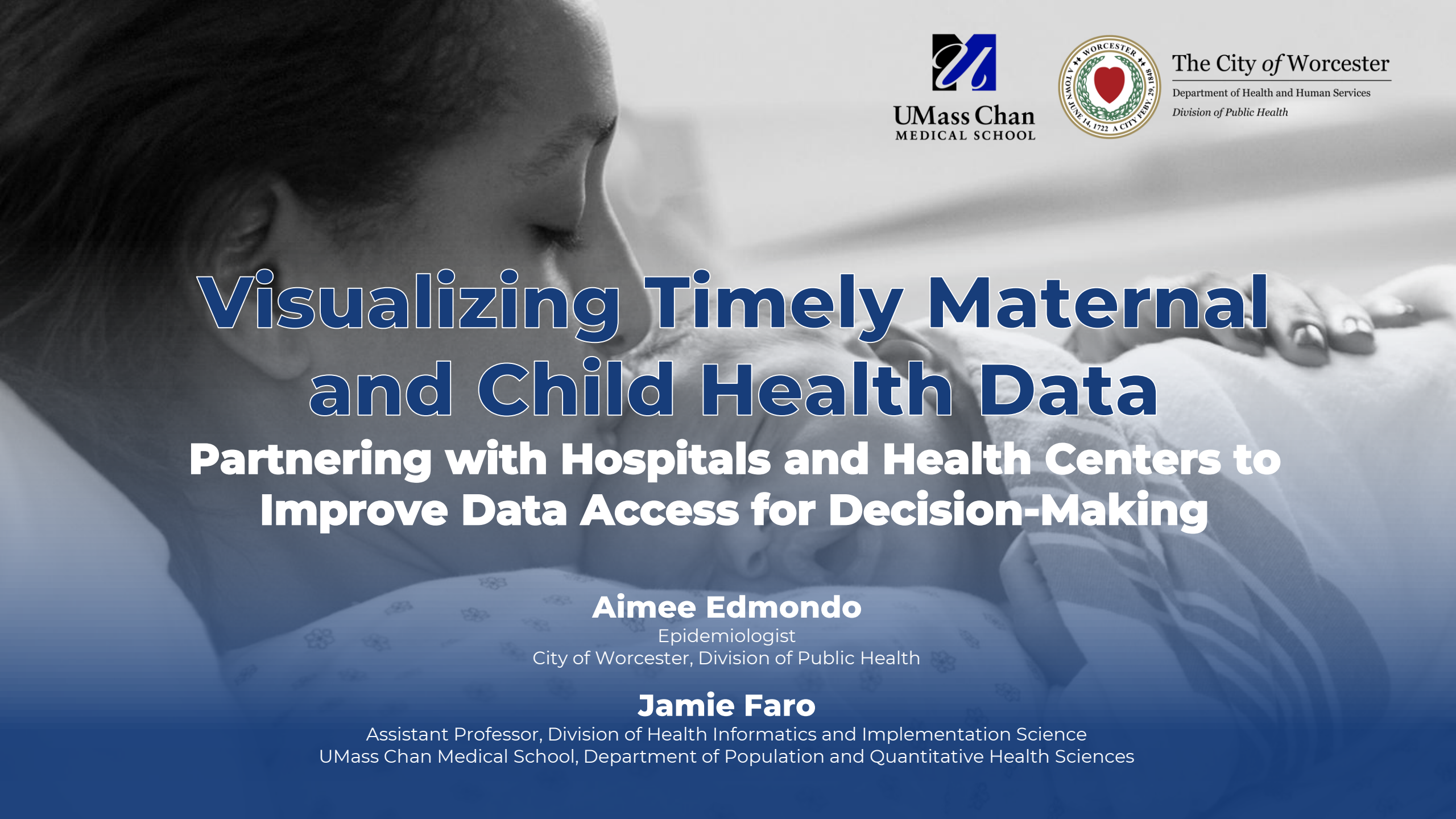


UMass Chan MEDICAL SCHOOL

The City *of* Worcester
Department of Health and Human Services
Division of Public Health

Visualizing Timely Maternal and Child Health Data

Partnering with Hospitals and Health Centers to Improve Data Access for Decision-Making

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UMass Chan Medical School, Department of Population and Quantitative Health Sciences

Disclaimer

We have no financial interests or relationships to disclose.

Poll 1: What are examples of important maternal and child health indicators a health department might want to know?

To join the poll, use the web address in your browser or scan the QR code

https://ahaslides.com/8TB5L

Contents

- Background on maternal and child health (MCH) in Worcester
- History of the public MCH dashboard
- Challenges with publicly available data
- The Worcester Integrated Health Data Exchange (WIHDE)
- WIHDE and WDPH partnership for improved MCH data
- Dashboard demo – Diseases of hypertension in pregnancy
- Data challenges and lessons learned
- Q&A

Maternal & Child Health in Worcester

- The City of Worcester is far more diverse than Worcester County or Massachusetts
- Many of the 2,200+ women who give birth each year in Worcester have high-risk demographic characteristics with associated poor health outcomes



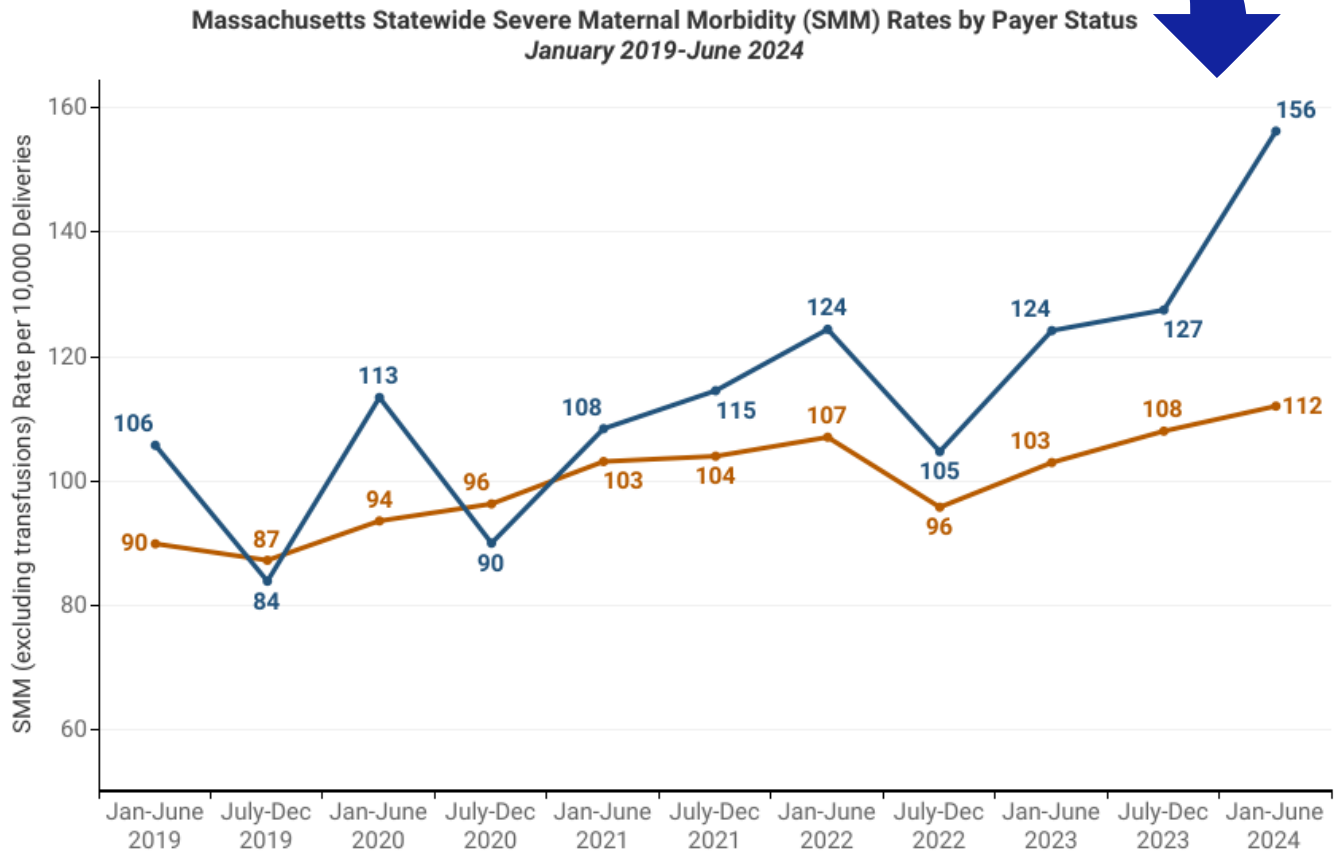
City of Worcester Division of Public Health 2025 Tea Party and Baby Shower event for expectant and newly postpartum mothers hosted at El Buen Samaritano

