Maternal Health in Oregon

Findings from Oregon's Maternal Mortality and Morbidity Review Committee

October 6, 2023

Kelly Dayne Hansen

Oregon Health Authority

Maternal Mortality in Oregon

Oregon Health Authority
Maternal Mortality Review Committee

Oregon's MMRC

- Legislative mandate and funding passed 2018
- OHA team assembled 2019, including Governor-appointed members
- Multiple trainings for members in 2019
- First case review meeting in 2020 (pivoted to virtual)

What were the circumstances surrounding the death and how can we prevent deaths like this in the future?

Oregon Health Authority
Maternal Mortality Review Committee

Pregnancy-related Mortality Surveillance Programs:

	Pregnancy Mortality Surveillance System (PMSS)	State and Local Maternal Mortality Review Committees (MMRCs)
Data Source	Death records, and death records linked birth or fetal death records, additional information as available	Death records, and death records linked birth or fetal death records**, medical records, social service records, autopsy, informant interviews, etc**.
Source of Classification	Medical epidemiologists	**Multidisciplinary committees**
Purpose	Analyze clinical factors associated with deaths, publish national information that supports interpretation and uptake of information among clinical & public health practitioners.	**Understand medical and non-medical contributors to deaths, inform prioritization of interventions that effectively reduce pregnancy-related deaths**

Adapted from: St. Pierre A, Zaharatos J, Goodman D, Callaghan WM. Challenges and opportunities in identifying, reviewing, and preventing maternal deaths. *Obstet Gynecol*. 2018;131(1):138–142.

Maternal Mortality Review

Is

An ongoing anonymous and confidential process of data collection, analysis, interpretation, and action

A systematic process guided by policies, statutes, rules, etc.

