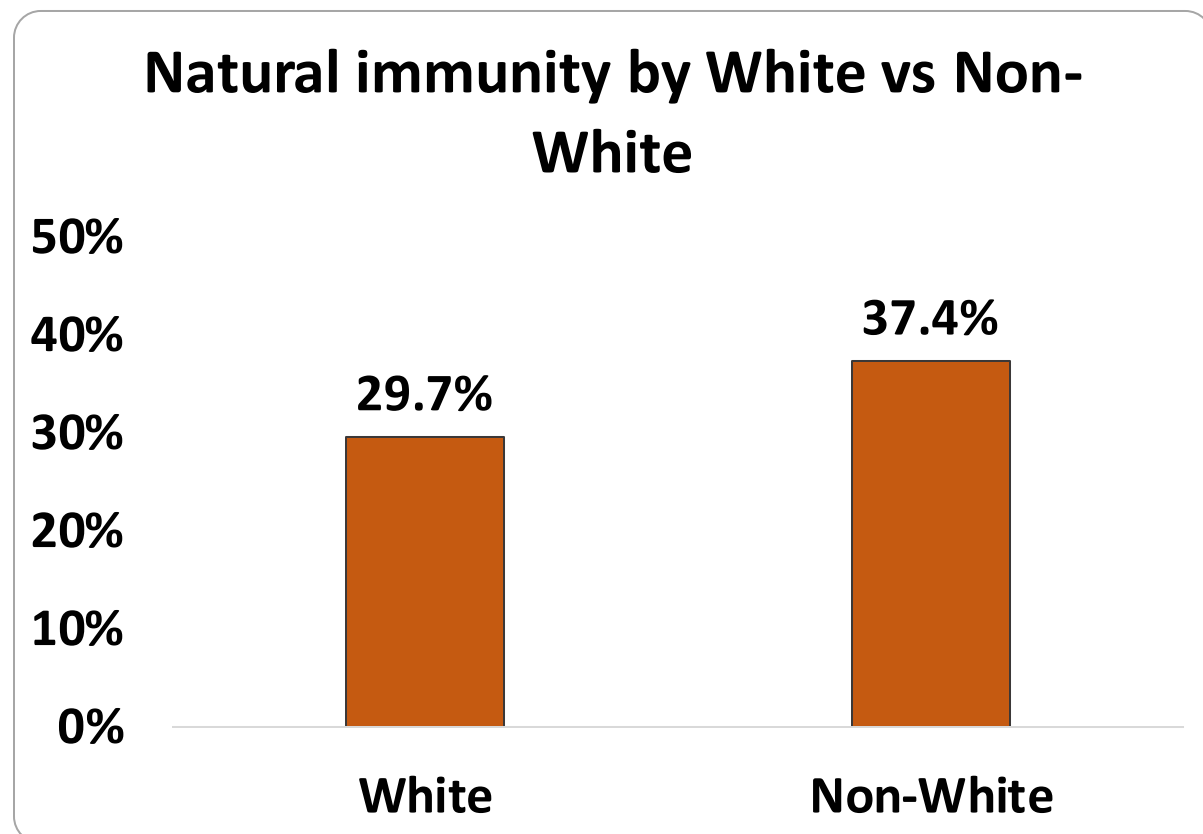
Note: The False Discovery Rate (FDR) cut-off used for natural immunity (seroprevalence) was 10%.

Differences in levels of education and household income were not so much of a factor for seroprevalence



