HRSA
Health Resources & Services Administration

Severe Maternal Morbidity: Trends and Disparities

Advisory Committee on Infant and Maternal Mortality

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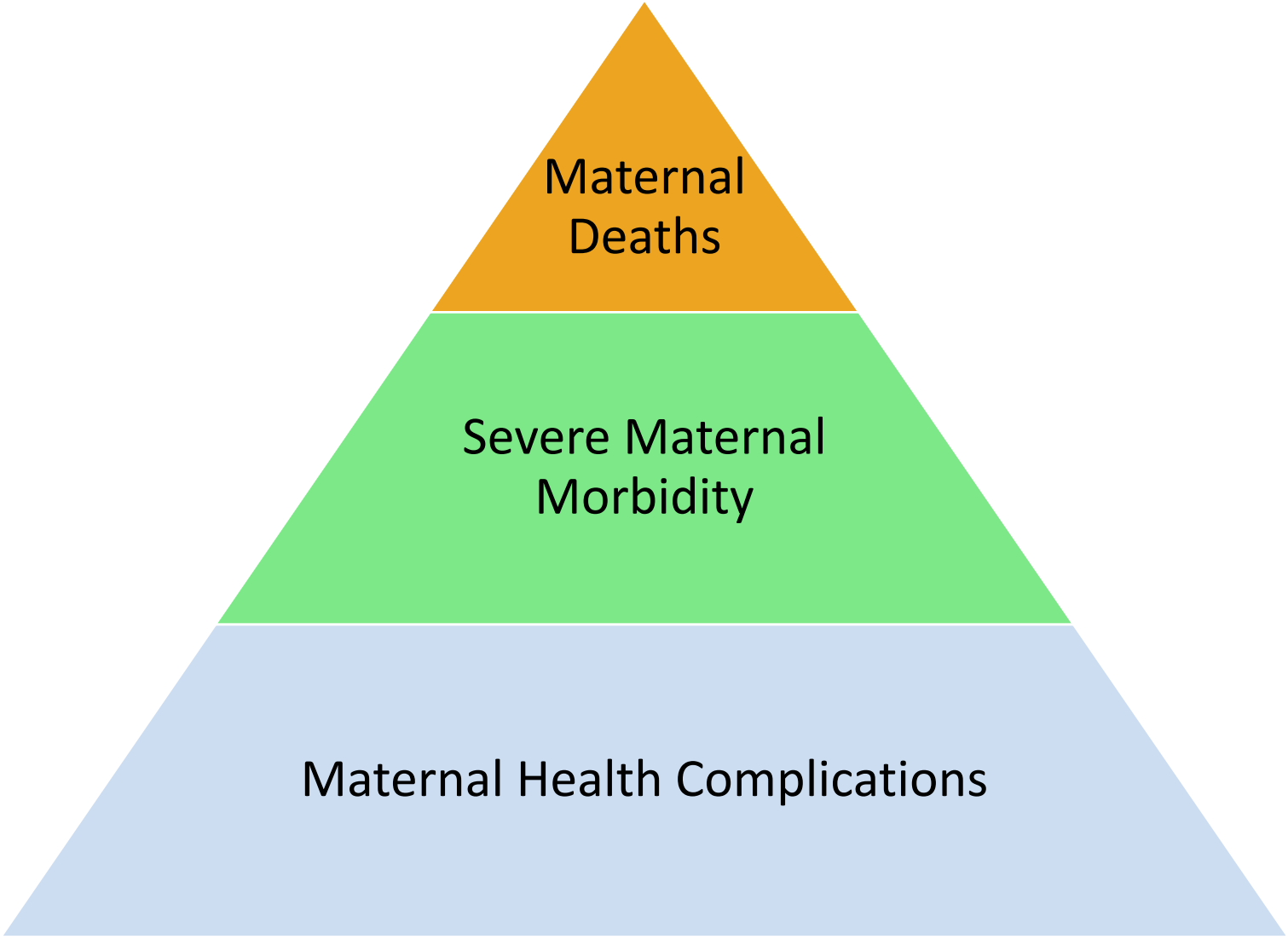
Maternal and Child Health Bureau (MCHB)