Intended to move from data collection to prevention activities

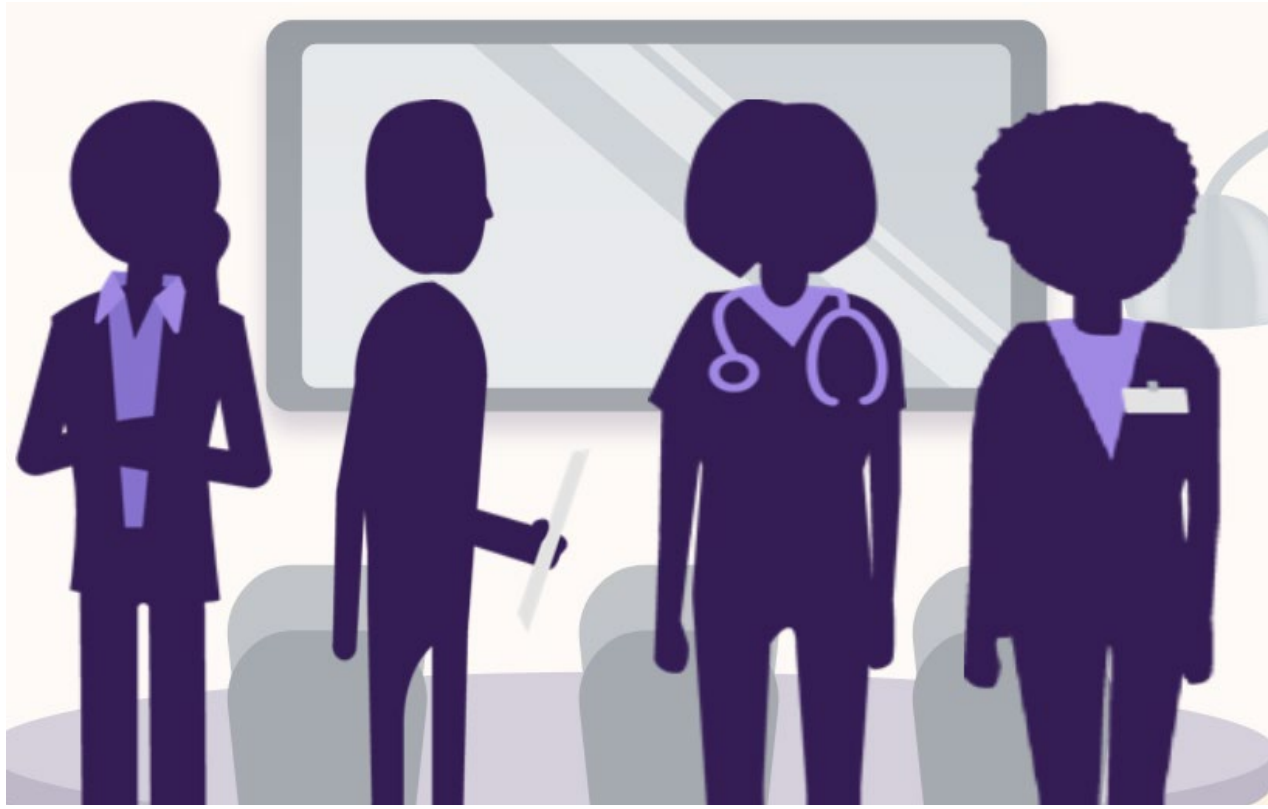
Is not

A mechanism for assigning blame or responsibility for any death

A research study

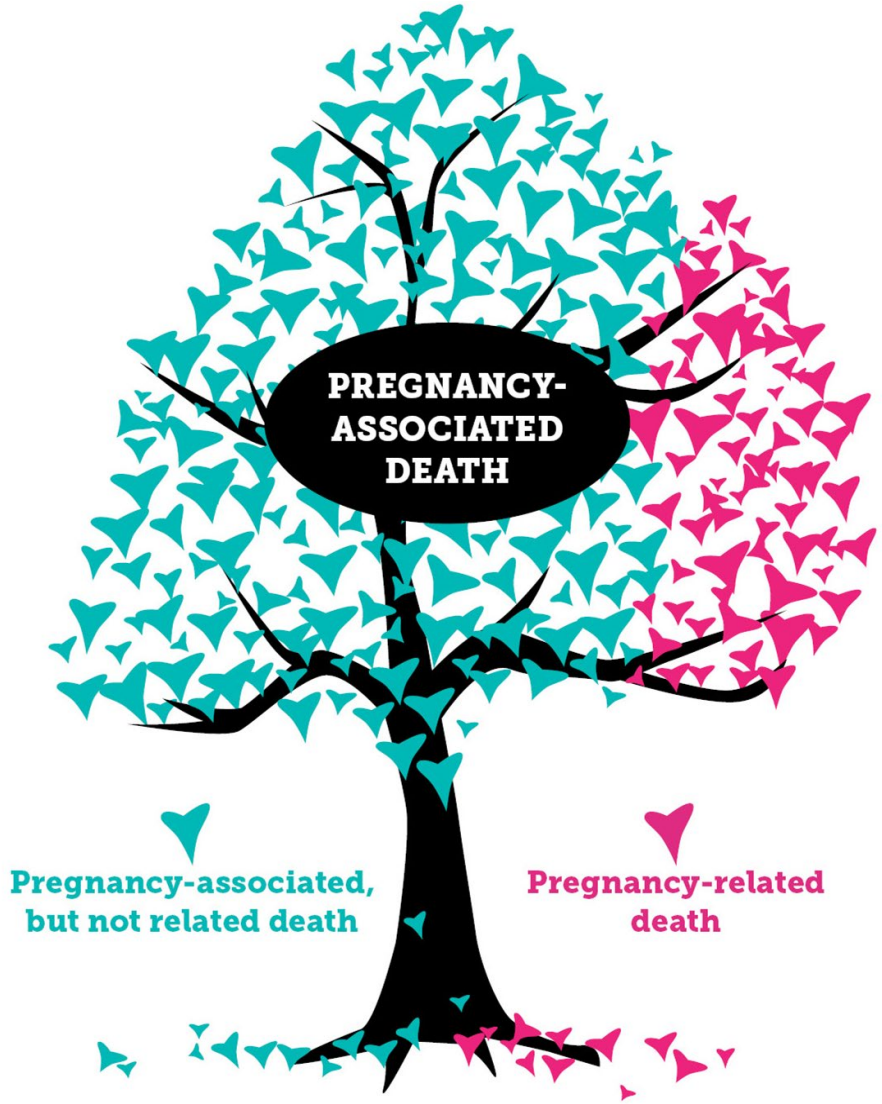
Peer review / Institutional review

A substitute for existing mortality and morbidity inquiries



Pregnancy-Associated, but Not-Related

A death during pregnancy or within one year of the end of pregnancy from a cause that is not related to pregnancy



Pregnancy-Related

A death during pregnancy or within one year of the end of pregnancy from a pregnancy complication, a chain of events initiated by pregnancy, or the aggravation of an unrelated condition by the physiologic effects of pregnancy

MMRC Case Review Flow

Case Presentation and Questions

Underlying Cause of Death

- Do you agree with the underlying cause of death?
  - Yes
  - No

If No,

Discussion on: What was the Underlying Cause of Death?

Circumstances Surrounding the Death

- Did obesity contribute to the death?
  - Yes
  - Probably
  - No
  - Unknown
- Did discrimination contribute to the death?
  - Yes
  - Probably
  - No
  - Unknown
- Did mental health conditions other than substance use disorder contribute to the death?
  - Yes
  - Probably
  - No
  - Unknown
- Did substance use disorder contribute to the death?
  - Yes
  - Probably
  - No
  - Unknown

Pregnancy-Related

A death during pregnancy or within one year of the end of pregnancy from a pregnancy complication, a chain of events initiated by pregnancy, or the aggravation of an unrelated condition by the physiologic effects of pregnancy

Manner of Death

- Was this death a homicide?
  - Yes
  - Probably
  - No
  - Unknown
- Was this death a suicide?
  - Yes
  - Probably
  - No
  - Unknown

Pregnancy-Associated, but Not-Related

A death during pregnancy or within one year of the end of pregnancy from a cause that is not related to pregnancy

Pregnancy Relatedness

- Was this death pregnancy related?
  - **Pregnancy Related**
  - Pregnancy Associated but NOT Related
  - Unable to Determine

If **Pregnancy Associated but NOT Related** or Unable to determine

Remaining discussion is limited.

If **Pregnancy-Related**

Discussion Continues

Preventability

**May be considered for all cases*

A death is considered preventable if the committee determines that there was at least some chance of the death being averted by one or more reasonable changes to patient, family, provider, facility, system and/or community factors.

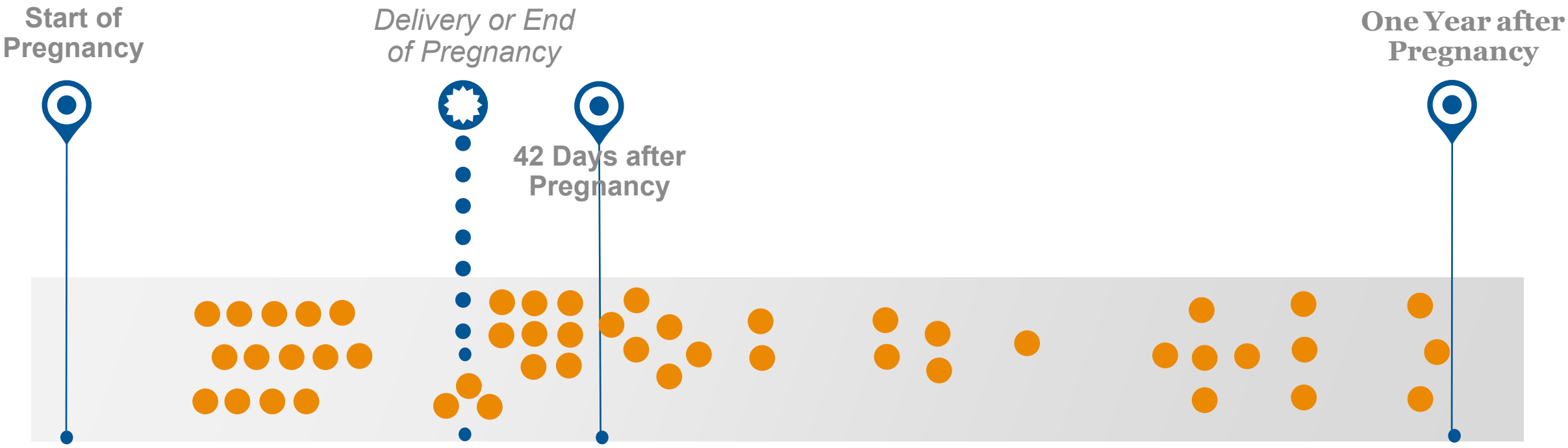
- Was this death medically preventable?
  - Yes
  - No
  - Unable to Determine
- Could community or system level factors (non-medical care) have been changed to prevent this death?
  - Yes
  - No
  - Unable to Determine
- What was the chance to alter outcome?
  - Good Chance
  - Some Chance
  - No Chance
  - Unable to Determine