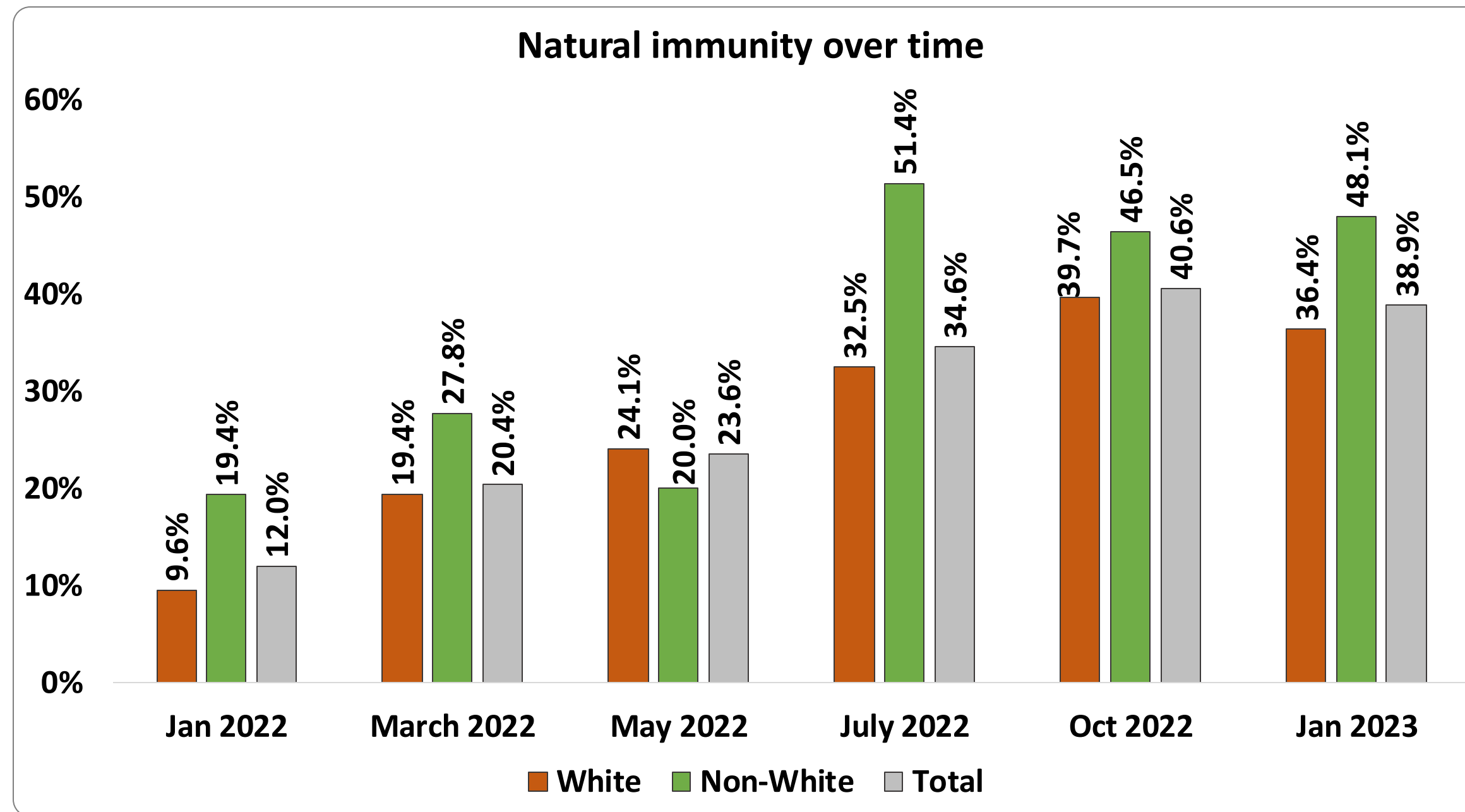
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Non-White respondents and immigrants showed markedly higher seroprevalence



