

BACKGROUND AND POPULATION

Background:

- The infant mortality rate (IMR) is a key indicator of the overall health and access to care in a population.
- In 2020, the United States IMR was 5.4 per 1,000 live births. The city of Cleveland's IMR in 2021 was 10.5. Infant mortality within Cleveland is a public health issue of high concern.
- The most recent infant mortality brief the Cleveland Department of Public Health has published was in 2016, reporting on 2012-2015 data. Updated infant mortality statistics in Cleveland are necessary to allocate resources to the community.

Population: Mothers who gave birth in Cleveland from 2013-2022, and infants who were born and/or passed away in Cleveland from 2013-2022.

METHODS

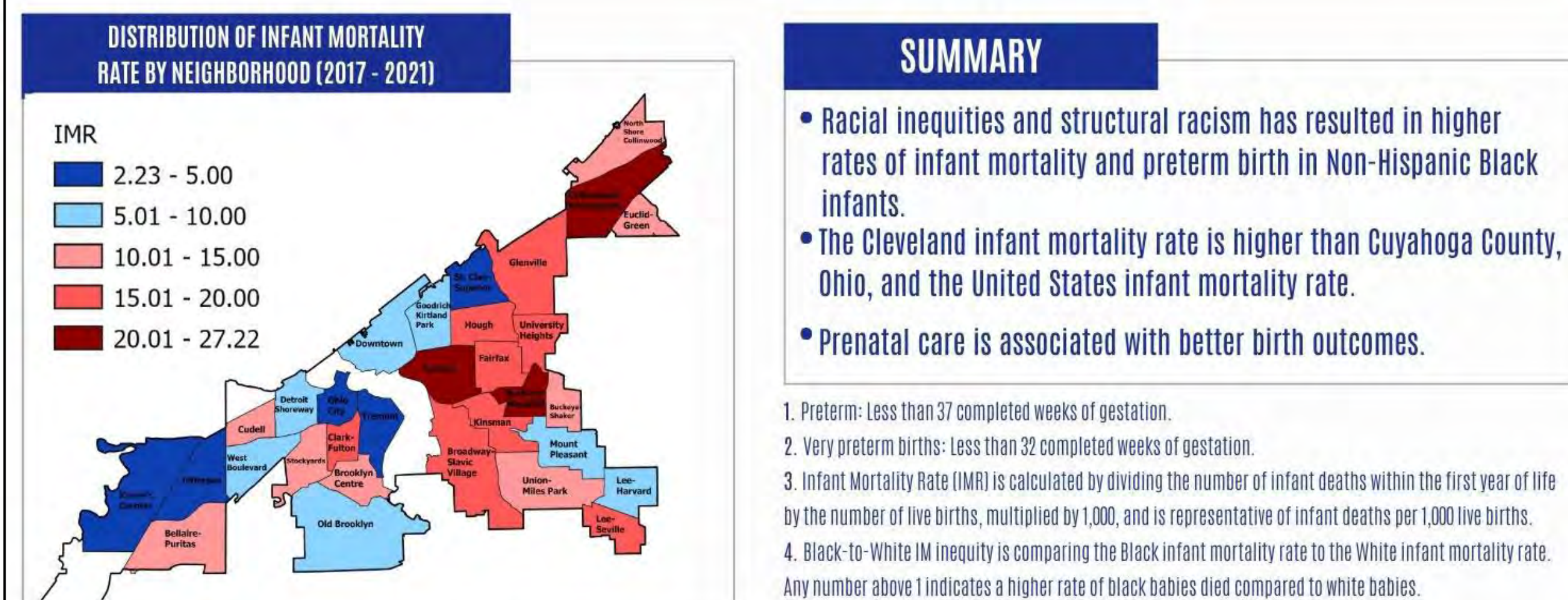
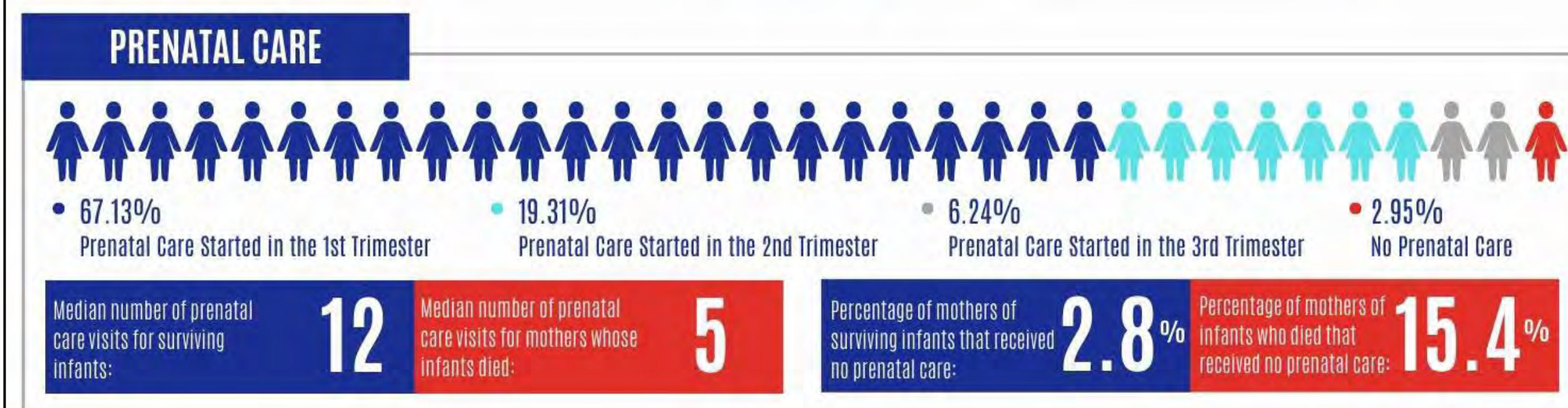
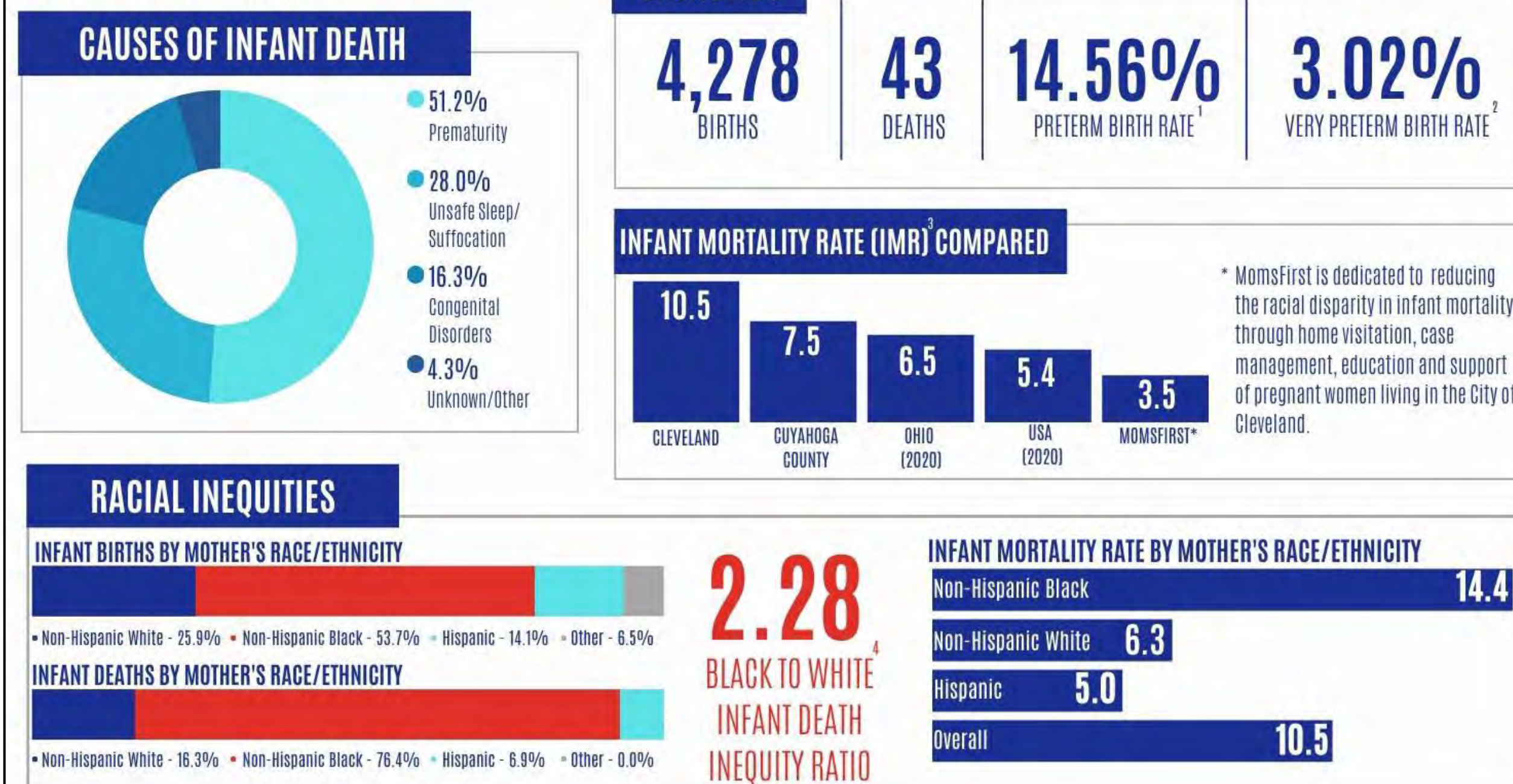
Methods:

- Yearly birth and death certificate data were compiled and filtered from the Ohio Department of Health and brought into RStudio.
- Variables of interest were selected and/or created, and the datasets were cleaned.
- Birth and death certificate data were linked using birth certificate number and date of birth in order to create one dataset that includes every birth in Cleveland and whether the infant survived past one year of birth.
- Geocoded locations of residence were utilized to create spatial summaries of infant mortality and health by neighborhoods.

DELIVERABLES

- The 2021 Infant Mortality and Birth Outcomes infographic (Figure 1).
- The 2017-2021 CDPH Infant Mortality Brief, scheduled to be published by the end of 2022, with spatial summaries of infant mortality and birth outcomes (Example in Figure 2).
- RStudio scripts for cleaning and linking birth and death data. (Example in Figure 3).

INFANT MORTALITY AND BIRTH OUTCOMES IN CLEVELAND, OH 2021



Source: Ohio Department of Health - Bureau of Vital Statistics; 2020 & 2021 data are preliminary. The Department disclaims responsibility for any analyses, interpretations, or conclusions.

Figure 1: 2021 Infant Mortality and Birth Outcomes Infographic.

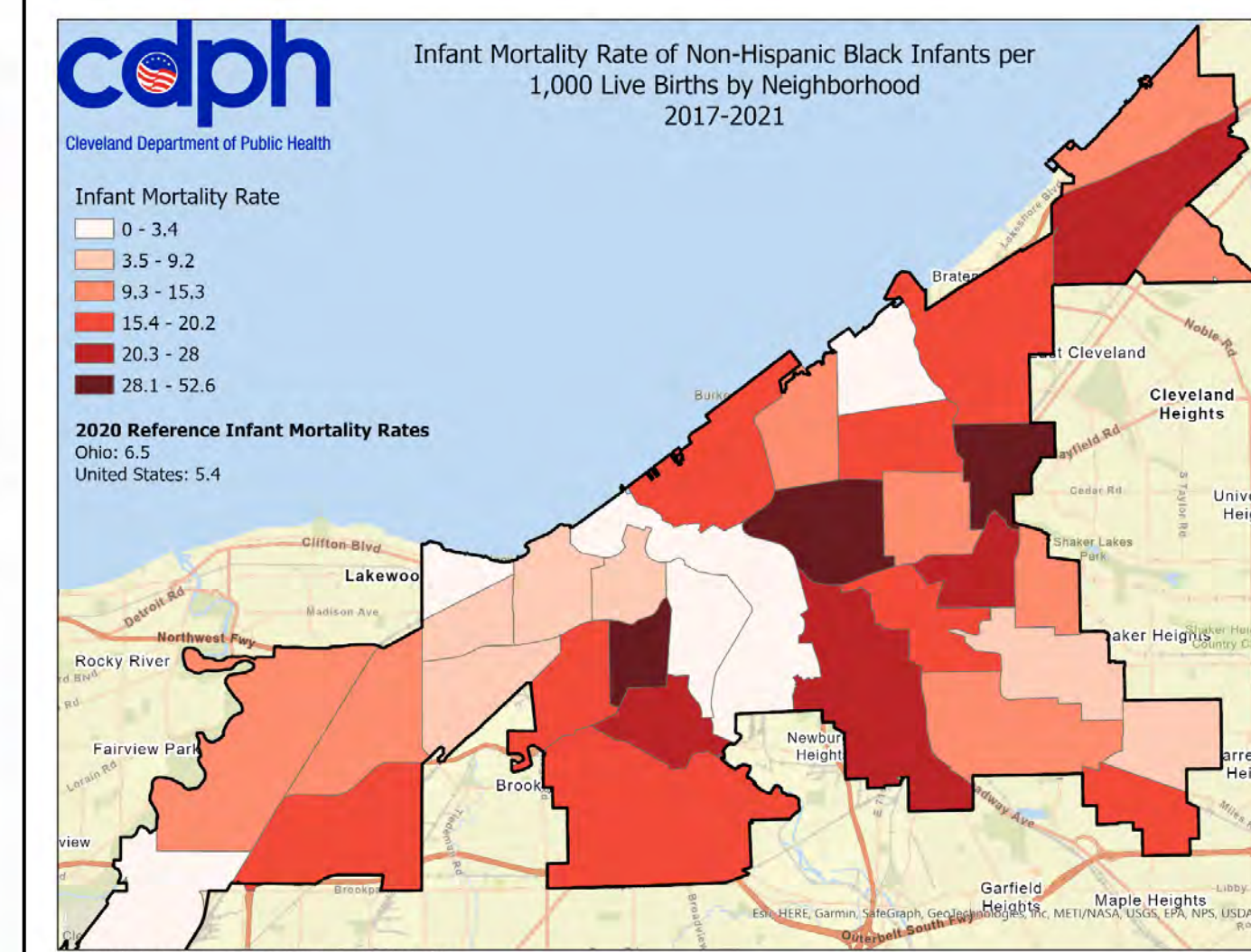
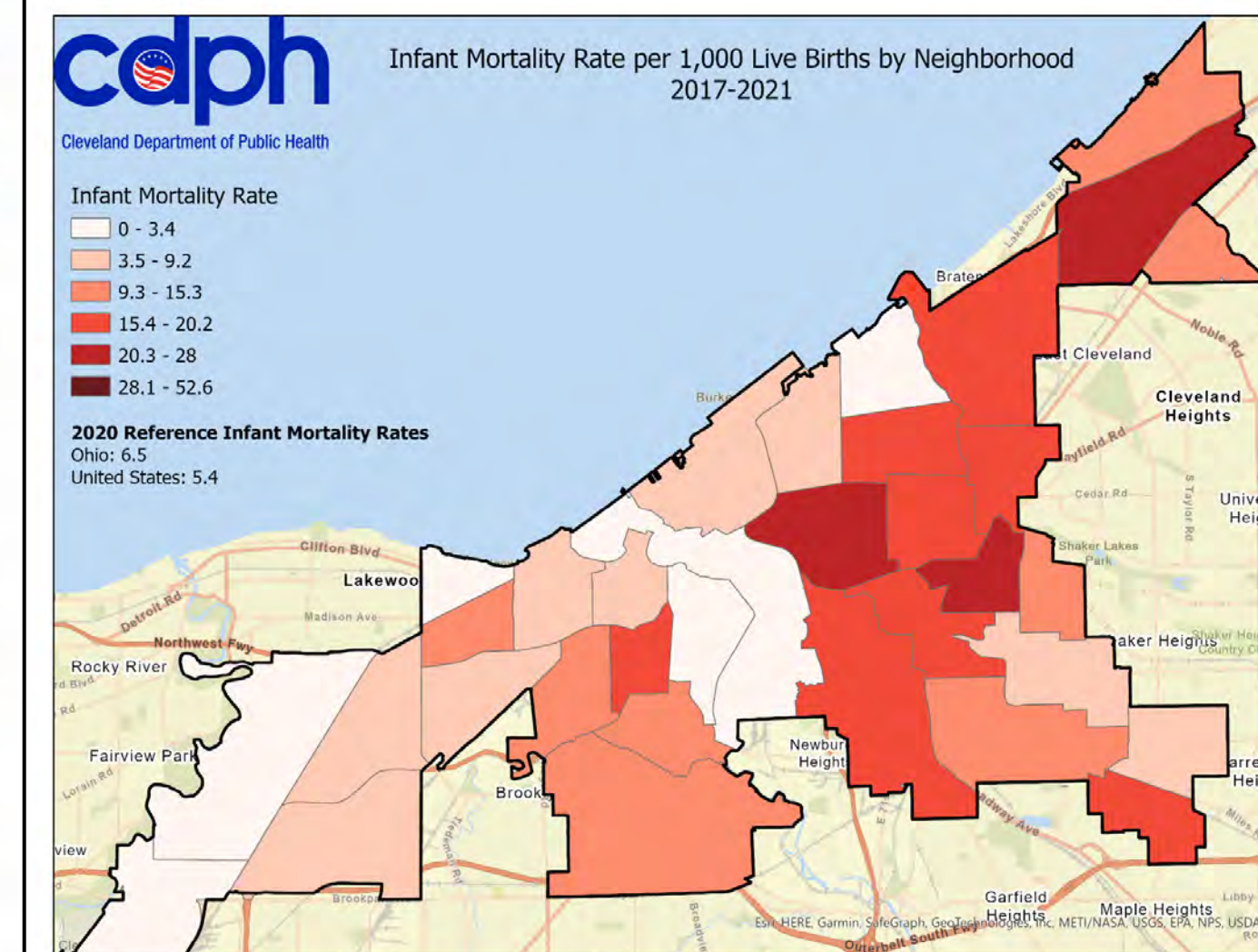