Discussion of Contributing Factors and Recommendations

Oregon Health Authority

Maternal Mortality Review Committee

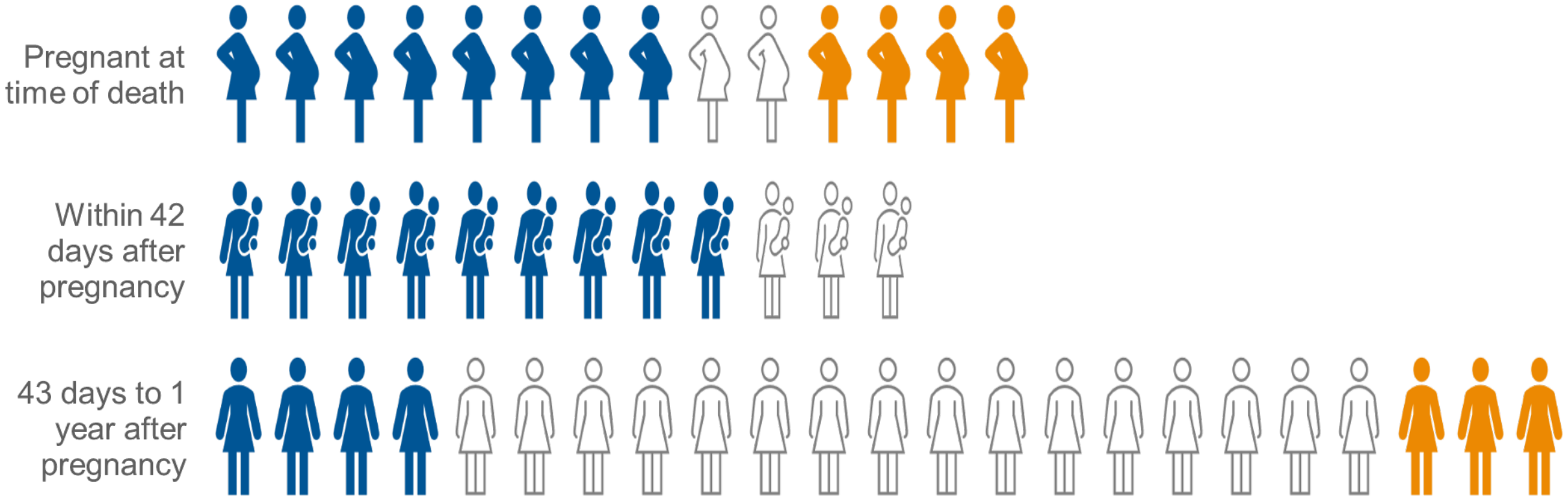
Distribution of Timing of Death for 49 Reviewed Cases



Oregon Health Authority
Maternal Mortality Review Committee

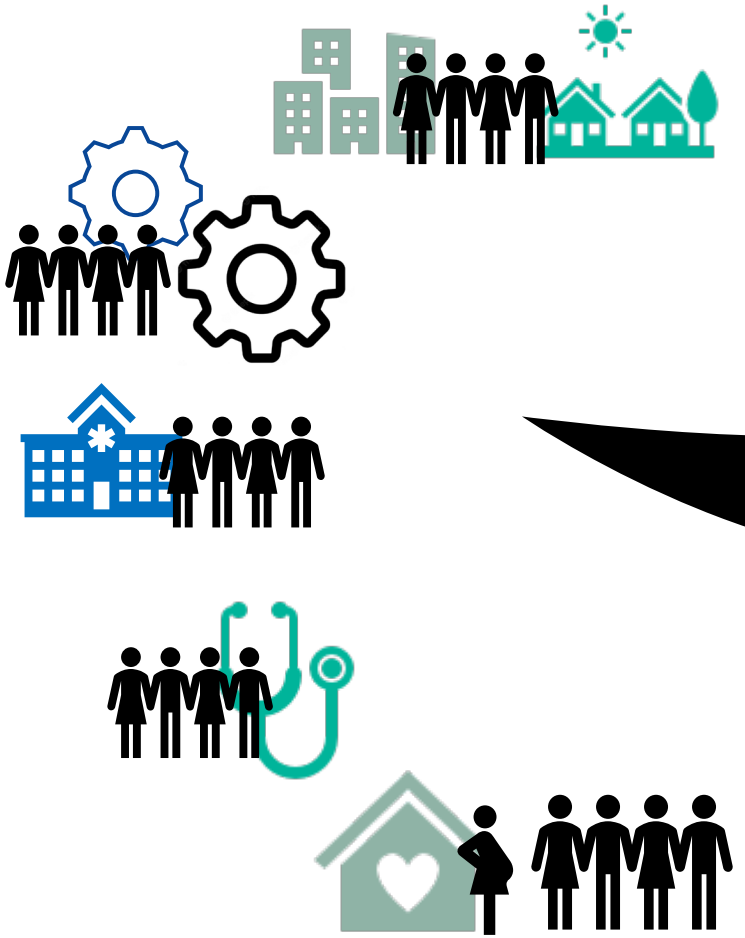
Timing of reviewed pregnancy-related, not pregnancy-related* and undetermined deaths among all pregnancy-associated deaths.

Includes reviewed deaths from 2018-2021, n=49



*Not pregnancy-related means the death occurred within one year of the end of pregnancy but no causal relationship was found between pregnancy and the death

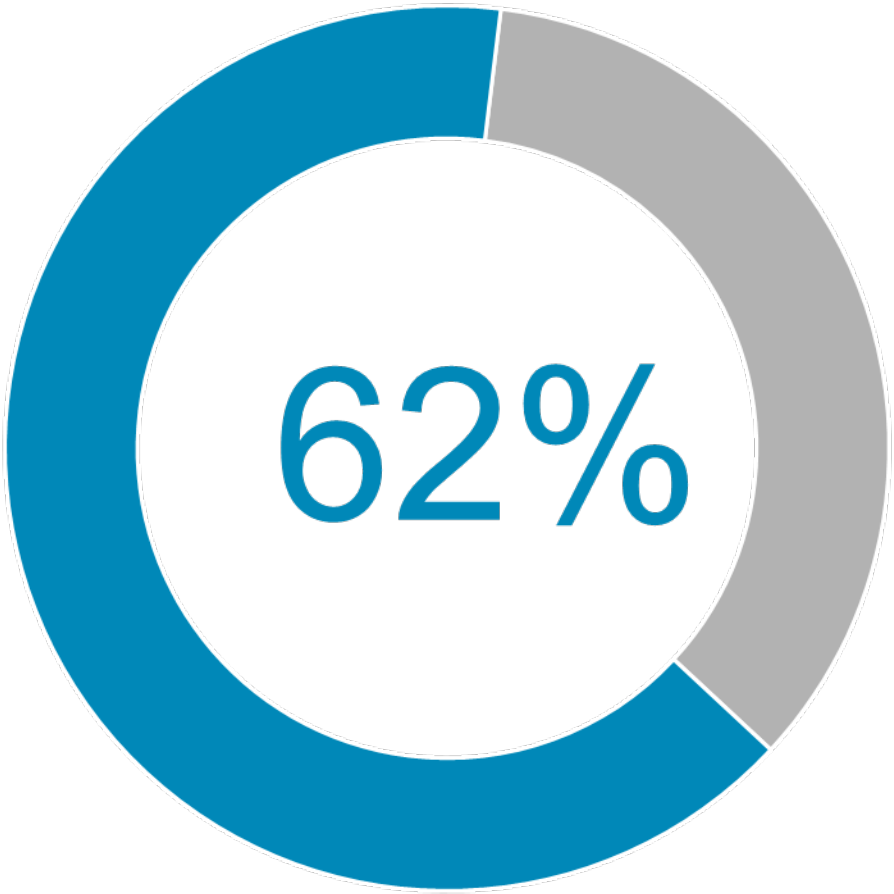
Among 36 States, MMRCs Determined:



84% of pregnancy-related deaths were determined to be preventable

Oregon Health Authority
Maternal Mortality Review Committee

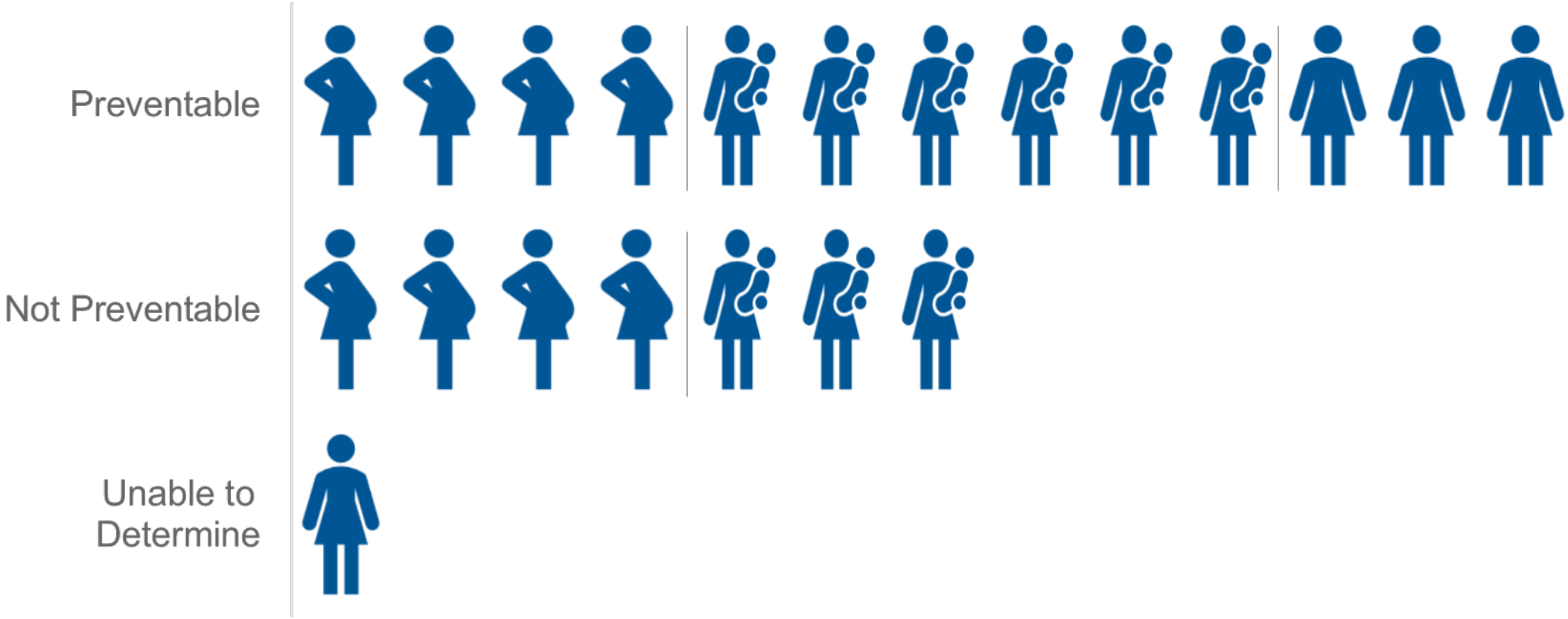
In Oregon, more than half of all pregnancy-related deaths were determined by the MMRC to be ***preventable***



Oregon Health Authority
Maternal Mortality Review Committee

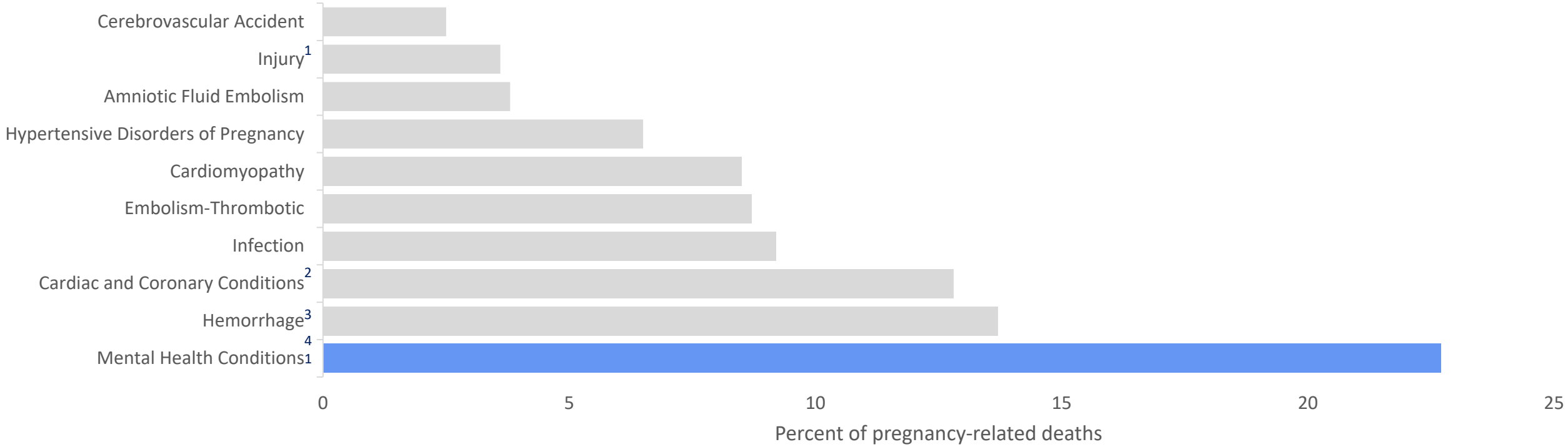
Preventability among pregnancy-related deaths.

Includes reviewed deaths from 2018-2020, n=21



*Not pregnancy related means the death occurred within one year of the end of pregnancy but no causal relationship was found between pregnancy and the death

Most Frequent Underlying Causes of Pregnancy-related Deaths*



[1] Injury includes intentional injury (homicide), unintentional injury, including overdose/poisoning deaths not related to substance use disorder, and injury of unknown intent or not otherwise specified.