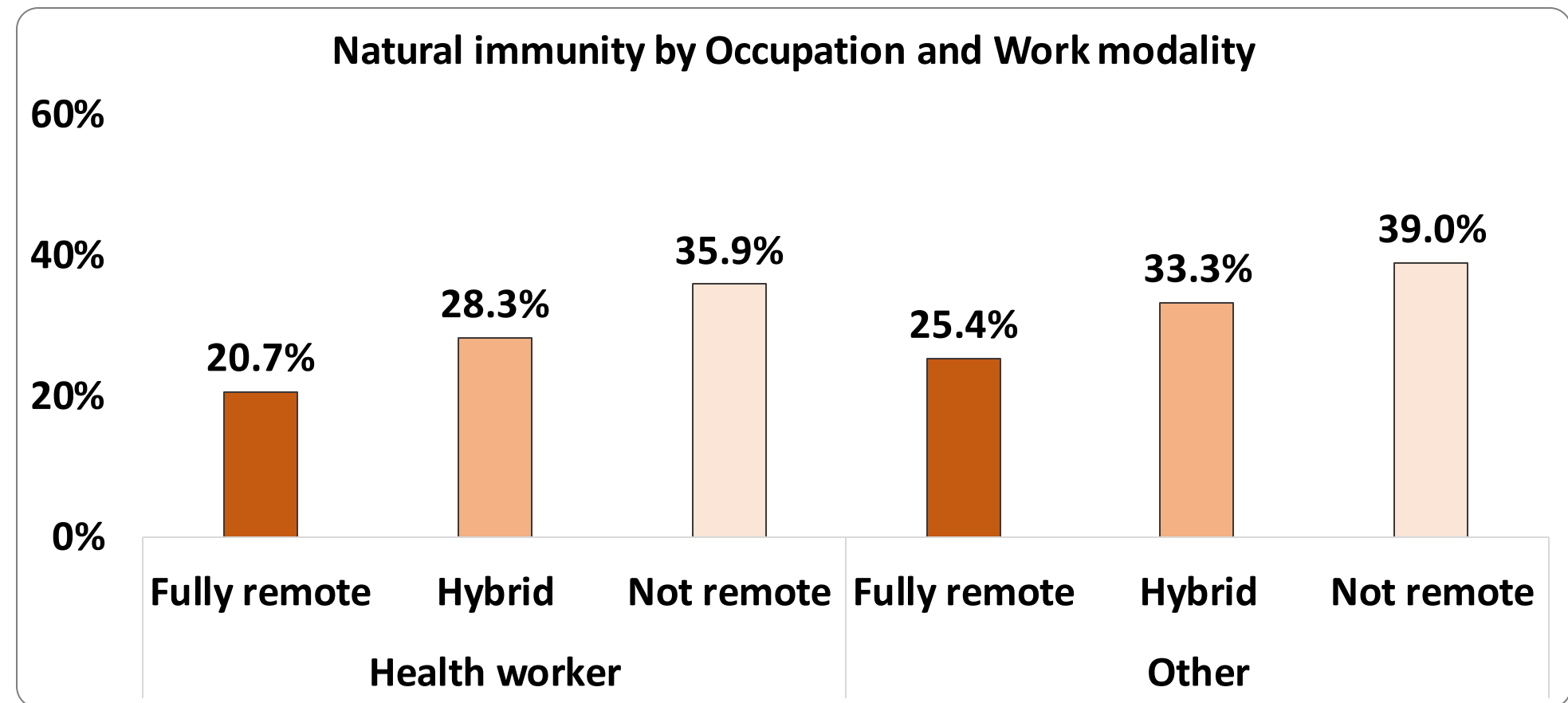
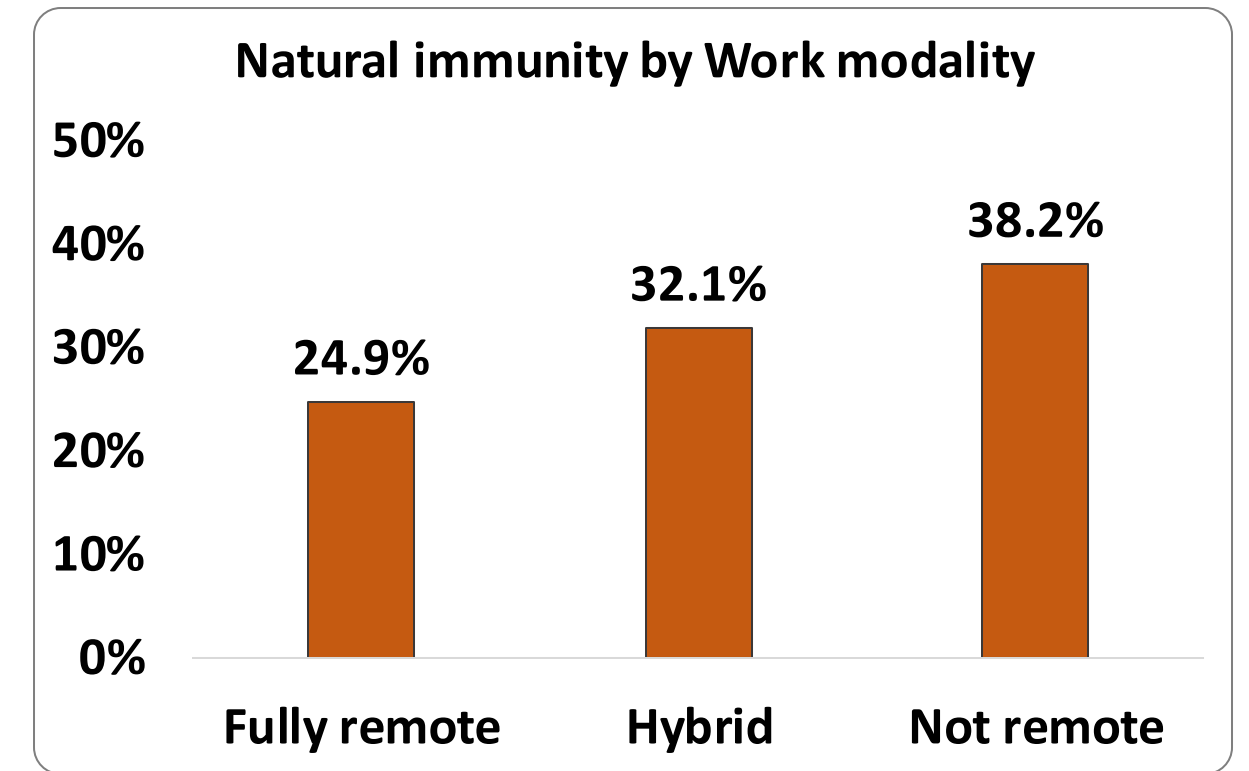