Public Payment for Prenatal Care, 2023

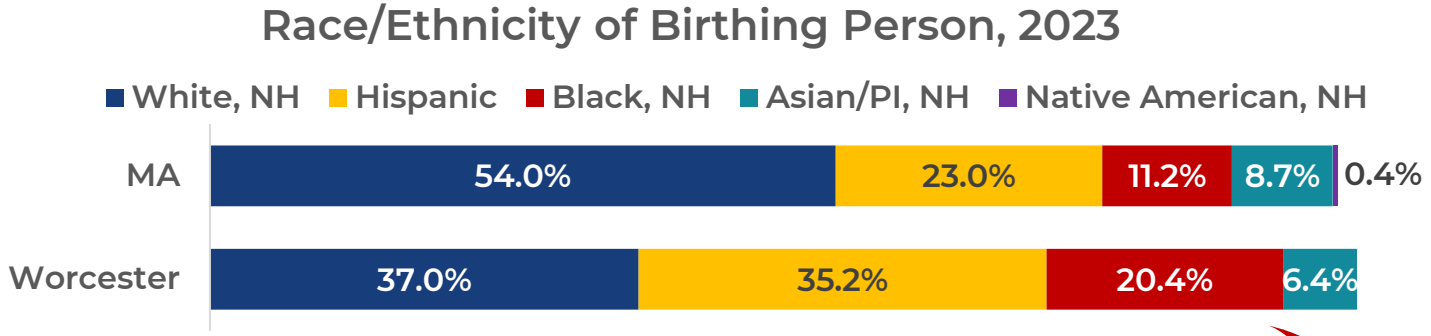


Disparities in SMM rates by payer status also exist, with Medicaid-insured patients being 1.14 times more likely to experience SMM than birthing patients with private/commercial insurance.

Though SMM rates have been steadily increasing among both payer groups, it is more pronounced for Medicaid-insured patients, whose rates of SMM almost doubled between July 2022 and June 2024.

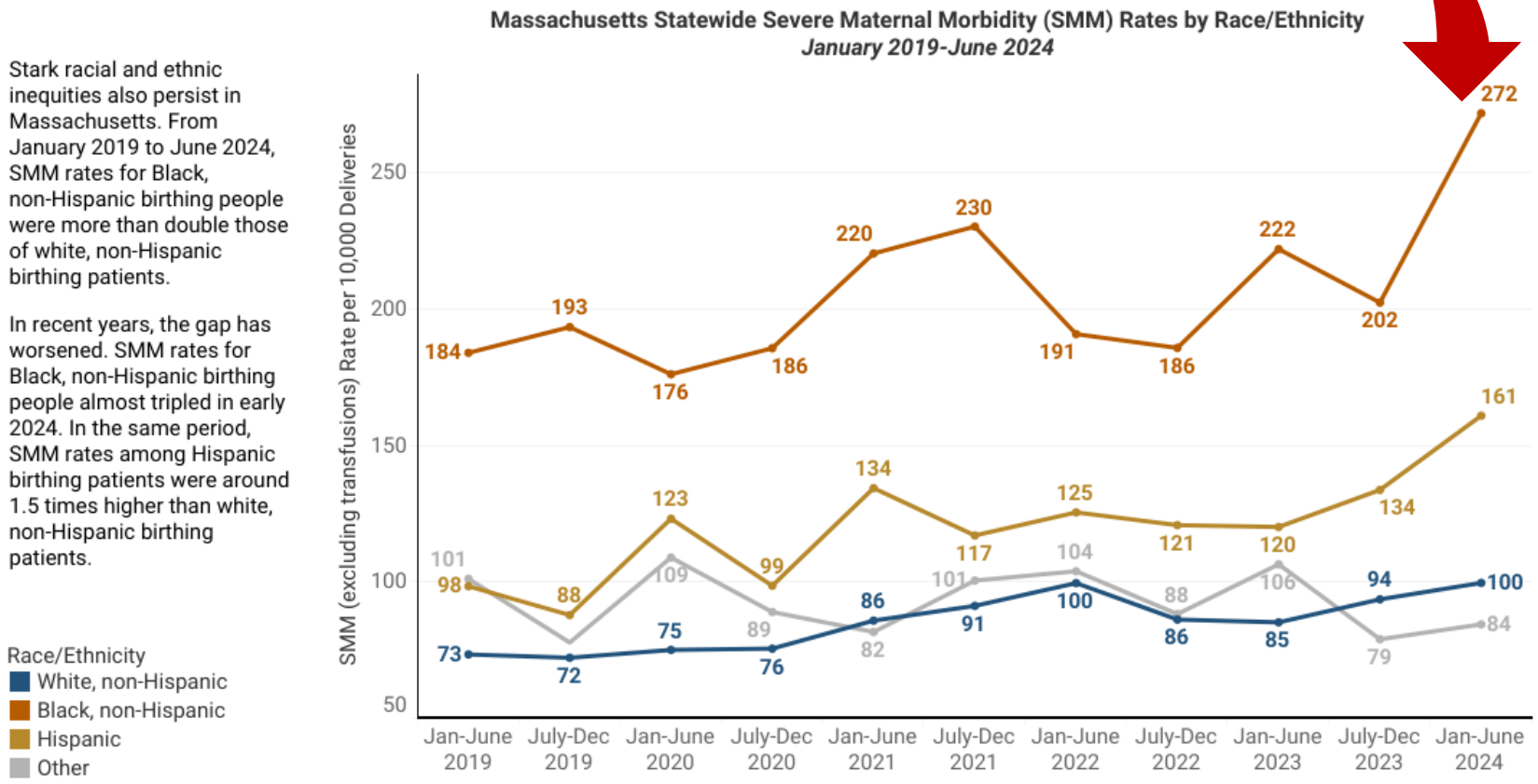


Source: MassDPH, Annual Massachusetts Birth Reports; Betsy Lehman Center for Patient Safety, Maternal Health > Morbidity Data



Stark racial and ethnic inequities also persist in Massachusetts. From January 2019 to June 2024, SMM rates for Black, non-Hispanic birthing people were more than double those of white, non-Hispanic birthing patients.

In recent years, the gap has worsened. SMM rates for Black, non-Hispanic birthing people almost tripled in early 2024. In the same period, SMM rates among Hispanic birthing patients were around 1.5 times higher than white, non-Hispanic birthing patients.



Source: MassDPH, Annual Massachusetts Birth Reports; Betsy Lehman Center for Patient Safety, Maternal Health > Morbidity Data

History of the Public MCH Dashboard

Guided by Local Voices

- Historical conversations between the City of Worcester and partner organizations working in the maternal and child health space include **a longstanding request for a report card on maternal and child health in Worcester**
- This need was reiterated by academic institutions, hospitals, and the City – who require maternal and child health data for different purposes, including priority setting and program evaluation