[2] Cardiac and coronary conditions include deaths to coronary artery disease, pulmonary hypertension, acquired and congenital valvular heart disease, vascular aneurysm, hypertensive cardiovascular disease, Marfan Syndrome, conduction defects, vascular malformations, and other cardiovascular disease; and excludes cardiomyopathy and hypertensive disorders of pregnancy

[3] Excludes aneurysms or cerebrovascular accident (CVA)

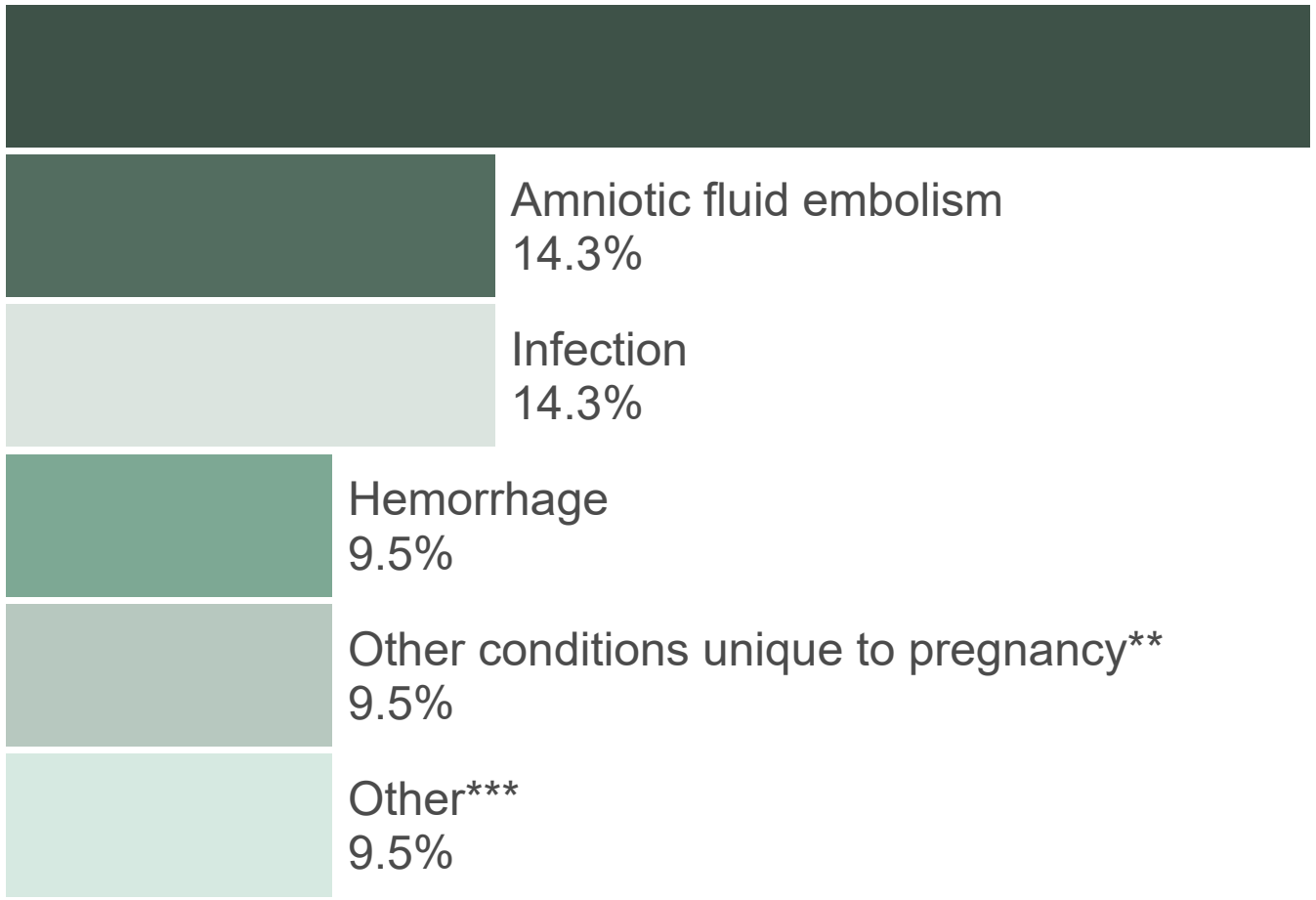
[4] Mental health conditions include deaths to suicide, unintentional or unknown intent overdose/poisoning related to substance use disorder, and other deaths determined by the MMRC to be related to a mental health condition, including substance use disorder

*Only 10 most frequent underlying causes of death are shown; underlying cause of death was missing (n=10) or unknown (n=21) for 31 (3.0%) pregnancy-related deaths

Oregon Health Authority
Maternal Mortality Review Committee

Underlying cause of death among pregnancy-related deaths

Includes reviewed deaths from 2018-2021, n=21

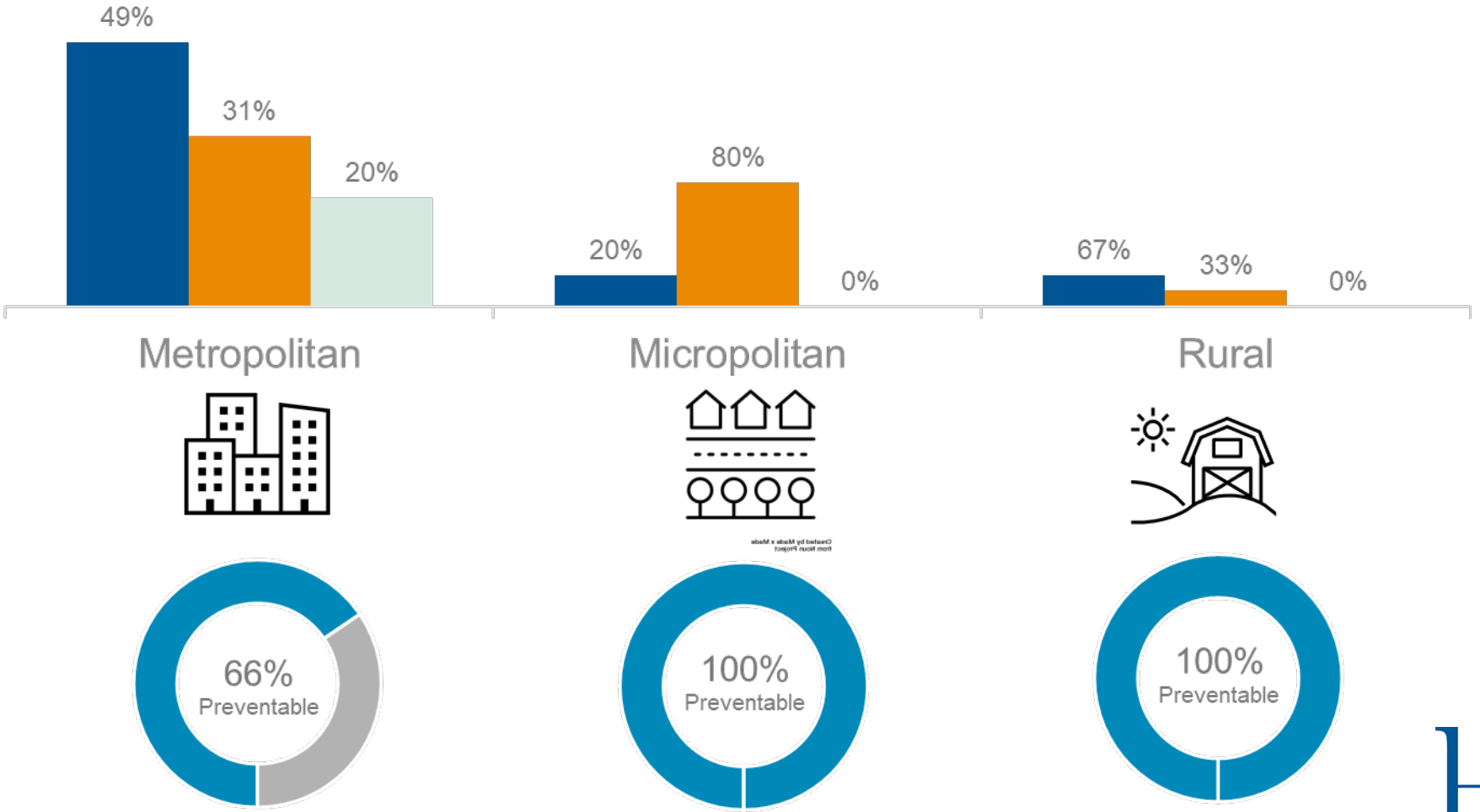


*50% of deaths due to mental health conditions were directly attributed to substance use disorder
**Other conditions unique to pregnancy include eclampsia and hyperemesis
***Other includes cardiovascular conditions and cerebrovascular accident