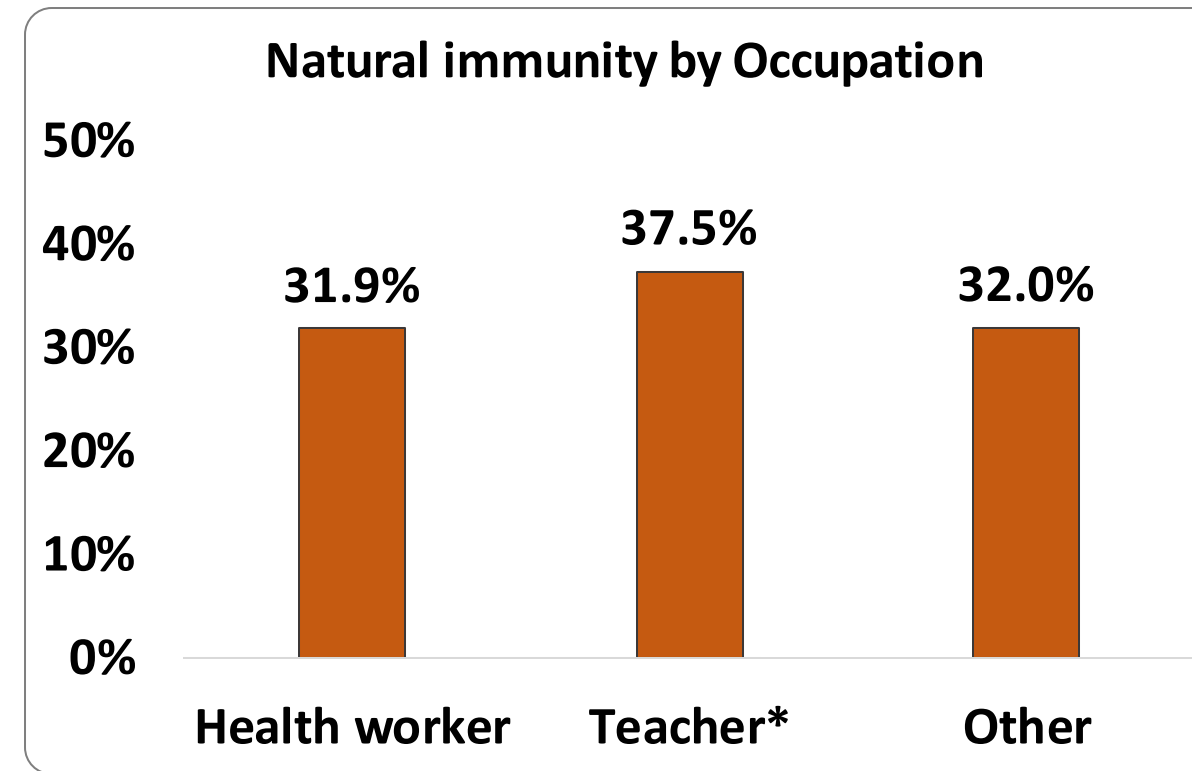
** Small sample size for the group*

