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Estimating Excess Mortality During the Covid-19 pandemic in the largest township in Gauteng, South Africa: Results from a Health and Demographic Surveillance System

Portia C. Mutevedzi (MSc; PhD)
Senior Epidemiologist – WITS-VIDA

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PRESENTATION OUTLINE

Improving Knowledge

CHAMPS addresses an important knowledge gap by producing high-quality data on stillbirths and deaths in children under age 5 in Sub-Saharan Africa and South Asia by using several different sources of information to determine the cause of death.

[READ MORE](#)

- Background
- Methods
- Results
- Discussion



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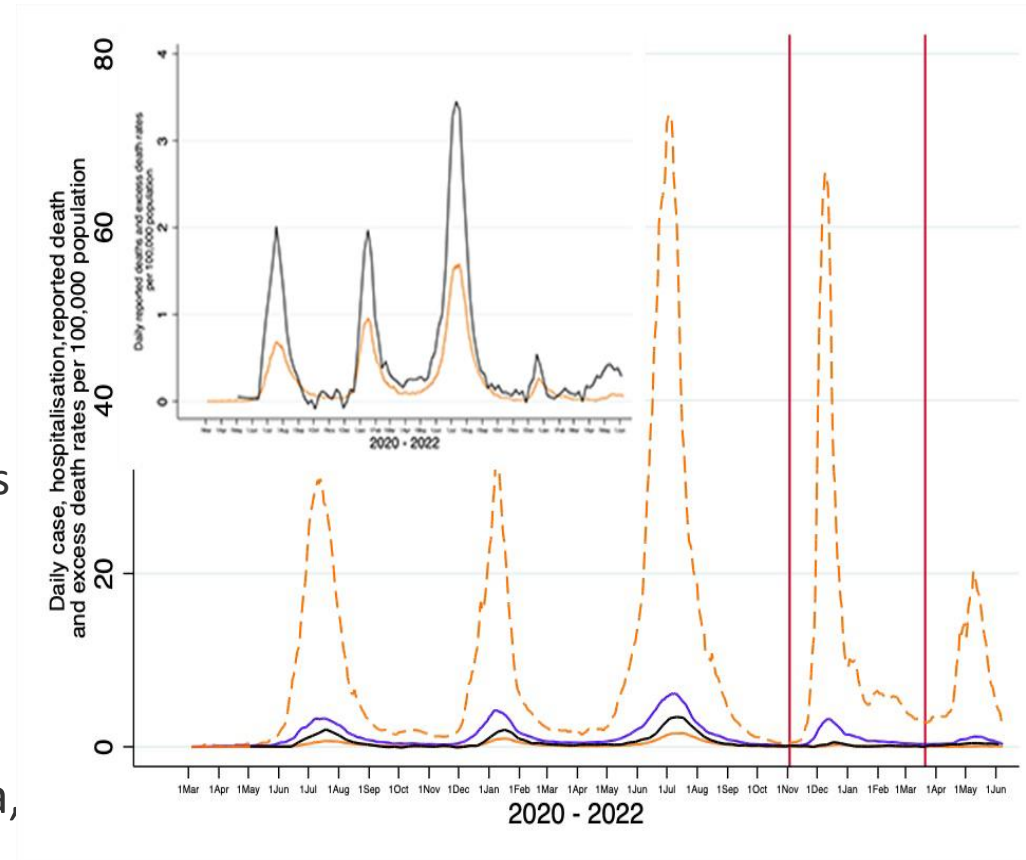
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BACKGROUND

- Since December 2019, the COVID-19 pandemic has caused varying but devastating levels of mortality.
- South Africa has experienced four waves of SARS-CoV-2 transmission
 - ▣ with the second, third, and fourth waves being driven by the Beta, Delta, and Omicron variants, respectively.
- Like many African countries, excess mortality owing to COVID-19 is likely underestimated
 - ▣ mortality estimates are largely based on health facility death counts excluding community deaths.
 - ▣ Diagnostic challenges

We utilised data from a health and demographic surveillance system (SaT-HDSS), in Soweto the largest township in South Africa, to estimate excess mortality during the Covid-19 pandemic.