Vision: Healthy Communities, Healthy People

Maternal Mortality and Morbidity



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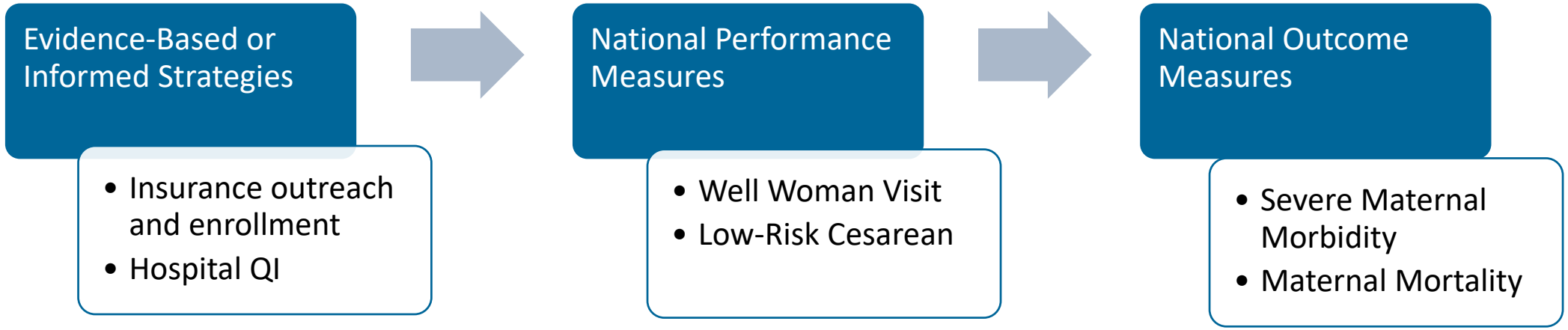
Severe Maternal Morbidity (SMM) Surveillance

- HRSA collaborates with the Agency for Health Care Research and Quality (AHRQ; data purveyor) and the Centers for Disease Control and Prevention (CDC; measure developer) to pre-populate Title V Block Grant National Outcome Measure for SMM (NOM-2) from the Healthcare Cost and Utilization Project (HCUP) – State Inpatient Databases