Non-White (racialized) respondents consistently showed higher prevalence over timeline (as determined by results from batches analyzed)



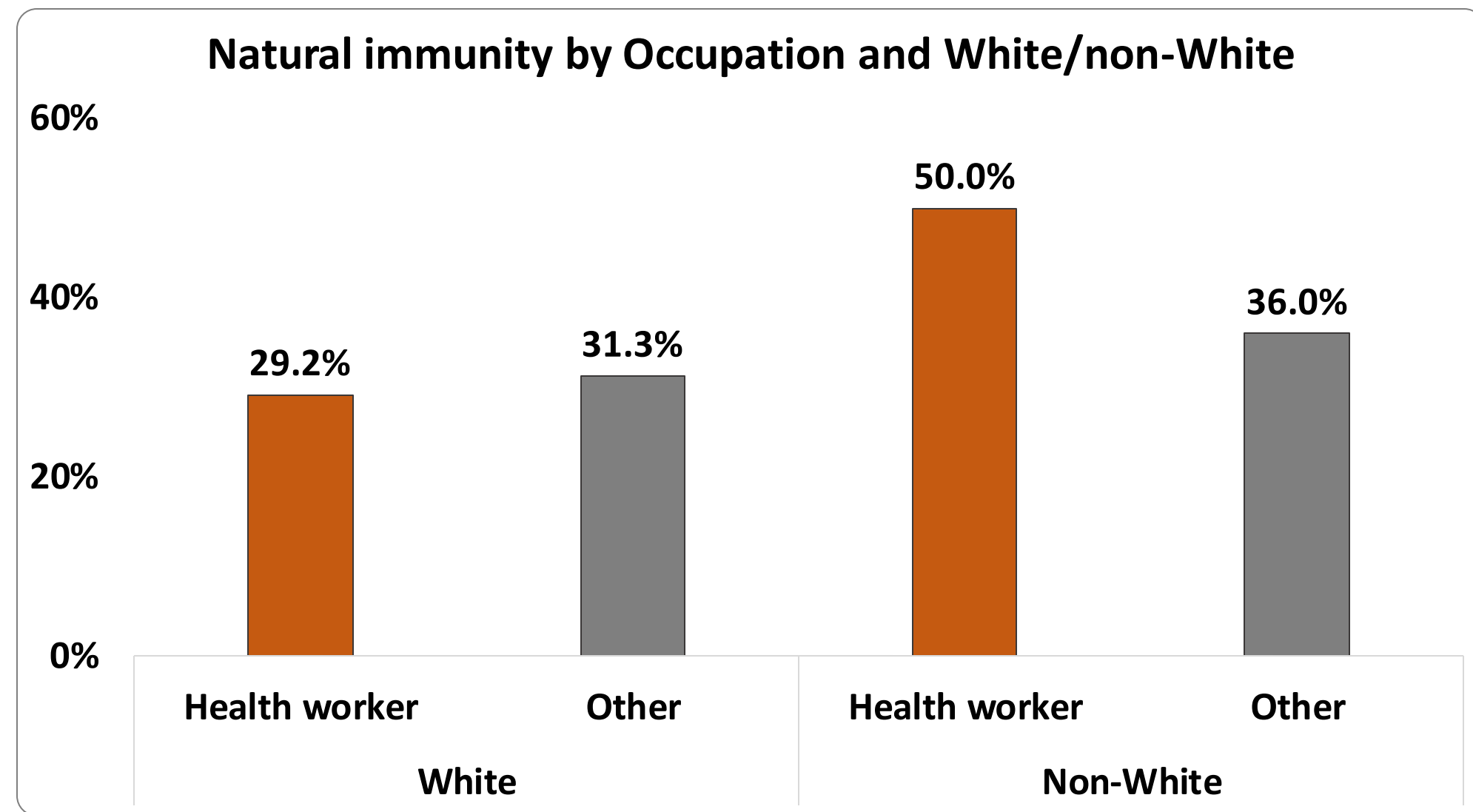
Respondents working remotely showed lower seroprevalence

Health workers showed lower seroprevalence in all three work contexts compared to other occupations but (see next slide)



* Small sample size for the group

**Non-White
(racialized) health
workers showed
much higher
seroprevalence
compared to White
health workers**



Next steps with RISC

- Final observations require further testing with additional analysis of the data and a focus on the extent to which contextual neighbourhood and workplace characteristics played a role in the higher vulnerability to COVID-19 in particular amongst visible minority/racialized groups surveyed. Also we'll look more closely at intersectionality with a view to establishing which social characteristics most 'determined' higher rates of prevalence across the identity-based groups sample.
- We will also control for pandemic waves/phases, since our data was collected at different intervals over the course of the contagion and its progression as well as varying periods in the rollout of the vaccine
- Results of the qualitative data will help provide additional insights into the role of neighborhood and workplace characteristics

Acknowledgments

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