STUDY SETTING

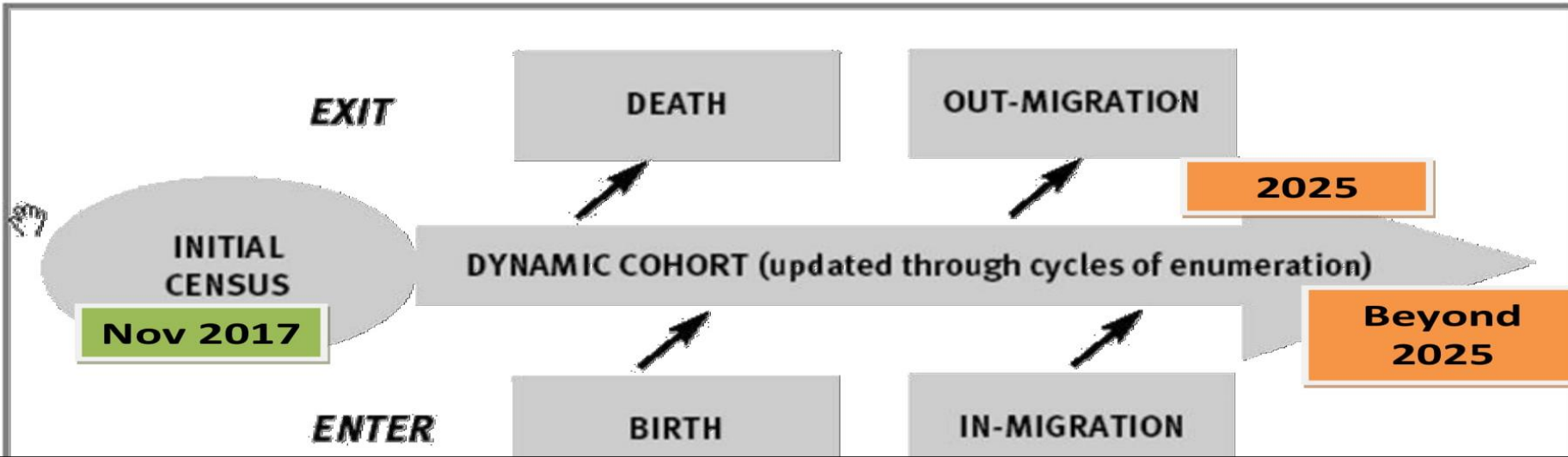
Gauteng

- Gauteng, the “economic hub” and one of nine South African provinces
- Gauteng constitutes 1.5% of South Africa’s landmass of 18 178 (km²), but 26% (15.9/59.6 million) of its population.
- The overall population density (people per km²) in Gauteng is 737 - range <10 to 63 211 by municipality.
- The City of Johannesburg (CoJ) district (population density 3400 people/km²) ranks among the top-10 most densely populated cities globally.
 - ▣ Soweto is in CoJ
- CHAMPS SA in Soweto – 1 of the 7 sites in Africa
 - ▣ SaT-HDSS



METHODS – DATA COLLECTION

5



	Baseline	R1	R2	R3	R4	R5	R6	Total households
2017	16,403							
2018	88,346	81,659						
2019	7,924	18,270	130,476					
2020				53,761	132,378			
2021						118,433	120,717	32 000

DATA ANALYSES

Objectives

- Quantify year specific mortality rates from 2018-2021
- Estimate annual age-specific mortality rates from 2018-2021
- Compare mortality rates pre- (2018 & 2019) and post Covid-19 era (2020 & 2021).

Study design

- Prospective cohort in a geographically defined area
 - ▣ health and demographic data collection

Data analyses

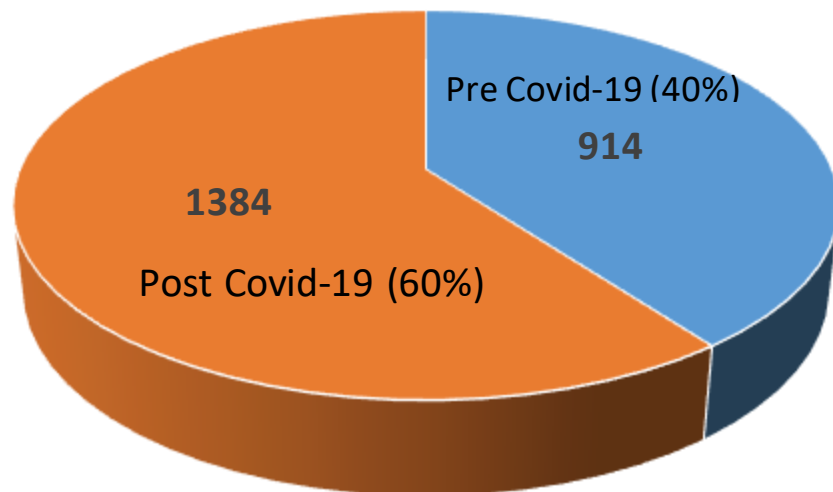
- Outcome – mortality
- Mortality rates computed per 1000 population
- Population denominators & death counts annualised to account for the twice a year data collection
- χ^2 to compare mortality rates pre- and post- Covid-19
- STATA software (Stata Statistical Software: College Station, TX: StataCorp LLC) was used for analyses