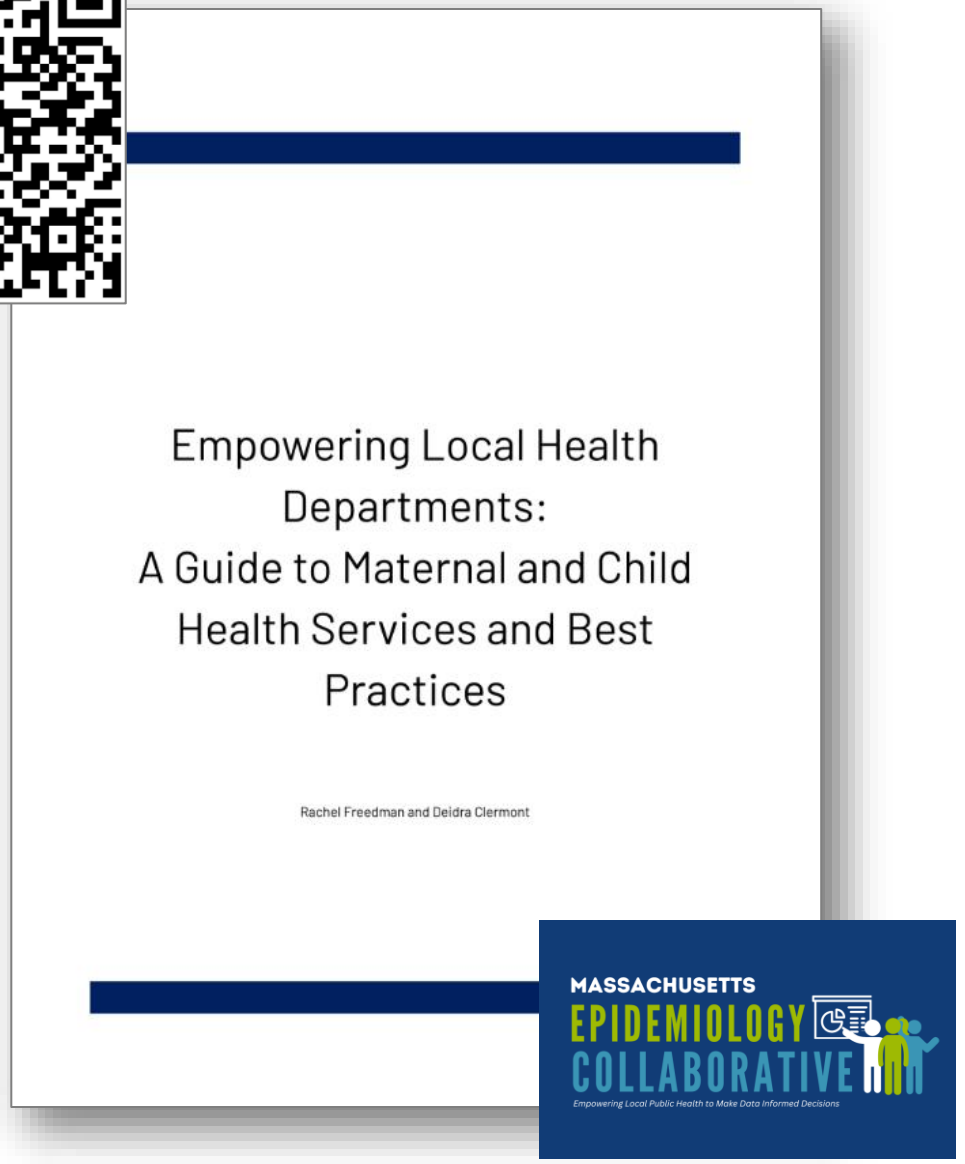
City of Worcester Division of Public Health Partners at the August 2026 Breastfeeding Professionals and Advocates Networking event reviewing breastfeeding data

History of the Public MCH Dashboard

Approach

- WDPH Epidemiology Office worked in tandem with the WDPH Maternal and Child Health Office on an approach to address the community's needs
- Began by reviewing existing guidance on key maternal and child health data
    - The MA Epidemiology Collaborative is a resource for sharing ideas and information – this guide is directly from collaborative members
    - The guide outlines key data points to consider when conducting a needs assessment focused on MCH

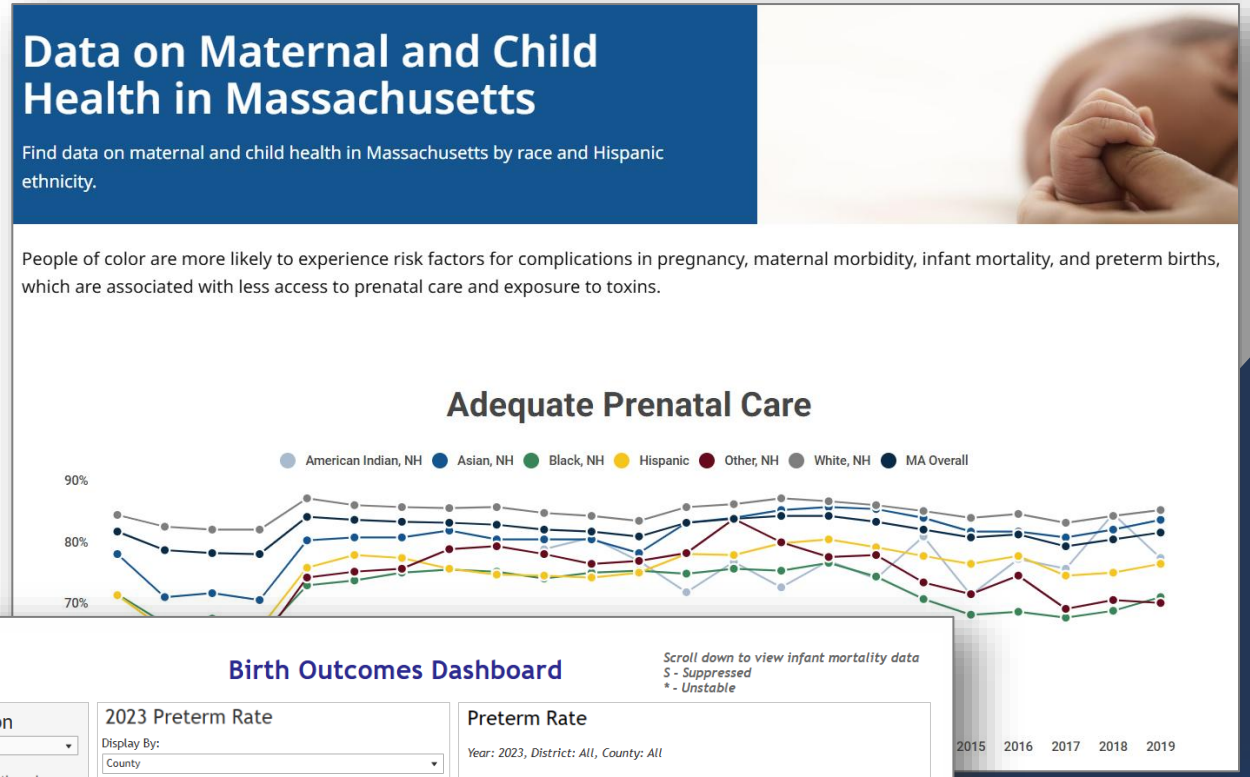
View the Guide

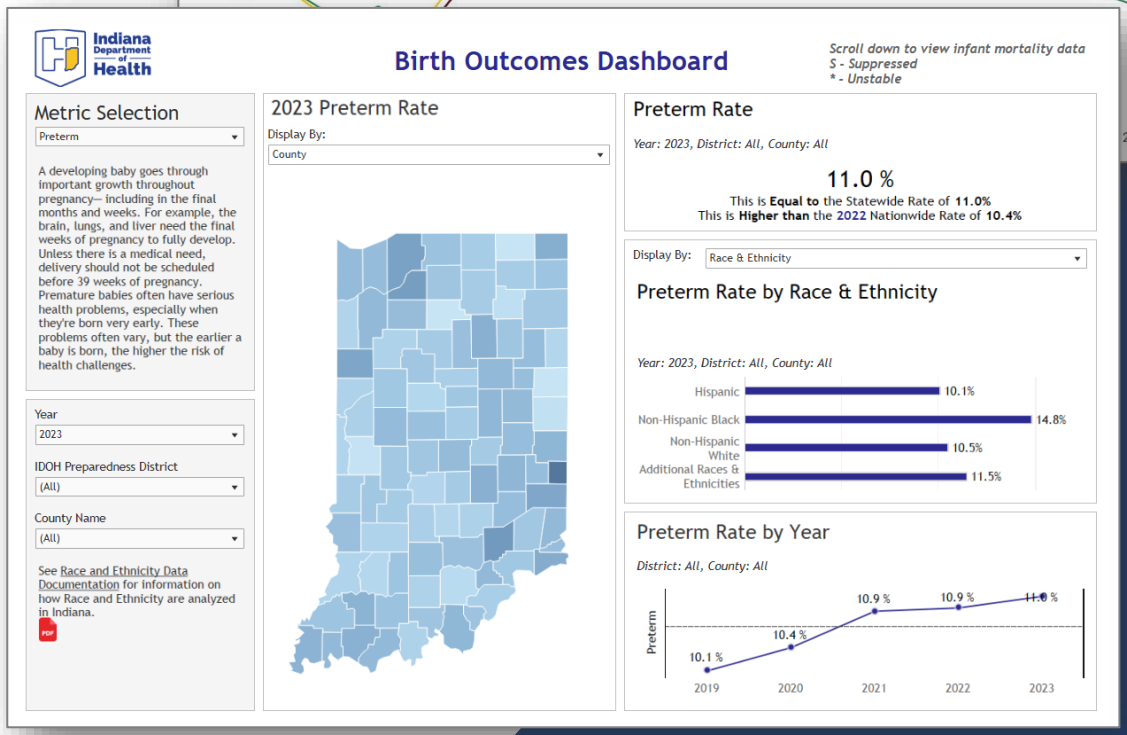


History of the Public MCH Dashboard

Learning from Others

- Reviewed existing maternal and child health dashboards in other jurisdictions around the country (e.g., Indiana, North Carolina, etc.)
- Drew inspiration and guidance from the Mass DPH Maternal and Child Health Dashboard and the Mass DPH Data Library