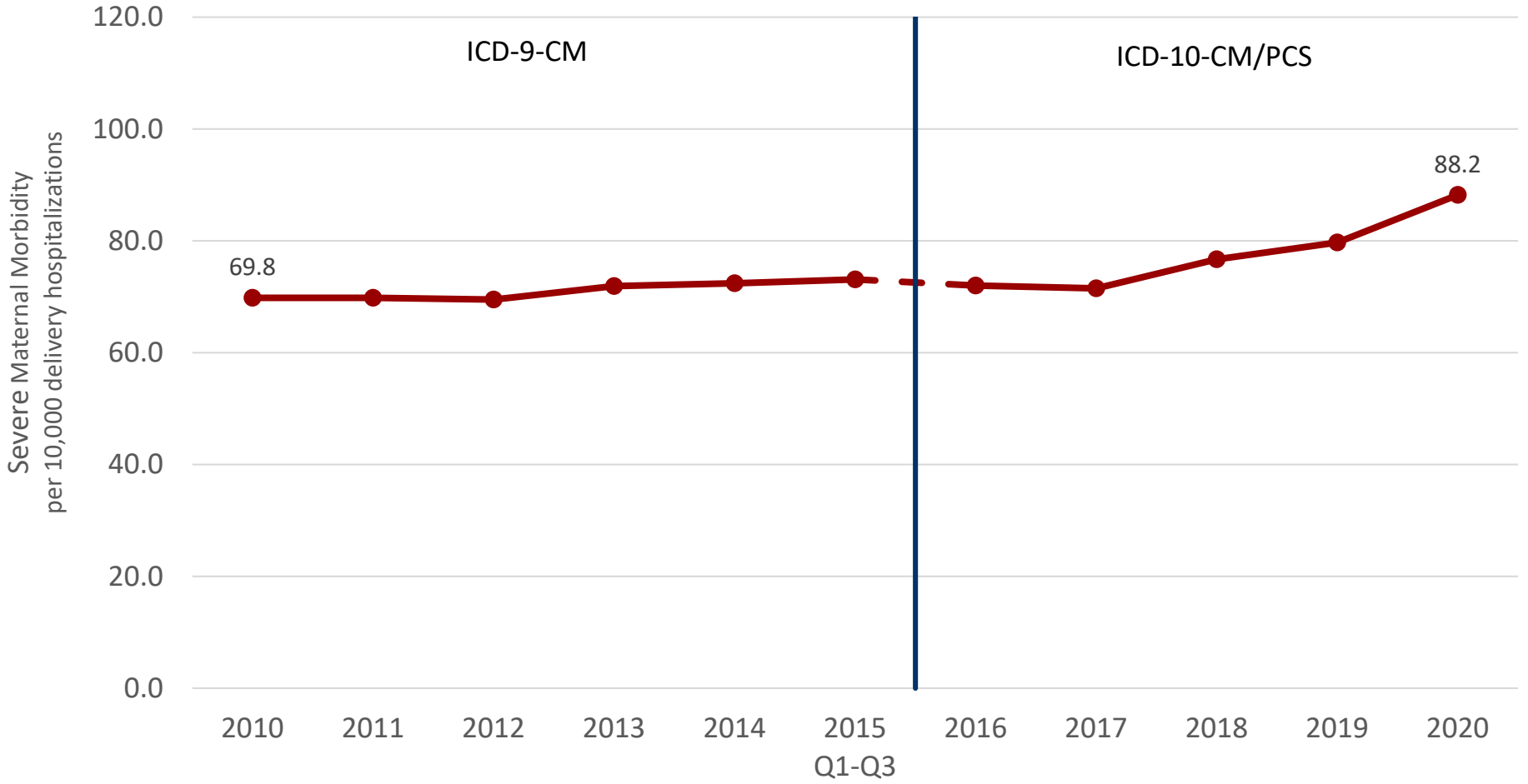
Outline

- Definition
- Trends
- Types
- Disparities
- Measurement Issues

SMM Definition

- "Unexpected outcomes of labor and delivery that result in significant short or long-term consequences to a woman's health" – CDC
  - 21 indicators (16 diagnosis and 5 procedures) from hospital discharge record codes
  - Recent analyses exclude blood transfusion only cases due to poor predictive value
    - HCUP Fast Stats https://datatools.ahrq.gov/hcup-fast-stats
    - Title V Federally Available Data Resource Document https://mchb.tvisdata.hrsa.gov/Home/Resources
    - Alliance for Innovation on Maternal Health https://saferbirth.org/aim-data/resources/
- Recent AHRQ, CDC, HRSA Publications
  - Trends in Severe Maternal Morbidity in the US Across the Transition to ICD-10-CM/PCS From 2012-2019. JAMA Netw Open. 2022;5(7):e2222966.
  - Associations Between State-Level Severe Maternal Morbidity and Other Perinatal Indicators. JAMA Netw Open. 2022;5(7):e2224621.
  - Assessment of Incidence and Factors Associated With Severe Maternal Morbidity After Delivery Discharge Among Women in the US. JAMA Netw Open. 2021 Feb 1;4(2):e2036148.
- Forthcoming Publications
  - AHRQ analysis of COVID-related SMM increases
  - CDC analysis of SMM indicators accounting for in-hospital deaths

SMM Trends, 2010-2020



Source: Agency for Healthcare Research and Quality, Healthcare Cost and Utilization Project, National Inpatient Sample

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SMM Indicator Grouping

Indicator Grouping	Indicators	2019 Rate per 10,000	2020 Rate per 10,000	Absolute Change	Relative Change
Hemorrhage	Disseminated intravascular coagulation Shock Hysterectomy	36.5	36.9	0.4	1%
Renal	Acute Renal Failure	15.7	19.2	3.5	22%
Respiratory	Adult respiratory distress syndrome Temporary tracheostomy Ventilation	11.6	15.7	4.1	35%
Sepsis	Sepsis	11.2	12.5	1.3	12%
Other Obstetric	Amniotic fluid embolism Eclampsia Severe anesthesia complications Air and thrombotic embolism	11.1	11.8	0.7	6%
Cardiac	Acute myocardial infarction Aneurysm Cardiac arrest/ventricular fibrillation Conversion of cardiac rhythm Heart failure/arrest during surgery Pulmonary edema / Acute heart failure	9.0	9.3	0.3	3%
Other Medical	Puerperal cerebrovascular disorders Sickle cell disease with crisis	4.6	5.0	0.4	9%