Oregon Health Authority
Maternal Mortality Review Committee

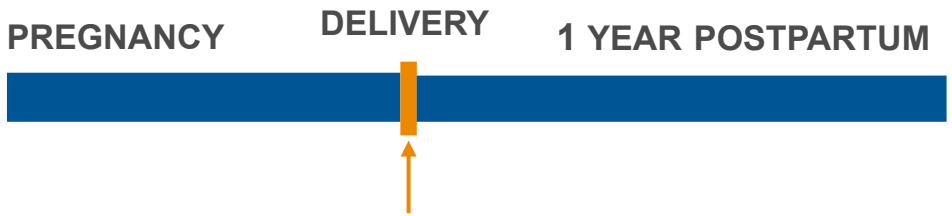
In Metropolitan counties, 49% of reviewed cases were determined to be Pregnancy-Related and 31% of cases were Pregnancy-Associated but not related, while only 20% of cases in Micropolitan counties were determined to be Pregnancy-Related.

Includes reviewed deaths 2018-2021, n=48



Severe Maternal Morbidity

Cases we capture for SMM have poor overlap with overall pregnancy-related deaths



- Definition/Time Period
- Data Sources

Our leading causes of SMM are not reflected in our leading causes of pregnancy-related mortality

Let's start thinking through how to make an expanded definition of SMM that has a timeline matching that of all pregnancy-associated deaths

Severe Maternal Morbidity

What is it?

Unexpected outcomes of labor and delivery
that result in significant short- or long-term consequences
to a birthing person's health

Severe Maternal Morbidity

What are we measuring?

Incidence of very severe or life-threatening conditions taking place during the delivery hospitalization

Indicators of SMM – Diagnoses

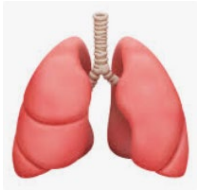
Heart

-Acute myocardial infarction (heart attack)