History of the Public MCH Dashboard

Indicator Selection

- Epi worked with the Maternal and Child Health Office at WDPH to narrow down indicators based on guidance and other best practices from health departments
- Determine which types of disaggregation would be most impactful for targeted programming: such as geographic level, time trends, racial breakdowns
- Determine the types of visuals that are possible with the data available and that would be the most helpful to a general audience

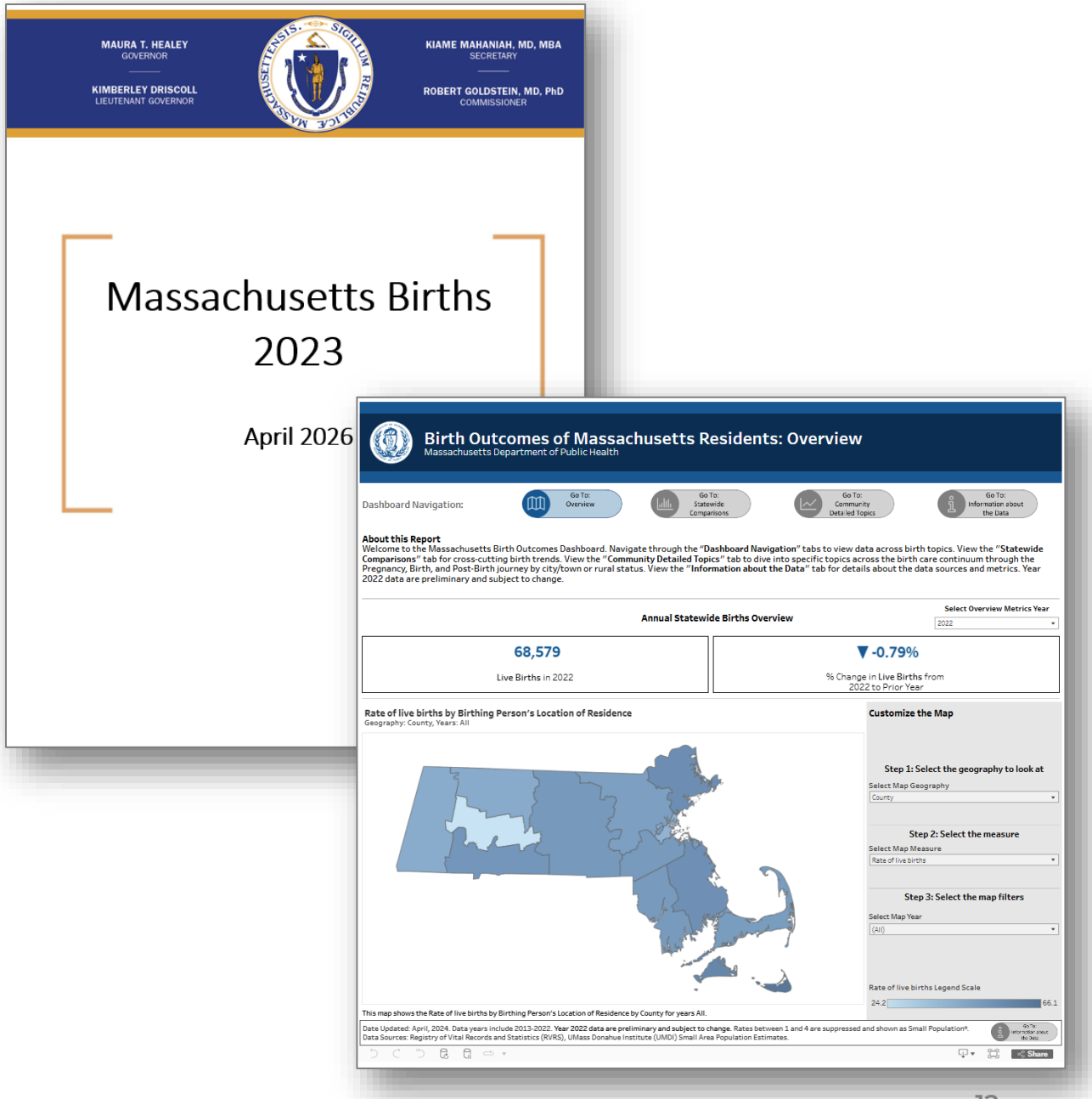
Indicator	Disaggregation	Category	Data Source(s)
Maternal Health			
OBGYNs (population per provider ratio)	City, State, US Trends over time	Prenatal Care Access and Utilization	National Plan and Provider Enumeration System (NPPES) via MySidewalk
Midwives/Doulas (population per provider ratio)	City, State, US Trends over time	Prenatal Care Access and Utilization	National Plan and Provider Enumeration System (NPPES) via MySidewalk
Adequacy of Prenatal Care Utilization Index	City, State, US Trends over time Race Payment Type Age	Prenatal Care Access and Utilization	-National Vital Statistics Report (US) -Mass DPH Birth Reports (State, City)
Prenatal Care in the First Trimester	County, State, US Trends over time	Prenatal Care Access and Utilization	-CDC Wonder via MySidewalk
Postpartum Care Attendance	City, State, US Race	Prenatal Care Access and Utilization	-PRAMS (State, US) -Mass DPH PRAMS
Births by Payment Type	City, State, US Race Age	Prenatal Care Access and Utilization	-National Vital Statistics Report (US) -Mass DPH Birth Report (State, City) Birth Outcomes Dashboard
Maternal Mortality	City, State, US Race	Maternal Mortality & Morbidity	-CDC (National)
Severe Maternal Morbidity	City, State, US Race Age Weight Special populations	Maternal Mortality & Morbidity	Mass DPH (state)
Pre-Pregnancy Weight	City, State, US	Maternal Mortality & Morbidity	-Mass DPH (City)
Hypertension/Pre-eclampsia/Eclampsia	City, State, US Race Age	Maternal Mortality & Morbidity	-CDC (National)
Gestational Diabetes	City, State, US Race Age	Maternal Mortality & Morbidity	-Mass DPH (City)
Postpartum Depression		Perinatal mental health and substance misuse	PRAMS -Mass DPH (State) -CDC (US)
Smoking		Perinatal mental health and substance misuse	PRAMS -Mass DPH (City) -Mass DPH (State) -CDC (US)

History of the Public MCH Dashboard

Data Sources

- Most data is publicly available, but scattered across various sources and sometimes difficult to access or navigate
  - As a larger municipality, we are fortunate to have the ability to access some public data at City-level, this often isn't the case for many municipalities in MA