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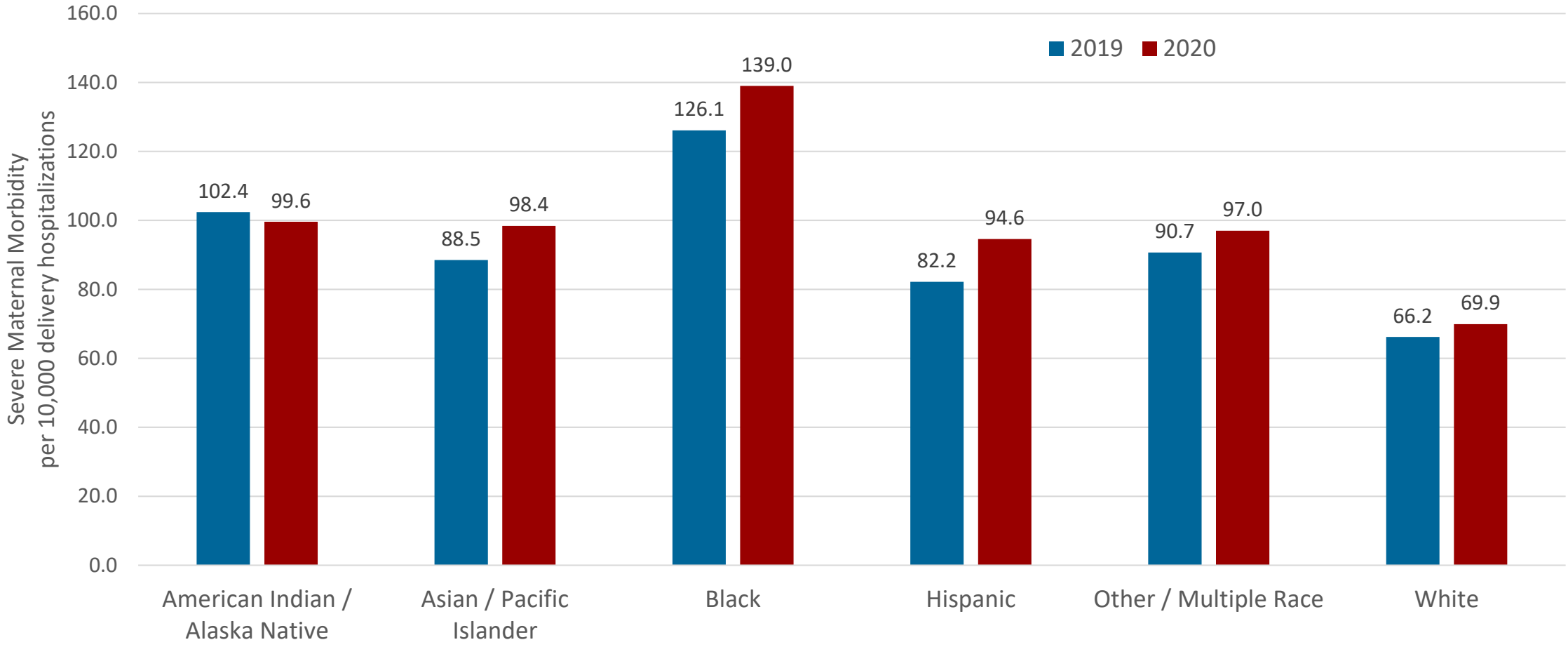
Source: Agency for Healthcare Research and Quality, Healthcare Cost and Utilization Project, State Inpatient Databases

SMM by Race and Ethnicity



From 42 states with adequate reporting of race and ethnicity

Source: Agency for Healthcare Research and Quality, Healthcare Cost and Utilization Project, State Inpatient Databases

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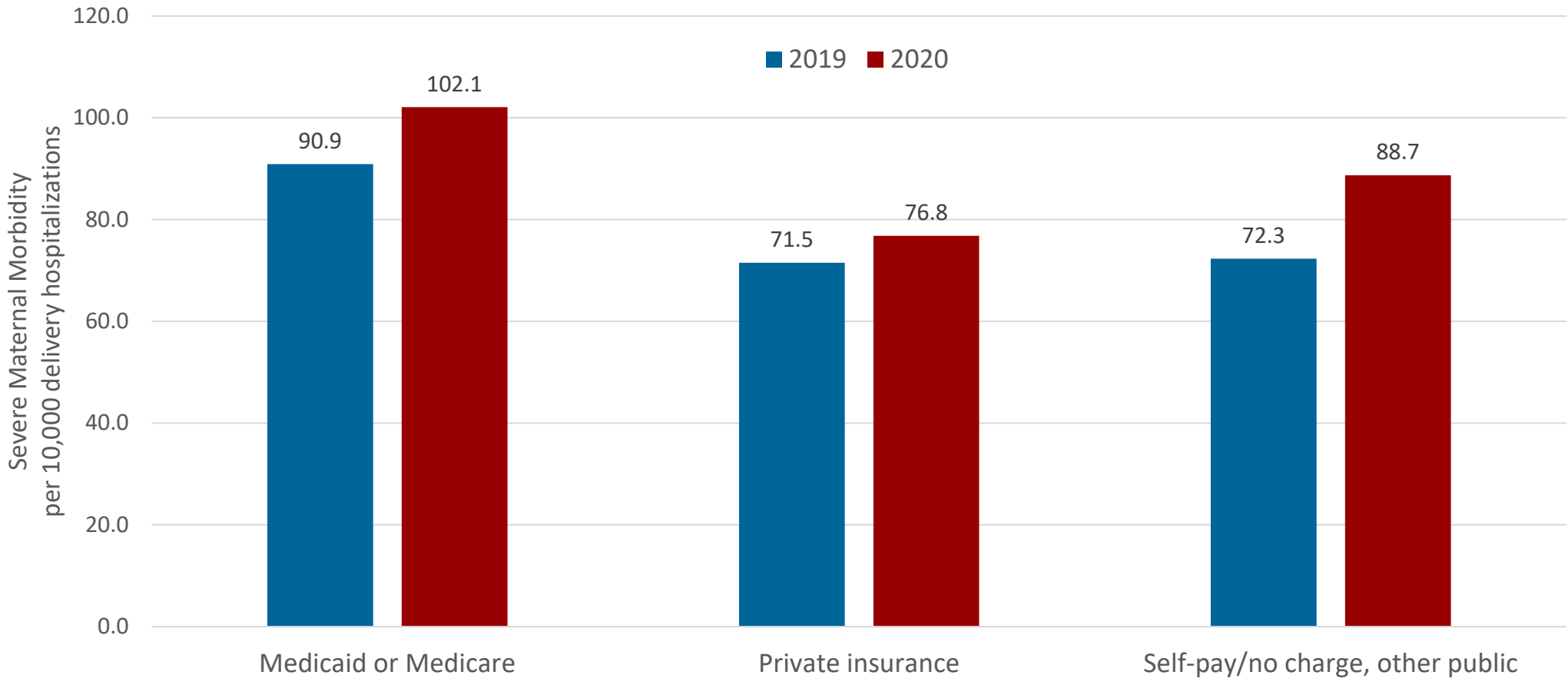
SMM by Expected Payer