Figure 2: Public-facing Infant Mortality Rate maps overall (top) and for Non-Hispanic Black infants (bottom)

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[[{r}
InfantMort_13_22 <-
  merge(
    Births_2013_2022_Var,
    Deaths_2013_2022_Var,
    by = "uniqueID",
    all.x = TRUE,
    all.y = TRUE
  ) %>%
  mutate(death = case_when(is.na(certkey) ~ 0,
    TRUE ~ 1)) %>%
  mutate(death = fct_recode(factor(death),
    "Deceased" = "1",
    "Alive" = "0"))
[[
  
```

Figure 3: Sample RStudio code to clean and link birth and death certificate data.

REFERENCES

- Centers for Disease Control and Prevention, Infant Mortality (2020).

RESULTS

- Infant mortality rates in Cleveland are slowly trending downwards, but non-Hispanic Black infants continue to have more than double the infant mortality rates of non-Hispanic White infants.
- Geographic variability of infant mortality closely follows structural racism and historic redlining patterns.
- Major risk factors and causes of death for infant mortality and prematurity in Cleveland were identified and will be reported in the 2017-2021 Infant Mortality Brief.

LESSONS LEARNED AND IMPLICATIONS

- The process of obtaining, cleaning, and linking birth and death certificates was the lengthiest process of this project and required constant communication with the CDPH Epidemiology team.
- Extreme caution must be taken in mapping infant mortality as it is a highly sensitive issue, and the protection of the identities of these mothers is necessary. Spatial reports must be done in a way to not stigmatize neighborhoods of Cleveland with higher infant mortality rates, but to draw attention to inequities that have resulted from structural racism.
- Mapping infant mortality must occur at a scale that is granular enough to provide information on where to allocate resources, but broad enough to not reveal identities.
- Updating vital statistics and reports pertaining to infant mortality is essential to understand the health of the population CDPH serves.
- The language and reported statistics must differ between audiences.
- CDPH has the goal of updating the Infant Mortality infographic every year, as well as the brief every 3 years.

ACKNOWLEDGEMENTS

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