RESULTS

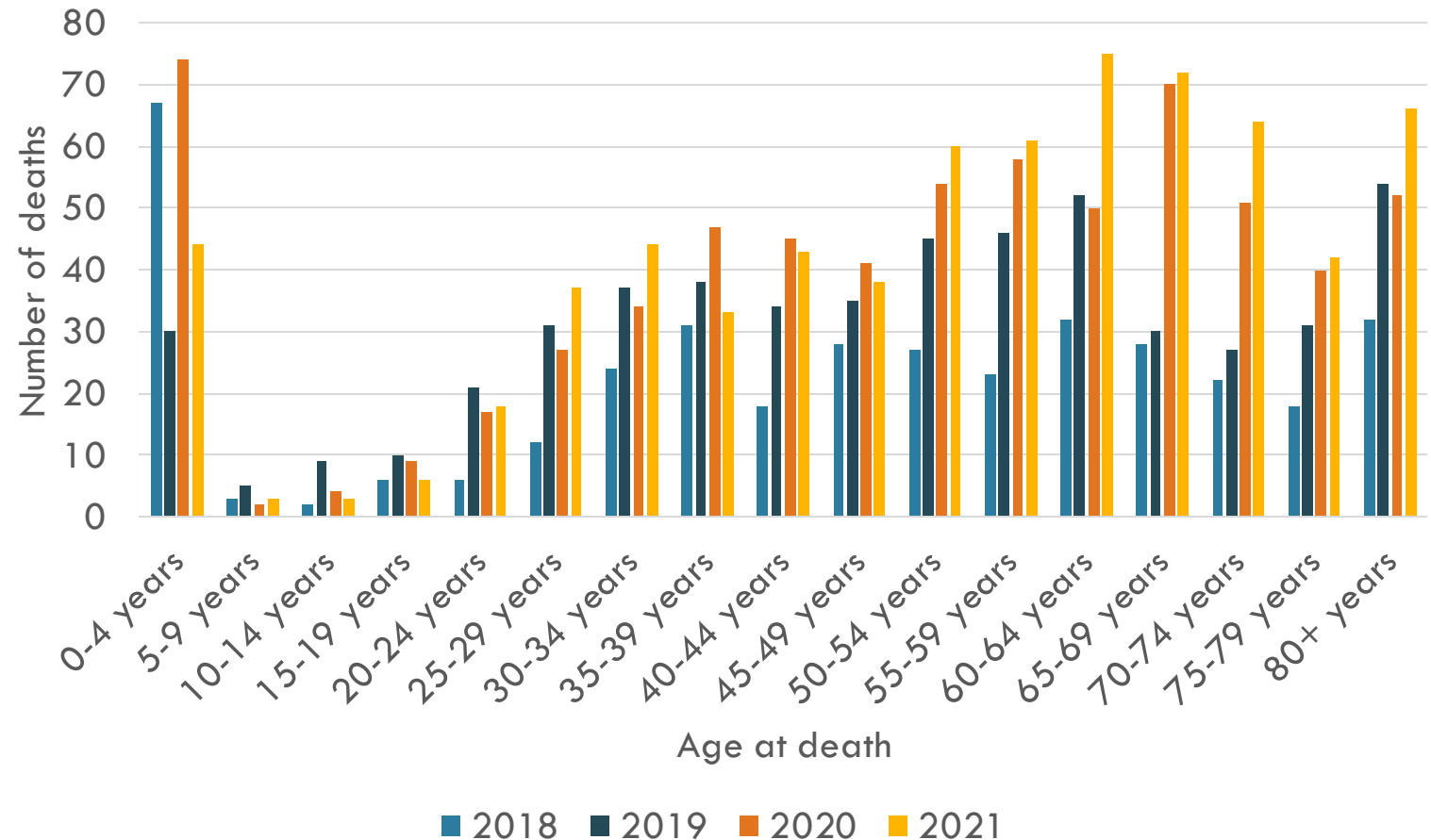
Total deaths

- 2298 deaths were recorded

Total number of deaths pre- and post-Covid-19

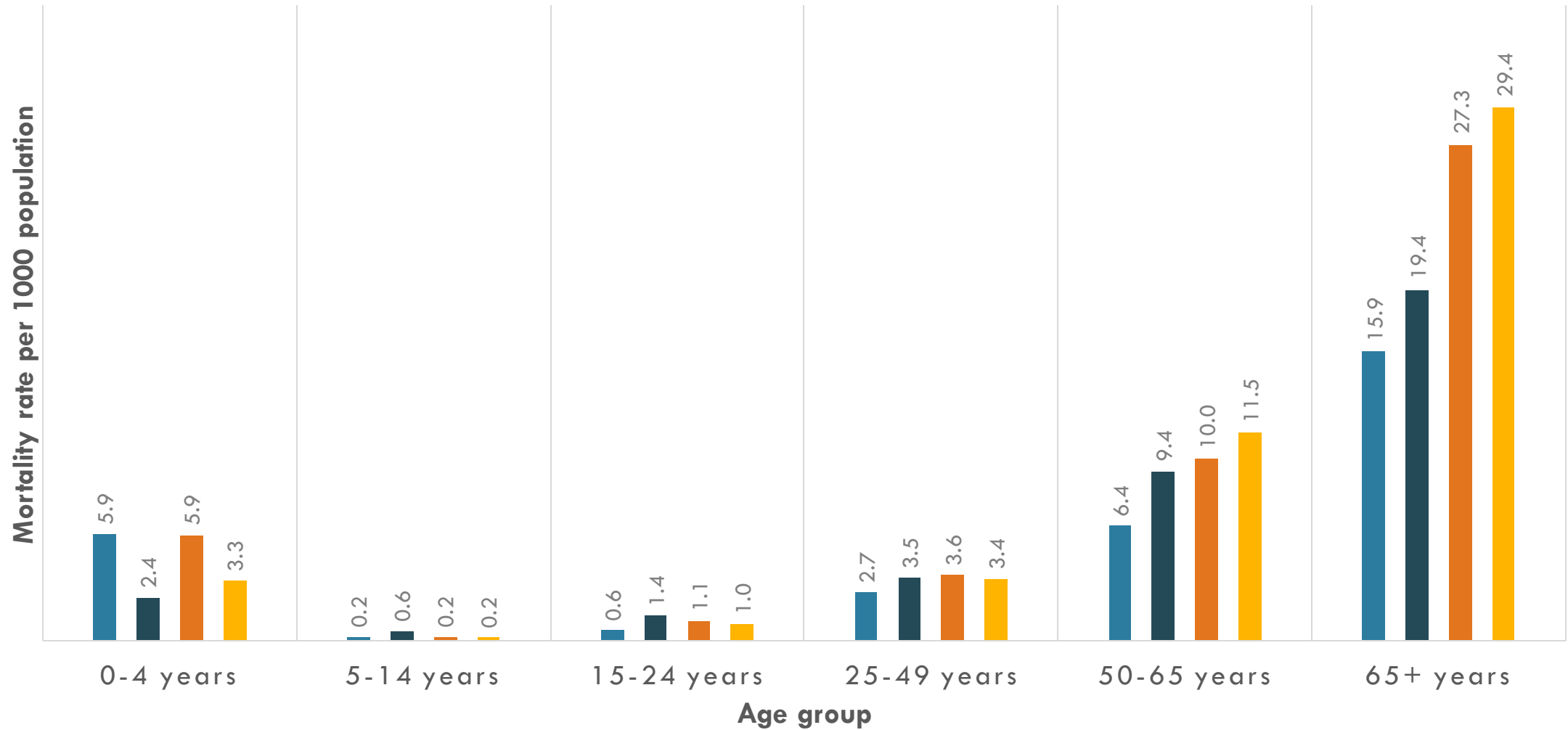


Number of deaths per year stratified by age group



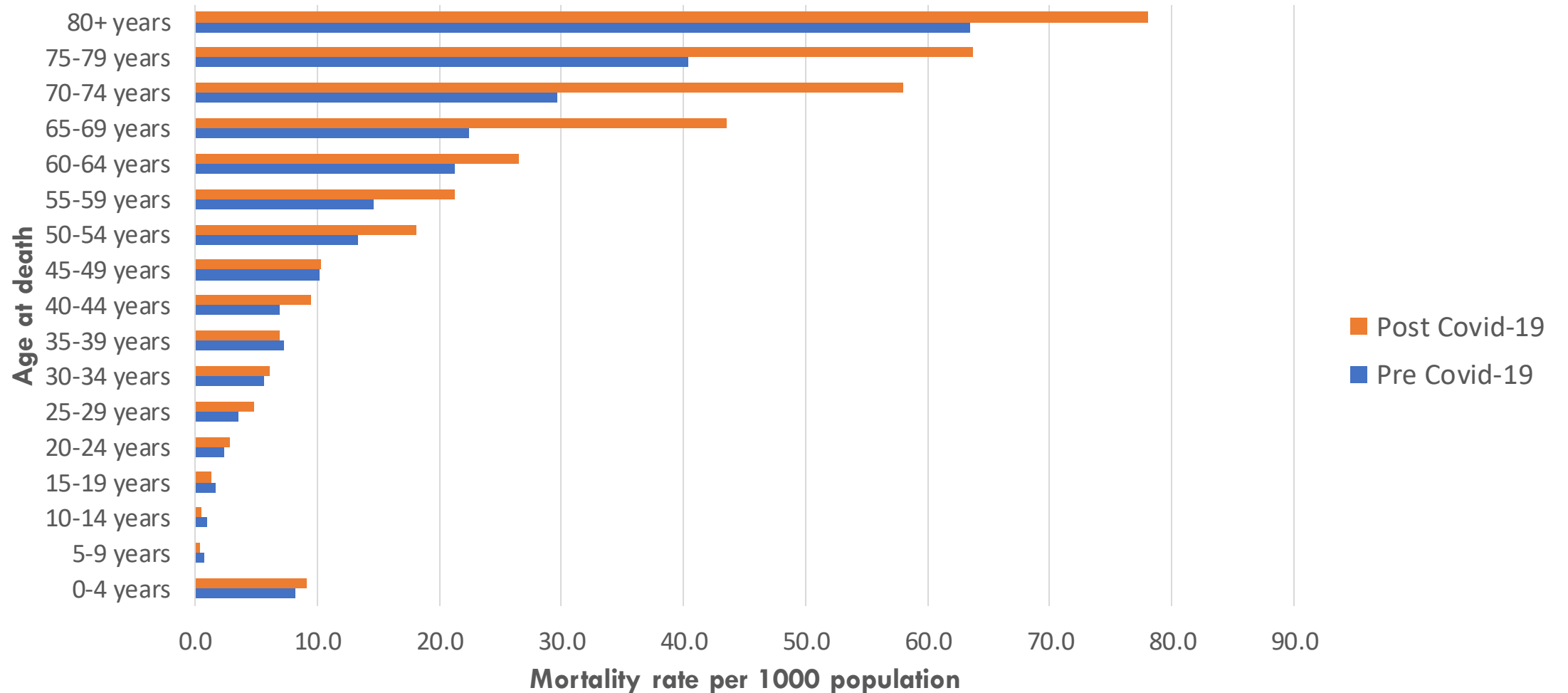
RESULTS

Annualised mortality rates by age category



RESULTS

Mortality rates per 1000 population pre- and post-Covid 19



DISCUSSION

- Overall, mortality rates increased from 3.4 in 2019 to 4.9 in 2021 (44% ↑)
- The greatest increase was in the >50 years and 65+ years age groups
 - 6.4 to 11.5
 - 15.9 to 29.4
- There was notable increase in mortality in children aged <5years
- These findings are in alignment with national excess mortality reports (SA-MRC) and with data on decoupling of cases from Covid-19 disease severity
- Estimates of excess mortality are significantly higher than reported Covid-19 mortality
 - Limitations in attributing covid-19 to deaths during the pandemic
 - Restricted access to health care services and Covid-19 testing
- The impact of Covid-19 on mortality is under-estimated in resource poor settings
 - More-so in poor African townships where transmission rates may have been high but Covid-19 diagnostic capacity limited
- Mortality surveillance is generally suboptimal in resource limited settings.



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**THANK YOU!
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