Source: Agency for Healthcare Research and Quality, Healthcare Cost and Utilization Project, National Inpatient Sample

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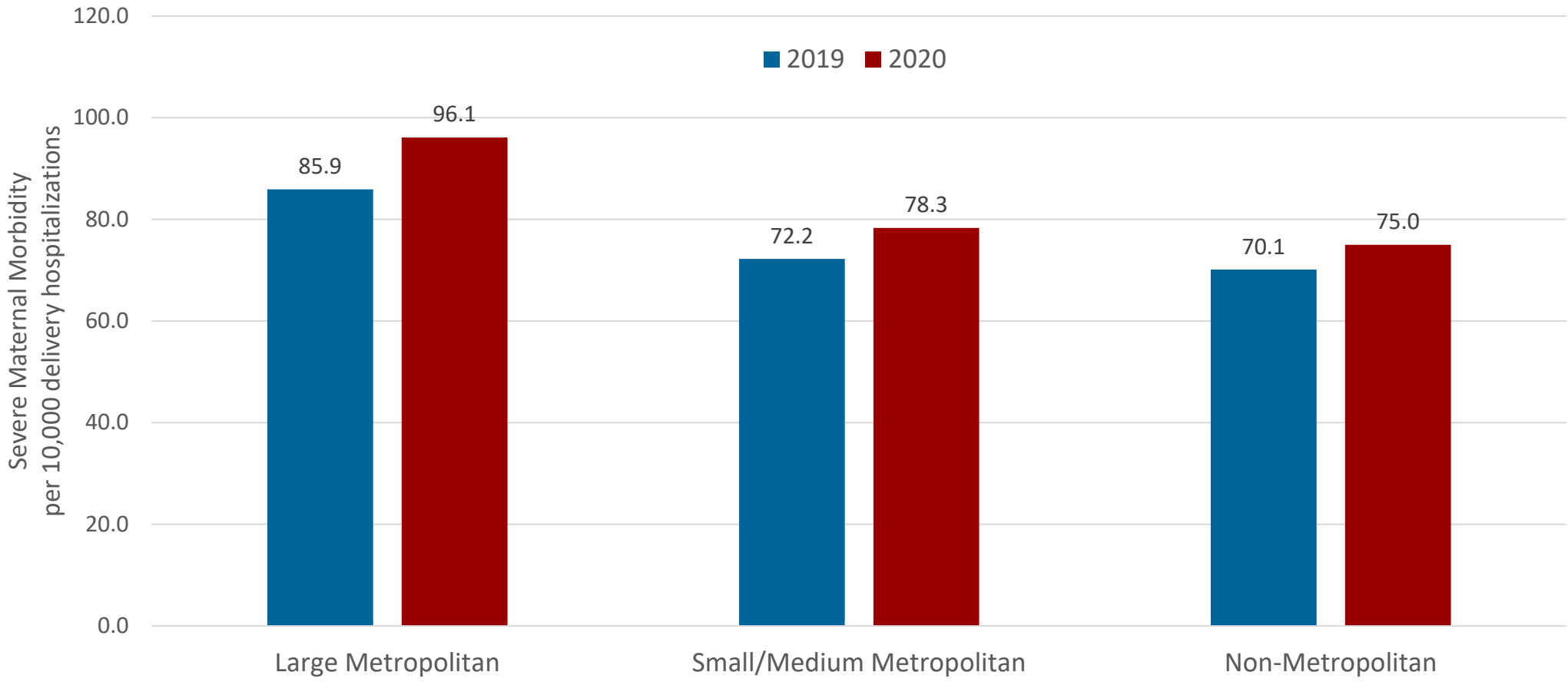
SMM by Rural/Urban Residence