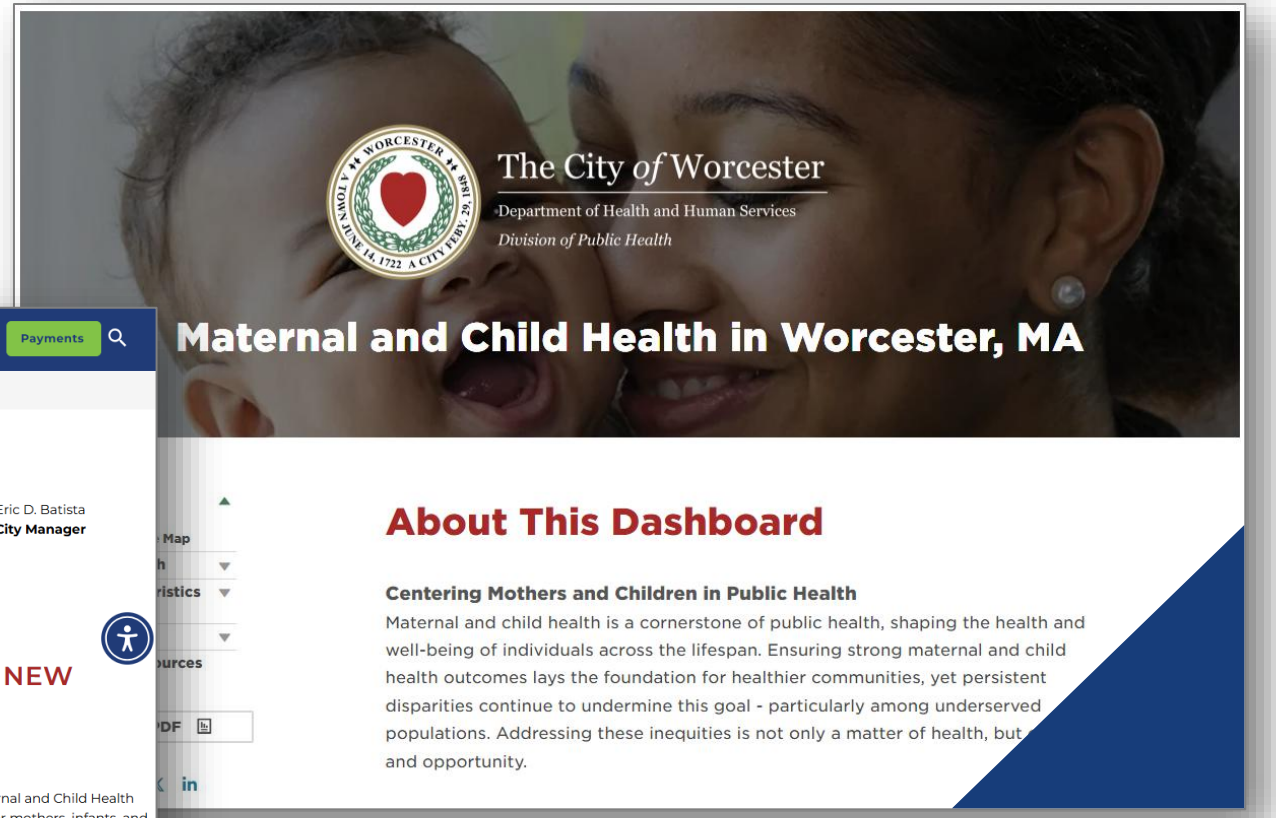
- What data sources are available
  - State: PRAMS, Birth Reports, SMM Reports, DESE, DEP
  - National: CDC Wonder, National Vital Statistics, US Census Bureau



History of the Public MCH Dashboard

Launch

Check out the dashboard!
Scan or visit bit.ly/WorcesterMCH





Poll 2: What are some challenges you've experienced with accessing health outcome data for public health programs?

To join the poll, use the web address in your browser or scan the QR code

https://ahaslides.com/8TB5L

Challenges with Publicly Available Data

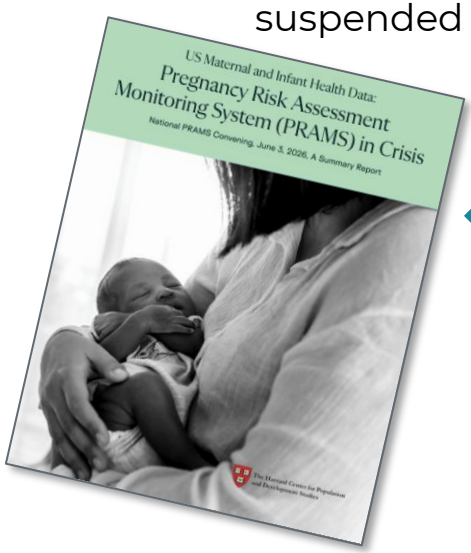
Data Delays
Data is often only available after one year or more, leading to less responsive public health programs

Limited Local Data
Data is often not available at City/Town level, or may be suppressed due to small numbers

Validity of Self-Reported Data
Some data sets rely on self-reported data, health record data could present a more complete picture

Changes to Federal Data
Data sets have been removed or are no longer being collected (e.g., CDC oversight of PRAMS suspended in 2025)

Potential Solution
Utilize existing partnerships with local health providers to aggregate patient data and develop more timely health outcome indicators specific to Worcester's population

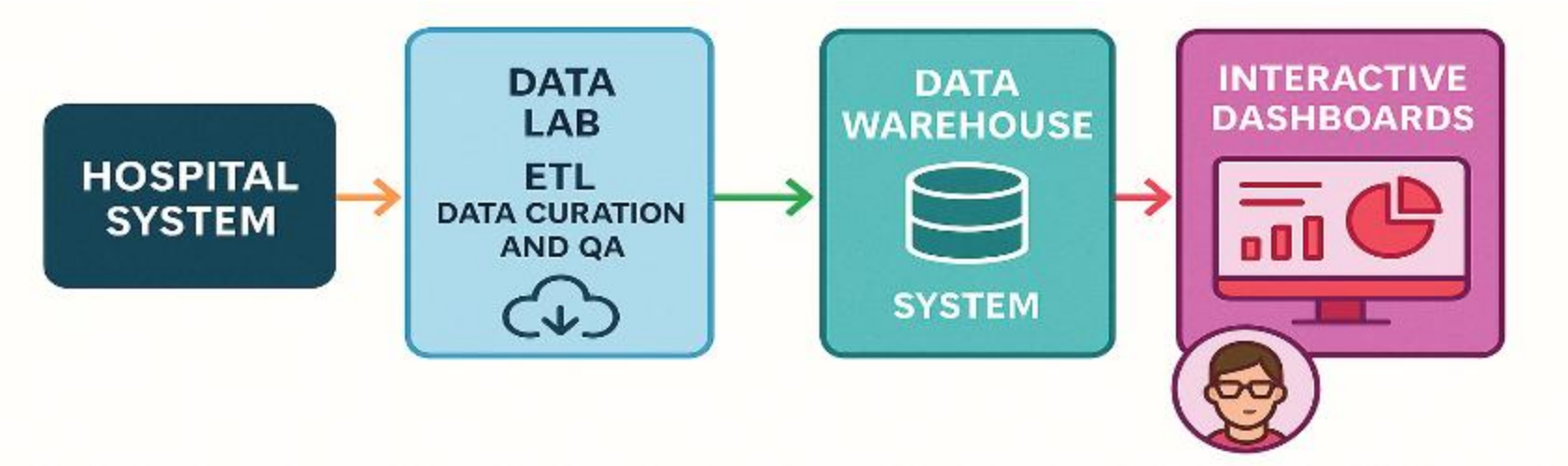


Source: Harvard TH Chan School of Public Health, PRAMS in Crisis (article)