-Cardiac arrest/ventricular fibrillation

-Heart failure/arrest during surgery or procedure

-Pulmonary edema/acute heart failure



Lung

-Adult respiratory distress syndrome

Indicators of SMM – Diagnoses

Blood or blood vessel

-Disseminated intravascular coagulation

-Air and thrombotic embolism

-Amniotic fluid embolism

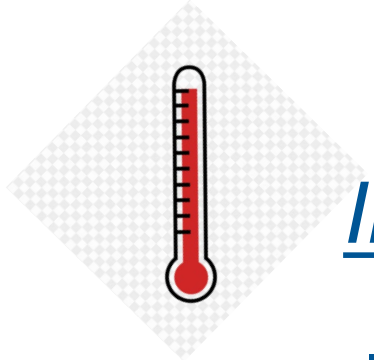
-Sickle cell disease with crisis

-Puerperal cerebrovascular disorders

-Eclampsia

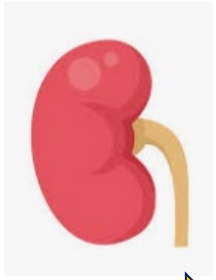
-Aneurysm

Indicators of SMM – Diagnoses



Infection

-Sepsis



Kidney

-Acute renal failure

Other

-Shock

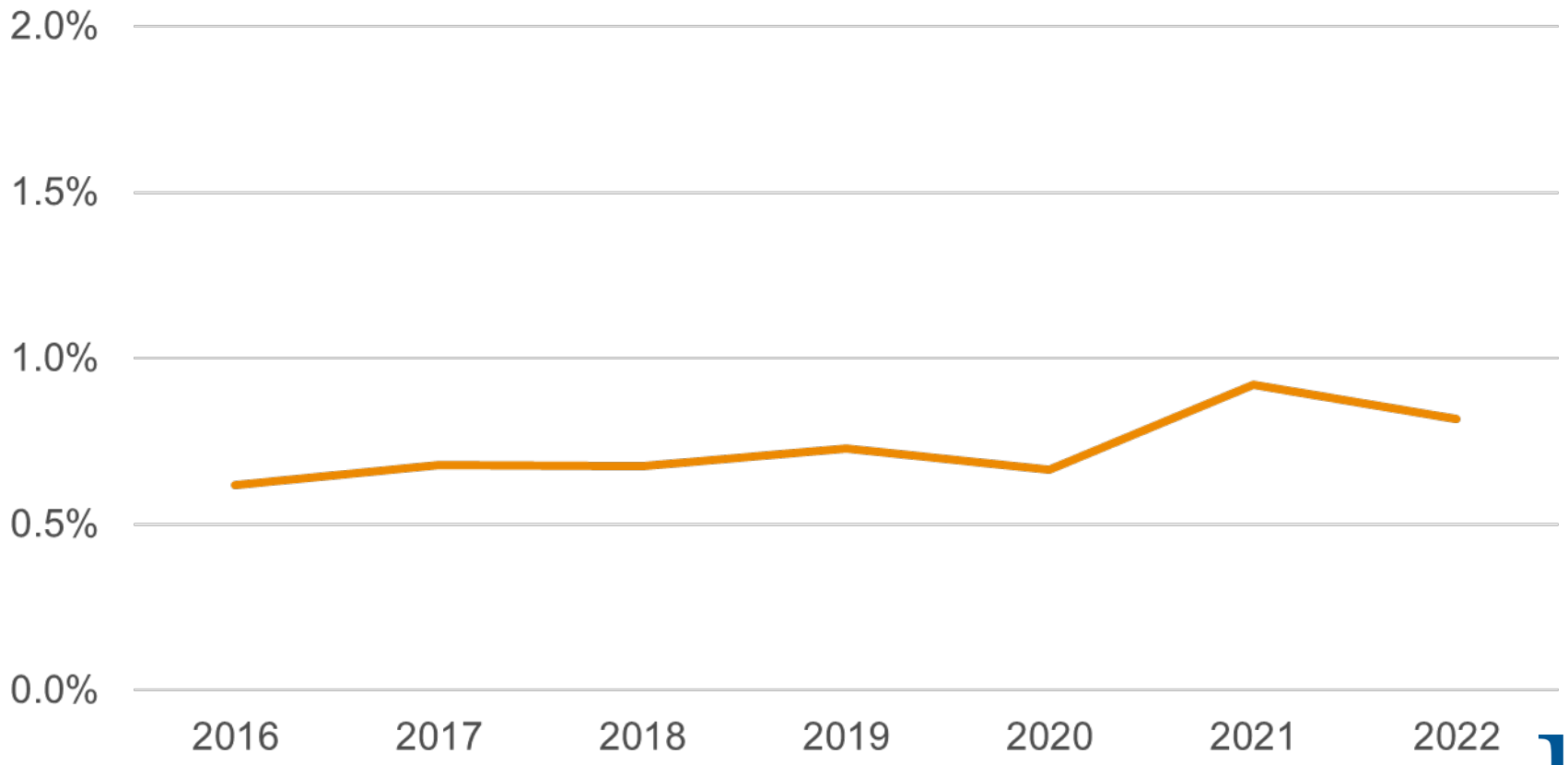
-Severe anesthesia complications

Indicators of SMM – Procedures

- -Hysterectomy
- -Ventilation
- -Blood products transfusion*
- -Conversion of cardiac rhythm
- -Temporal tracheostomy

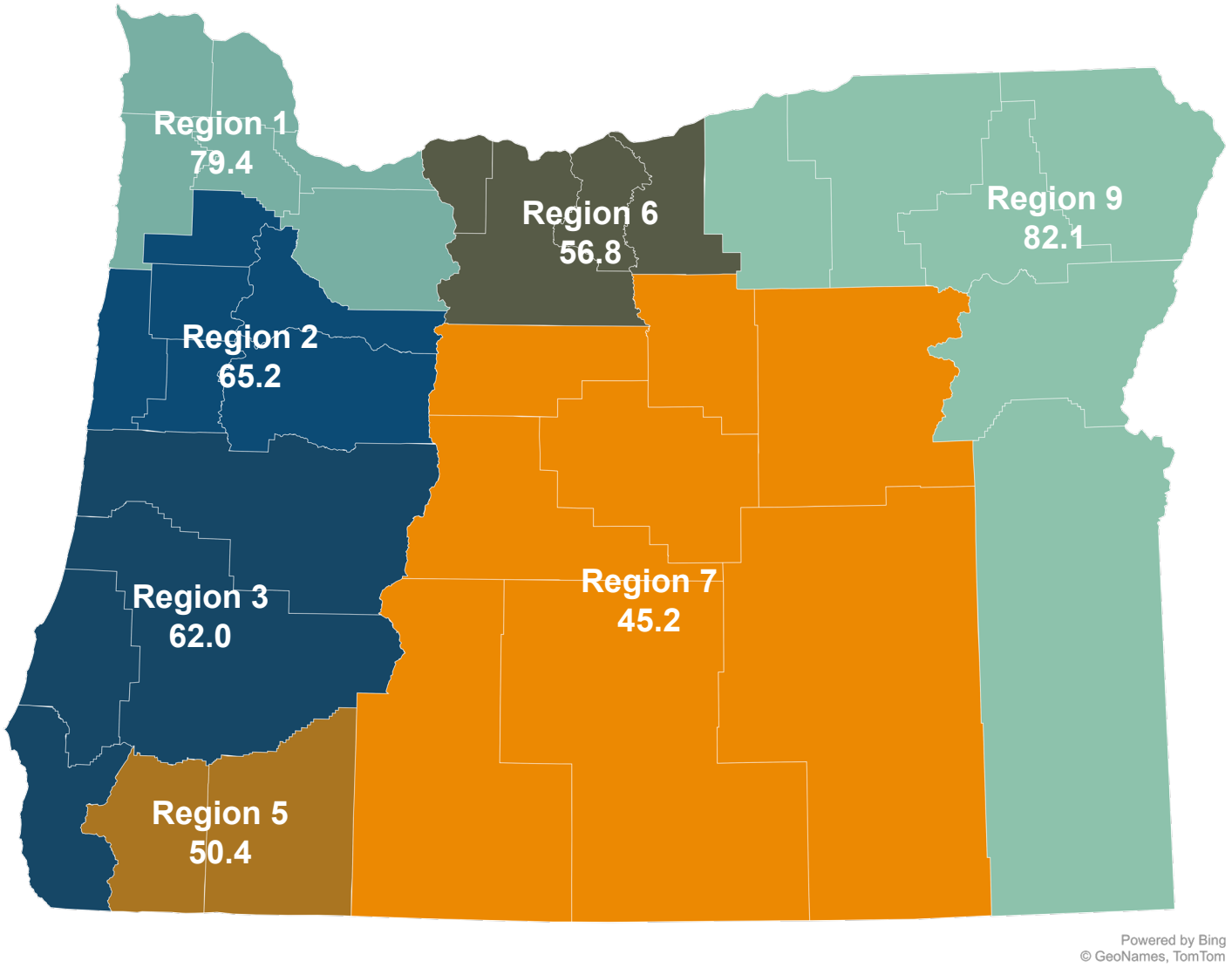
Severe Maternal Morbidity as percent of delivery hospitalizations by year, 2016-2022.

Excludes transfusion-only cases.



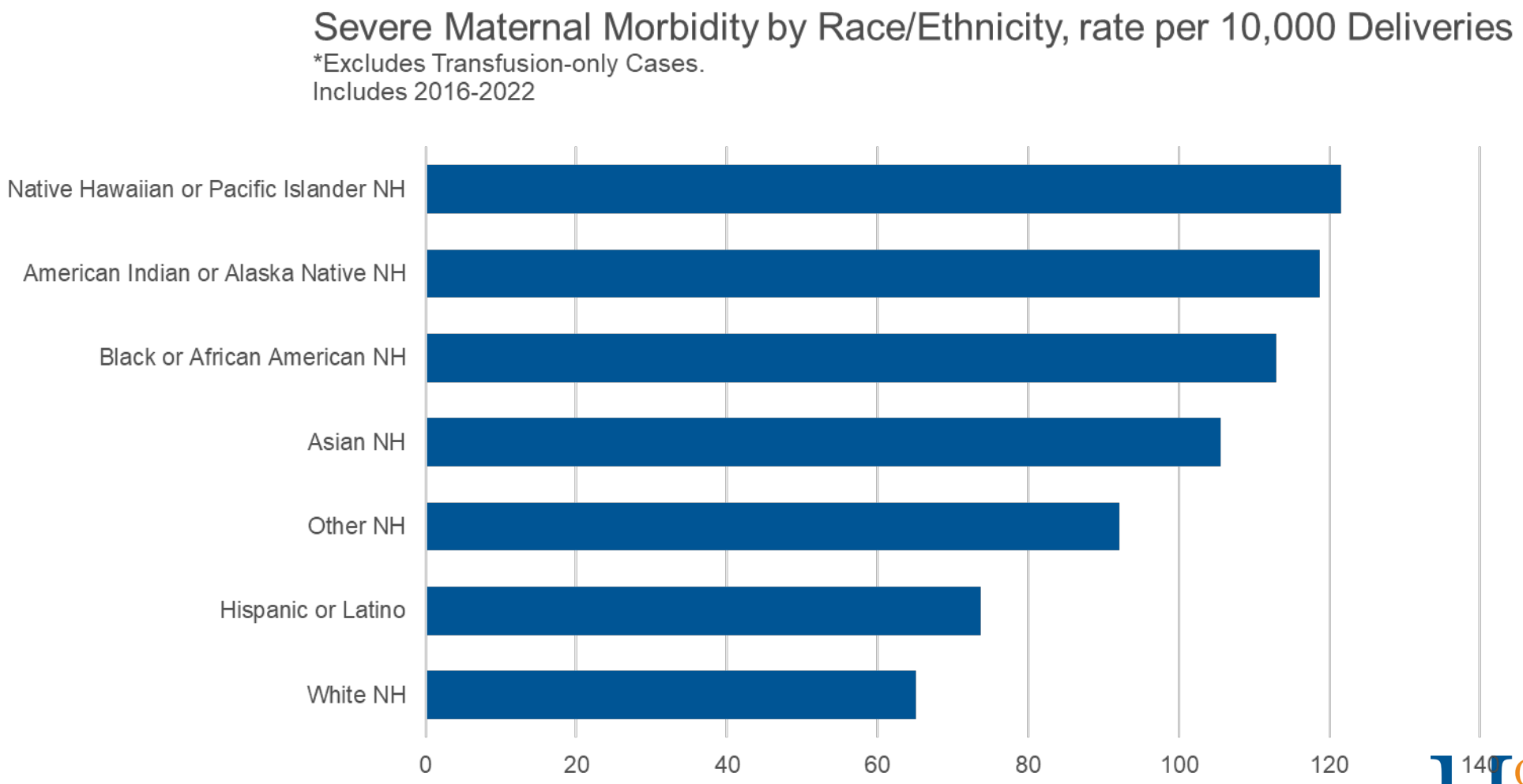
Oregon Health Authority
Maternal Mortality Review Committee