Source: Agency for Healthcare Research and Quality, Healthcare Cost and Utilization Project, National Inpatient Sample

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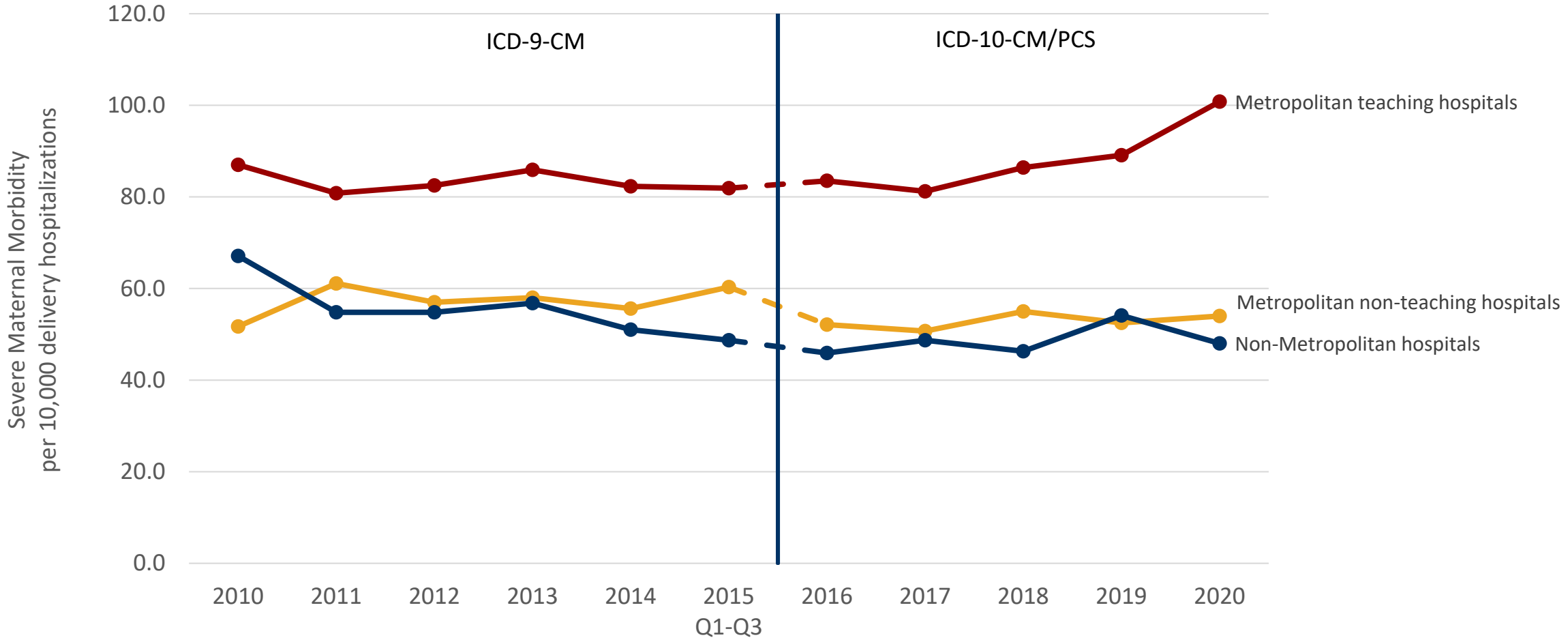
SMM Trends by Hospital Location and Teaching Status



Source: Agency for Healthcare Research and Quality, Healthcare Cost and Utilization Project, National Inpatient Sample