The Worcester Integrated Health Data Exchange

Background

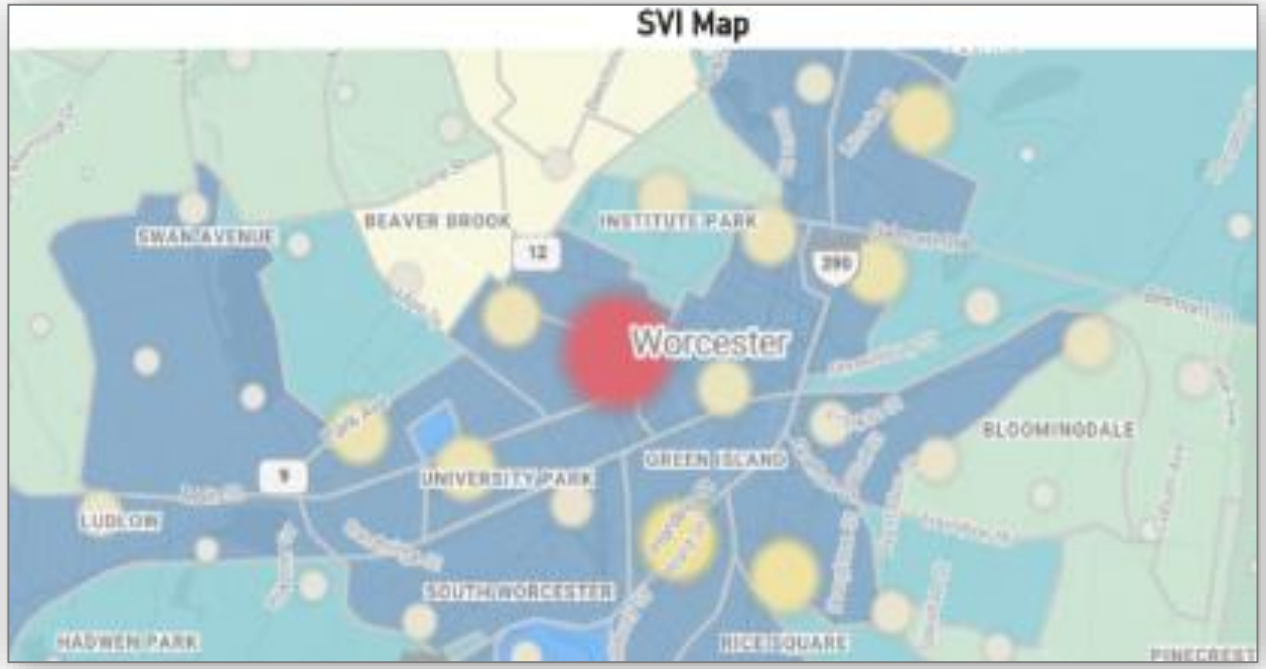
- WIHDE is an initiative between the City of Worcester and UMass Chan Medical School to harmonize data from the electronic health records in near real-time
- Developing near real-time dashboards with key indicators for Worcester's public health initiatives.



The Worcester Integrated Health Data Exchange

Turning Data into Action

- Near-real-time, cross-institutional dashboards
- Design focuses on equity in key areas of public health
- Not a benchmarking or compliance tool, an action-driven platform
- WIHDE translates data into action, not just reports but near real-time insights that inform decisions at local-levels.

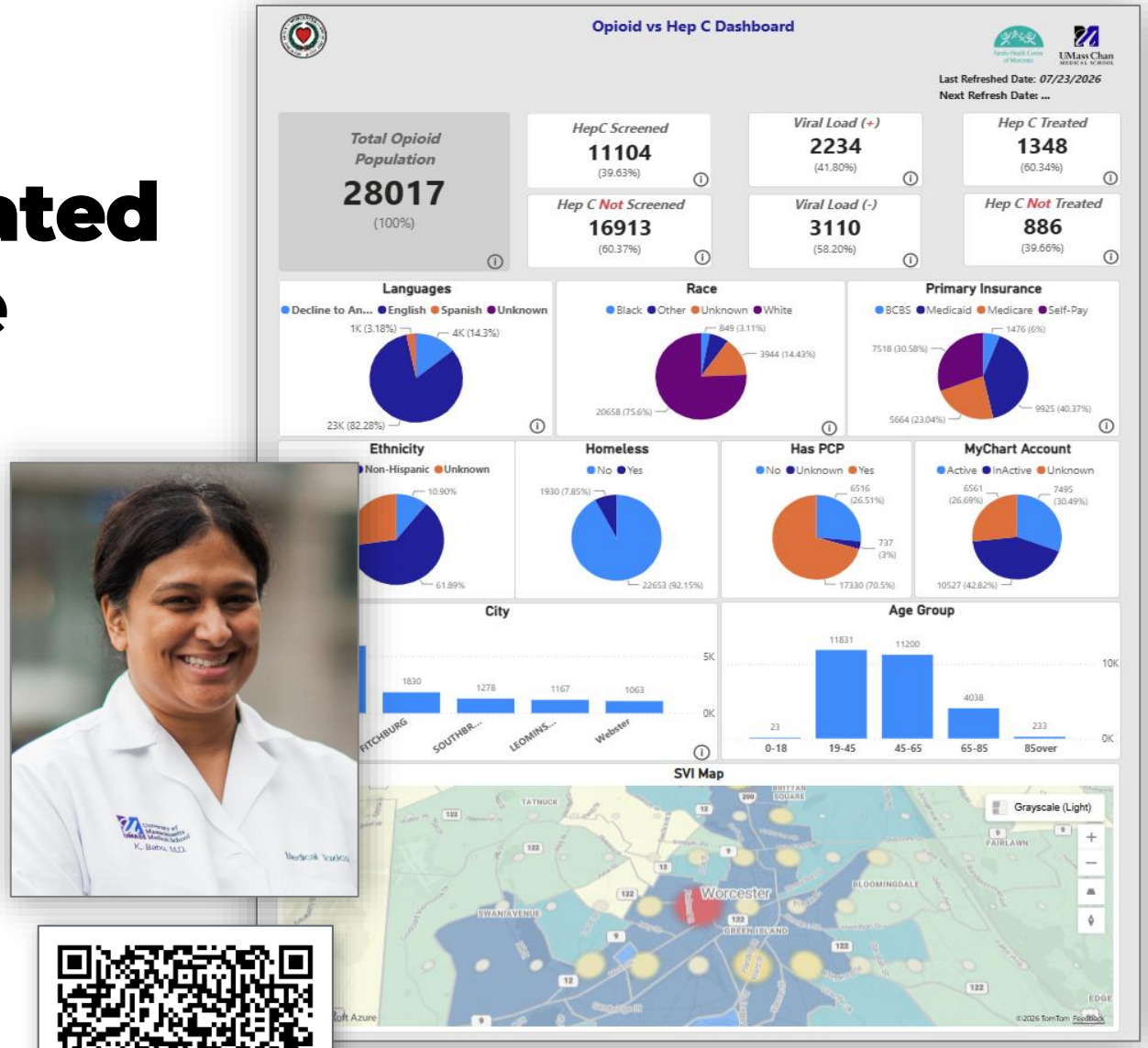


Patients with opioid use disorder by latitude and longitude overlayed on a social vulnerability index map disaggregated by census block

The Worcester Integrated Health Data Exchange

Opioid Dashboard Identifies Hep C and HIV Gaps

- Guided by Dr. Kavita Babu and Team
- Integrated data across UMass Memorial and Family Health Center of Worcester
- The dashboards examine hepatitis C and HIV screening and treatment among people with opioid use disorder.
- Findings support questions about screening, linkage to care, and policy planning.