Regional Variability



Oregon Health Authority
Maternal Mortality Review Committee

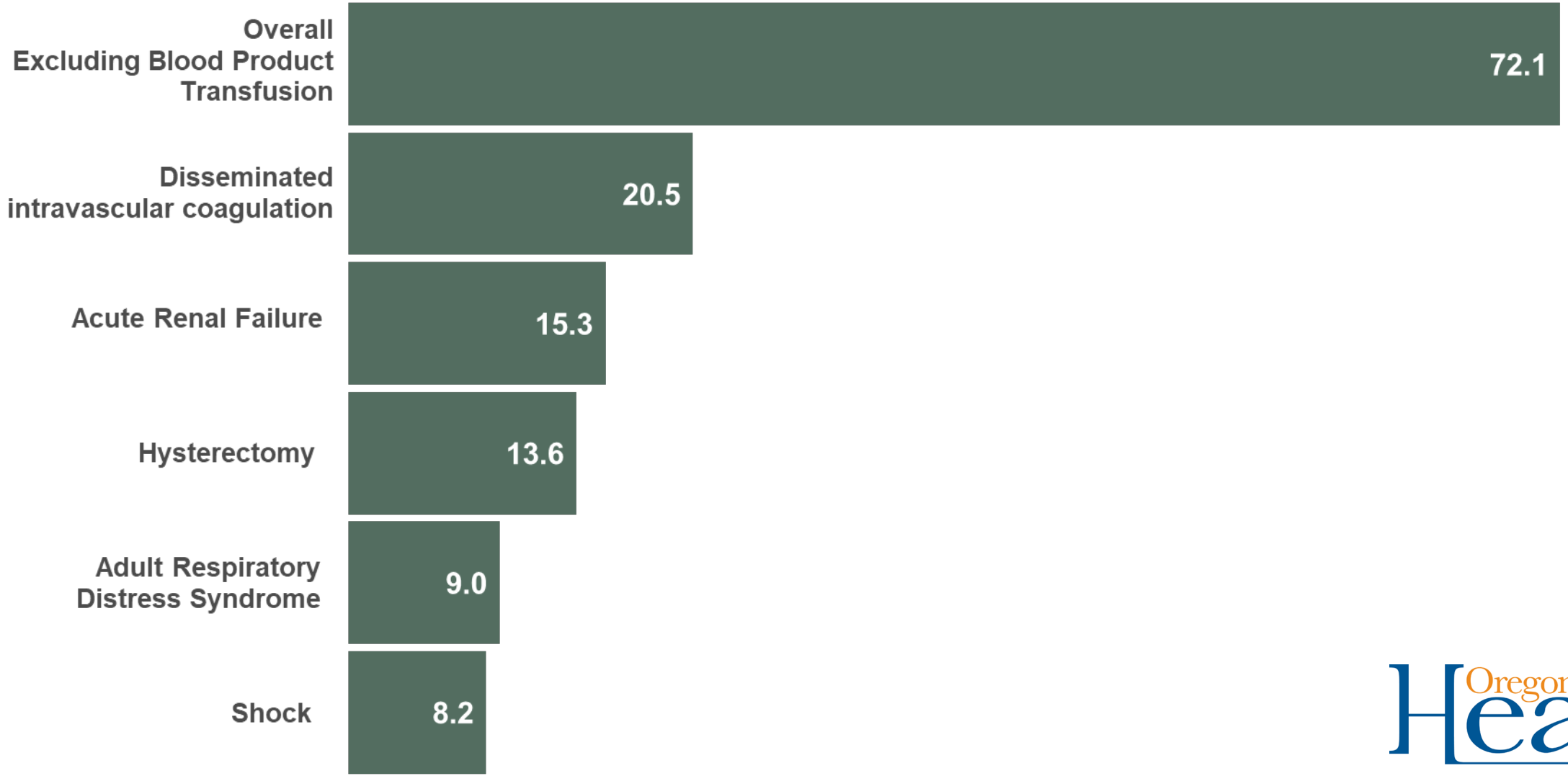
Race/Ethnicity Disparities



Oregon Health Authority
Maternal Mortality Review Committee

Top 5 SMM Diagnosis or Procedure Codes

Rates per 10,000 Deliveries



Oregon Health Authority
Maternal Mortality Review Committee

Thank you and acknowledgements

Past and Current MMRC Members

Silke Akerson
Telia Anderson
Emily Baird
LaRisha R Baker
Melissa J Cheyney
Sarah E Cole
Alivia M Feliciano
Nafisa N Fai
Kendra Harding
Amie L Keys
Jackie Leung
Melissa Li
Nancy J MacMorris-Adix
Willow Merchant
Lesa R O'Dell
Desha Reed-Holden
Maria I Rodriguez
Jeanne S Savage
Wendy J. Smith
Brandon M Togioka
Mark W Tomlinson
Rick Treleaven
Ana del Rocío Valderrama
Sabrina Villemenay
Emily Yeast

OHA Staff

Lynne Gonzales
Heather Mackay-Gimino
Suzanne Zane
Kelly Dayne Hansen
John Putz
Cate Wilcox