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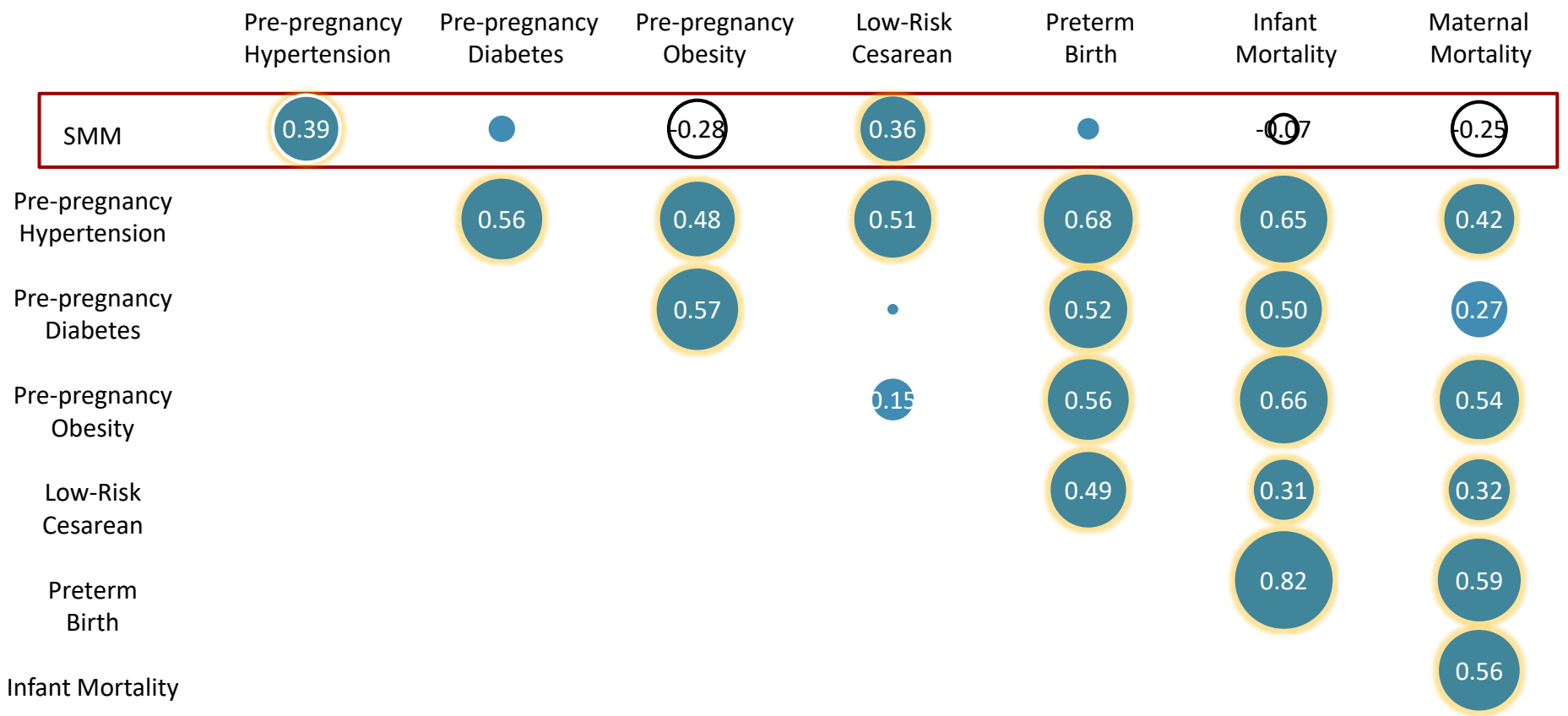
State-level SMM Correlations with Perinatal Indicators



SMM only correlated with pre-pregnancy hypertension and low-risk cesarean

Stronger and more consistent correlations for all other perinatal indicators

SMM Source: Agency for Healthcare Research and Quality, Healthcare Cost and Utilization Project, State Inpatient Databases, 2017-2019
All Other Source: National Center for Health Statistics, National Vital Statistics System, Birth and Mortality Files, 2017-2019 (2016-2020 for MMR)