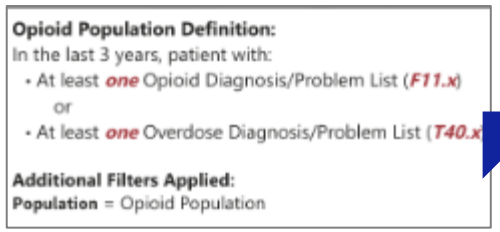
Scan to view the Opioid Dashboard

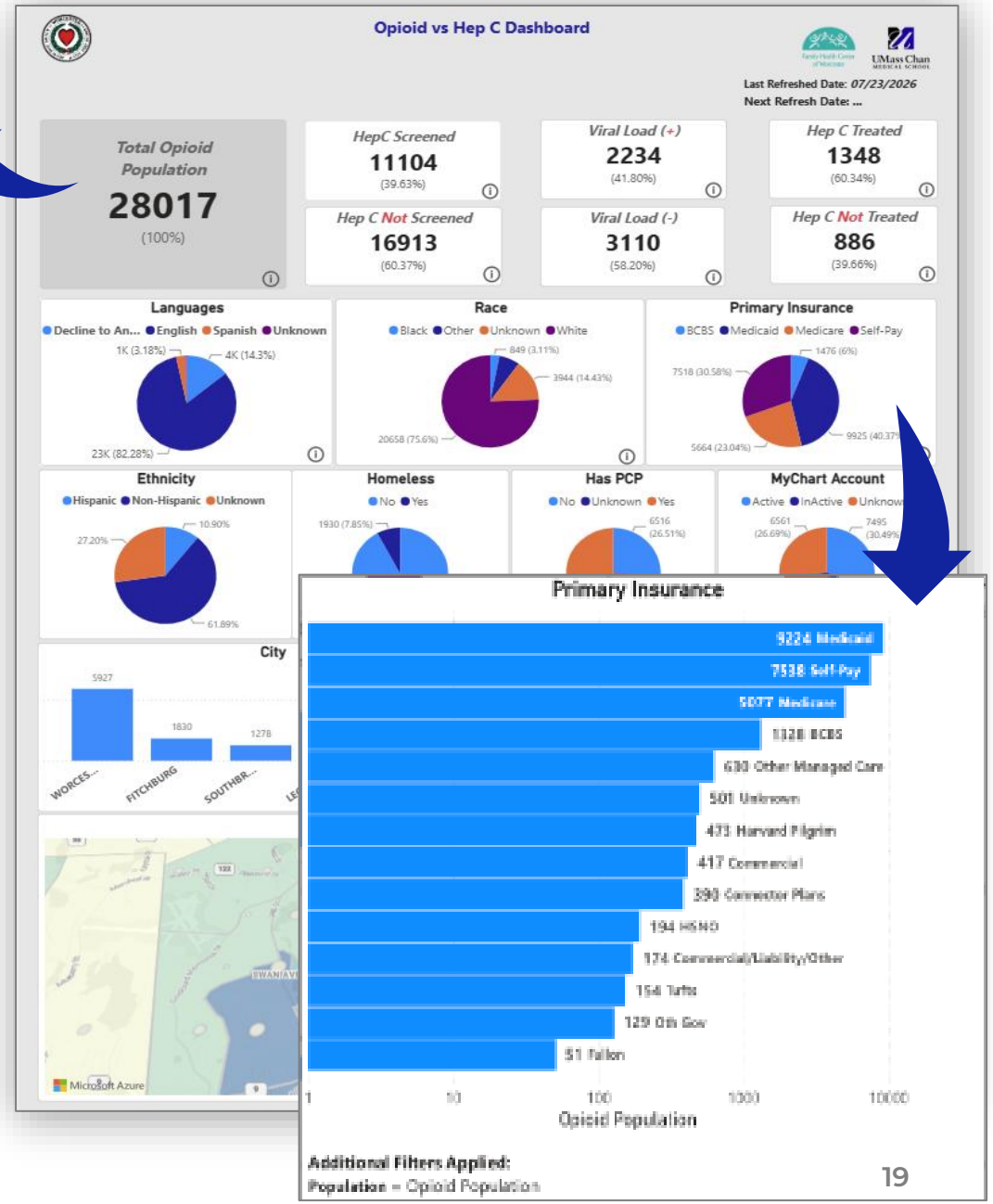
Select Next Page for the hepatitis C report, page 2 of 4.

The Worcester Integrated Health Data Exchange

Power BI supports defined measures and interactive exploration

- SQL extracts electronic health record information using agreed indicator definitions.
- Power BI supports drill-down features for more granular population summaries.
- Connected data sets can support automatic refresh when source connectivity and transfer processes are in place.
- Different visuals can display health outcomes by population, place, and time.





The Worcester Integrated Health Data Exchange

Brainstorming Questions for MCH Dashboard



How do subgroups compare within and across indicators of interest (race, ethnicity, age group, insurance types, etc.)?



Are there crises we can identify in addition to what is known (i.e., Black maternal health crisis, older moms, pre-pregnancy obesity)?



In what **populations is there the highest need** for wrap-around services?



How can we best leverage hospital data?

- Hypertensive disorders and breastfeeding data gaps
- Insight into social determinants of health
- Up to date key indicators

The Worcester Integrated Health Data Exchange

Key Indicators of Interest for MCH Dashboard



Maternal Health

- Gestational Diabetes
- Obesity
- Diseases of Hypertension
- Mental Health
- First Trimester Care Attendance
- Postpartum Care Attendance
- Substance Use
- Adequacy of Prenatal Care Utilization
- Maternal Mortality
- Severe Maternal Morbidity
- Social Determinants of Health



Birth Outcomes

- Birth Method
- Gestational age
- Gestational weight



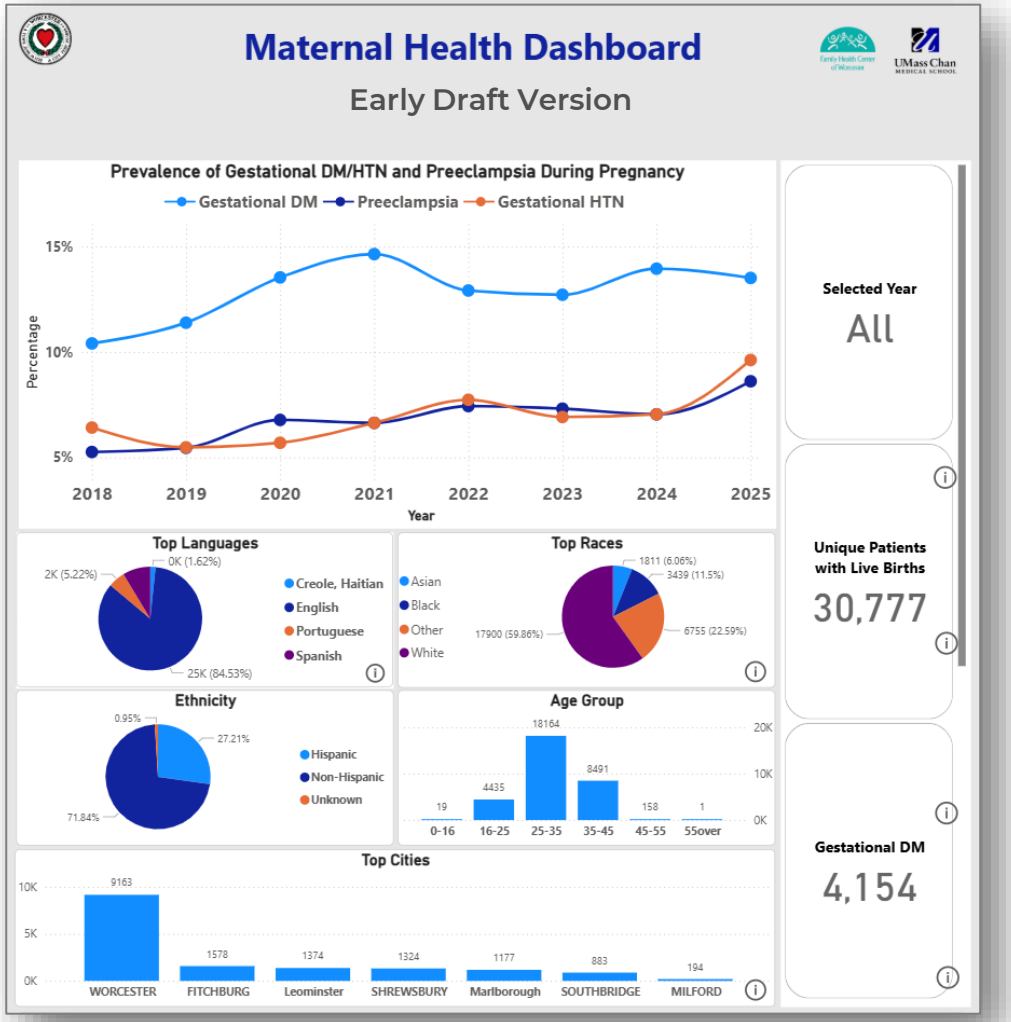
Child Health

- Breastfeeding
- Immunization
- Annual Well Child Visit Attendance
- Infant mortality
- Social Determinants of Health

The Worcester Integrated Health Data Exchange

Maternal Health Dashboard Iterations

- Hepatitis C dashboard used as template
- City's maternal and child health indicators/dashboard used to inform data
- Regular working group meetings between City, UMass Chan RIC, OB/GYNs, Maternal/Fetal Medicine Specialists
- Iterative refinements based on feedback and usability testing with users
- Other jurisdiction dashboards used for inspiration and design



Dashboard Scope and Indicator Example

Population, definitions, and data limitations

UMassMemorial Health Care

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Worcester Integrated Health Data Exchange (WIHDE)
Maternal Health Dashboard

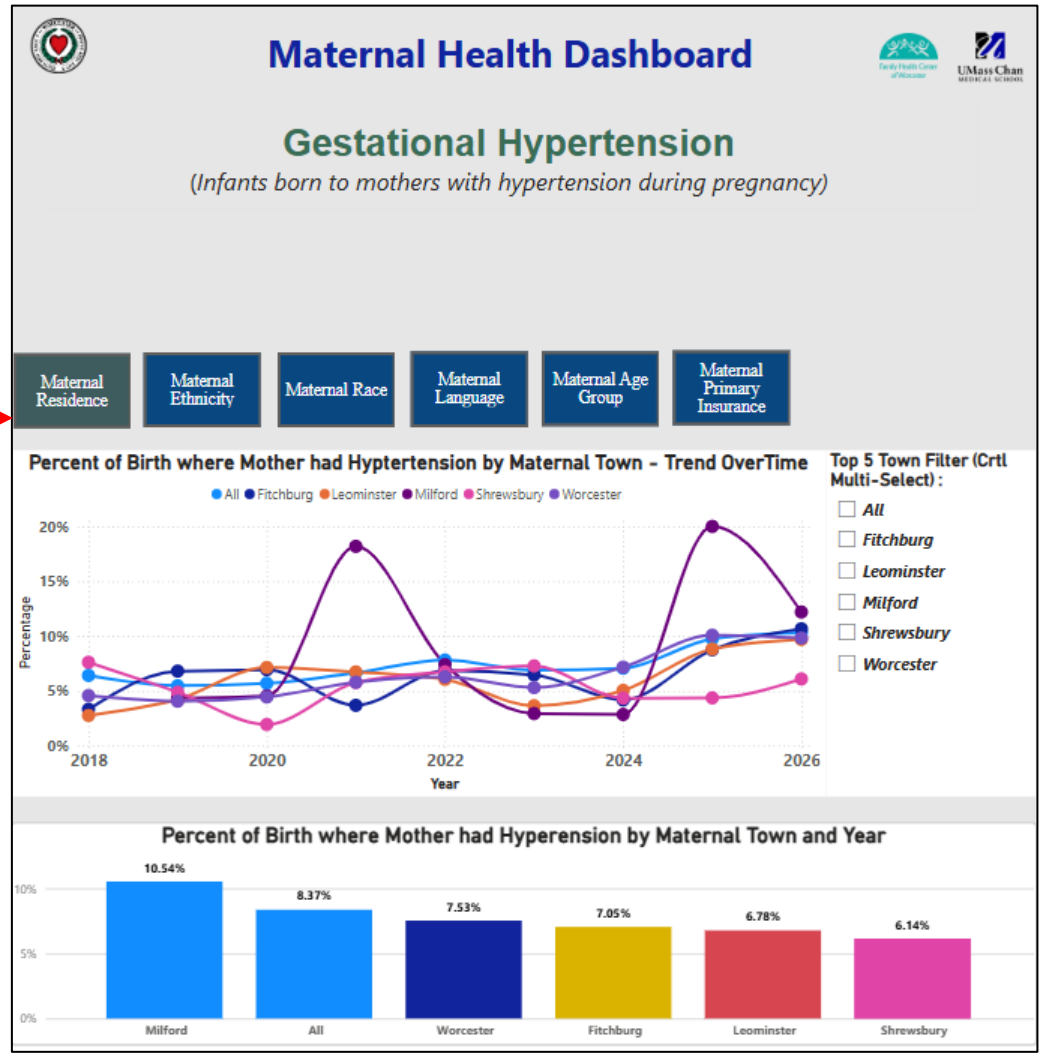
Birth Characteristics/Risk Factor Dashboards:

- Preeclampsia
- Gestational Diabetes
- Gestational Hypertension
- Pregnancy-related obesity (BMI>30)
- Maternal Morbidity
- Maternal Mortality
- Smoking and Substance Use
- Mental Health
- Prenatal Care
- Social Determinants of Health (Also added into indicators above)

About this Dashboard:
This dashboard was developed as a joint collaboration between the City of Worcester Department of Public Health and UMass Chan Medical School. Maternal health is a critical public health concern for the City of Worcester, and the purpose of this dashboard is to provide data to help identify maternal health trends across the City. These data will provide measurable insights into areas needing intervention to support the health of birthing persons in the city. The dashboard includes data for people giving birth and/or receiving prenatal care at UMass Memorial healthcare system in the City of Worcester, dating back to January 2018.

Data Source and Limitations
The data presented in this dashboard include de-identified electronic health record data from the UMass Memorial healthcare system. Data included in this dashboard are limited to those within the electronic health record using ICD-10 codes. As such, it is possible that clinical notes contain additional data not captured in the ICD-10 codes. There also may be variation in applying ICD-10 codes between providers, healthcare systems, and clinics.

Gestational hypertension by maternal residence and time



Exploring Hypertension in the Maternal Health Dashboard

- Which populations have higher observed rates of hypertension in pregnancy, and what should partners investigate further?
- Select a population and compare the observed pattern.
- Review clinical context, the population included, and data coverage.
- Identify an additional assessment or a possible service response with the relevant partners.

Scan to View the MCH Dashboard

Poll 3: What would be the best/most useful way to display these types of data to you and your teams?

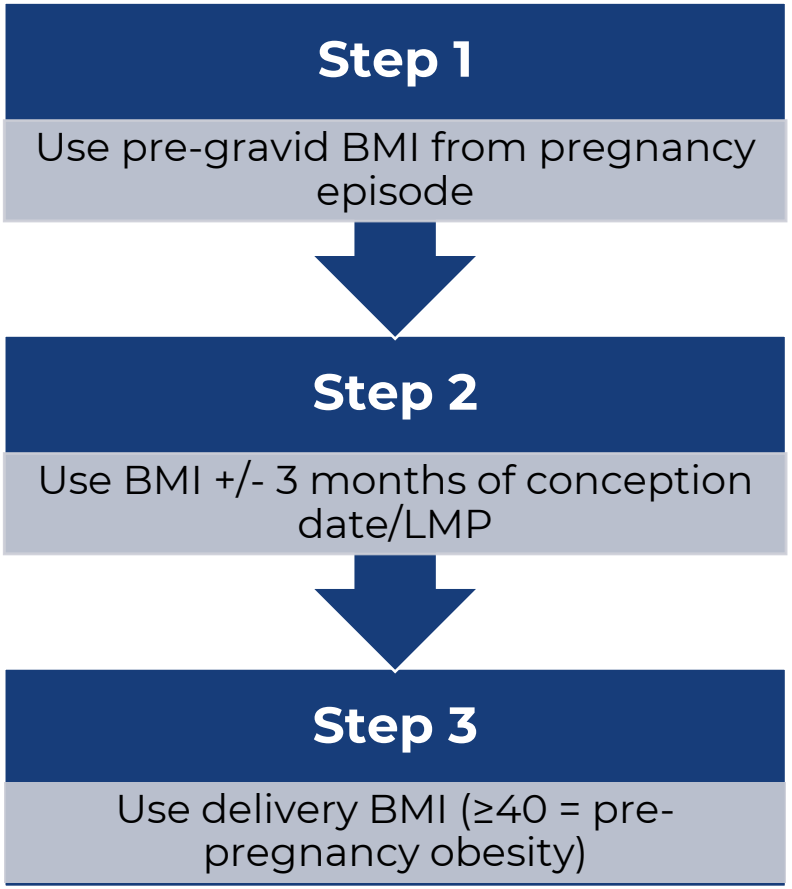
To join the poll, use the web address in your browser or scan the QR code

https://ahaslides.com/8TB5L

The Worcester Integrated Health Data Exchange

MCH Data Challenges

- Data limited by discrete variables within the EHR and data available ICD-10 codes are used for data extraction and may not capture all diagnoses
- Flowsheets are being used to capture some data (i.e., depression questionnaires), but those occur at several timepoints and will have varying temporal trends
- Example: Pre-pregnancy obesity: Difficult to ascertain based on visit prior to pregnancy; Proxy timepoints to assess
- Not all patients delivering at UMass Memorial receive prenatal care at UMass
- SDOH data are limited to the last ~1-2 years



The Worcester Integrated Health Data Exchange

Partnership Lessons Learned

- Researchers, informatics specialists, health providers, and public health professionals all use health data differently – it is essential to understand and define the target audience for these visualizations
- Work planning is essential to maintain project progress
- Not all indicators can be visualized or disaggregated due to small numbers (e.g., maternal mortality), when they are visualized, this sometimes results in erratic trend lines
- If there are multiple health providers, buy-in is essential to improve the data set (UMass Memorial is a level 1 facility and may have higher risk patients or emergency obstetric and pediatric cases that are not reflective of the general population)

Feedback for us!

Poll 4: What feedback do you have for our team on improving the data dashboard development?

To join the poll, use the web address in your browser or scan the QR code

https://ahaslides.com/8TB5L

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