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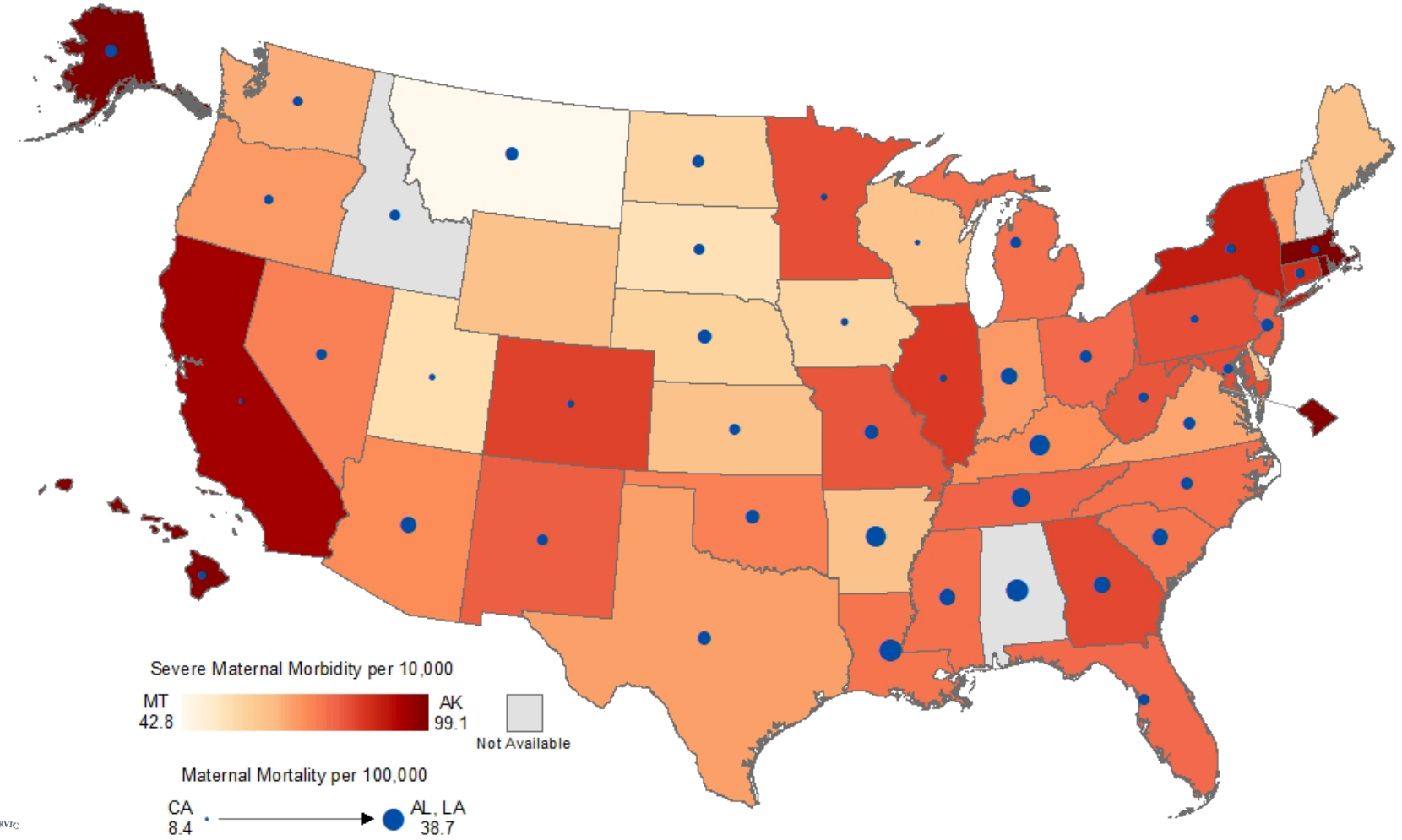
SMM and Maternal Mortality



SMM shows little geographic patterning with the highest rates in certain states on both coasts

Maternal mortality is highest in the southeast

Correlation: -0.25

SMM Source: Agency for Healthcare Research and Quality, Healthcare Cost and Utilization Project, State Inpatient Databases, 2017-2019
MMR Source: National Center for Health Statistics, National Vital Statistics System, Birth and Mortality Files, 2016-2020

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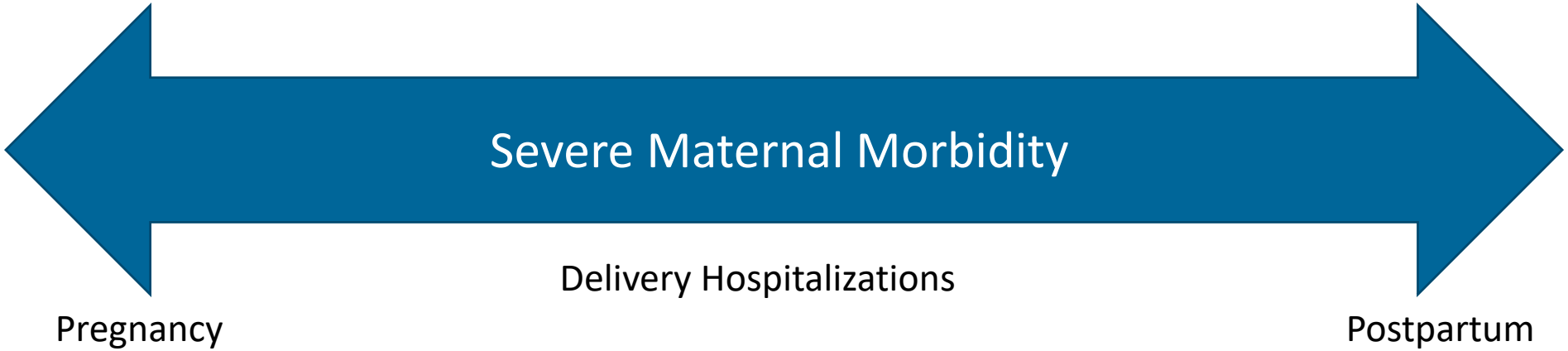
SMM Timing



- Recent analysis of IBM MarketScan data showed ~15% of de novo SMM occurred in the postpartum period

Chen J, Cox S, Kuklina EV, Ferre C, Barfield W, Li R. Assessment of Incidence and Factors Associated With Severe Maternal Morbidity After Delivery Discharge Among Women in the US. JAMA Netw Open. 2021 Feb 1;4(2):e2036148.

Contact Information

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