Every Beginning Matters:
Fetal Mortality in St. Louis County, 2019-2023

Presented to Community Action Team (CAT) Meeting

SAINT LOUIS COUNTY
Missouri

Michael Royce Tan
December 9, 2025

Why This Matters

The health of our mothers and babies is a mirror reflecting the health of our entire community. Fetal mortality is more than a statistic; it's a measure of our collective well-being and a call care for every family.

A sensitive topic we will approach with care.

A shared challenge that requires a shared response

A story told through data, leading to action

Our Approach

Case Definition

A fetal death is the loss of a pregnancy at 20 weeks of gestation or more.

Data Source
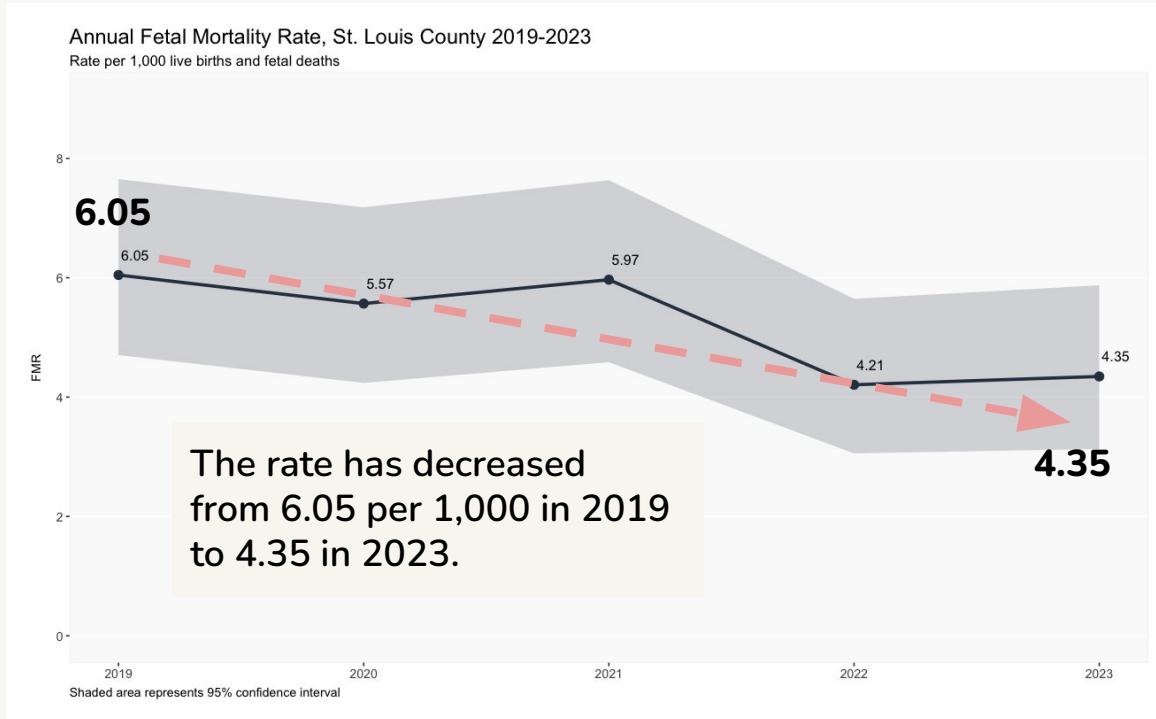
St. Louis County birth and fetal death records from 2019 to 2023

What is a 95% Confidence Interval?
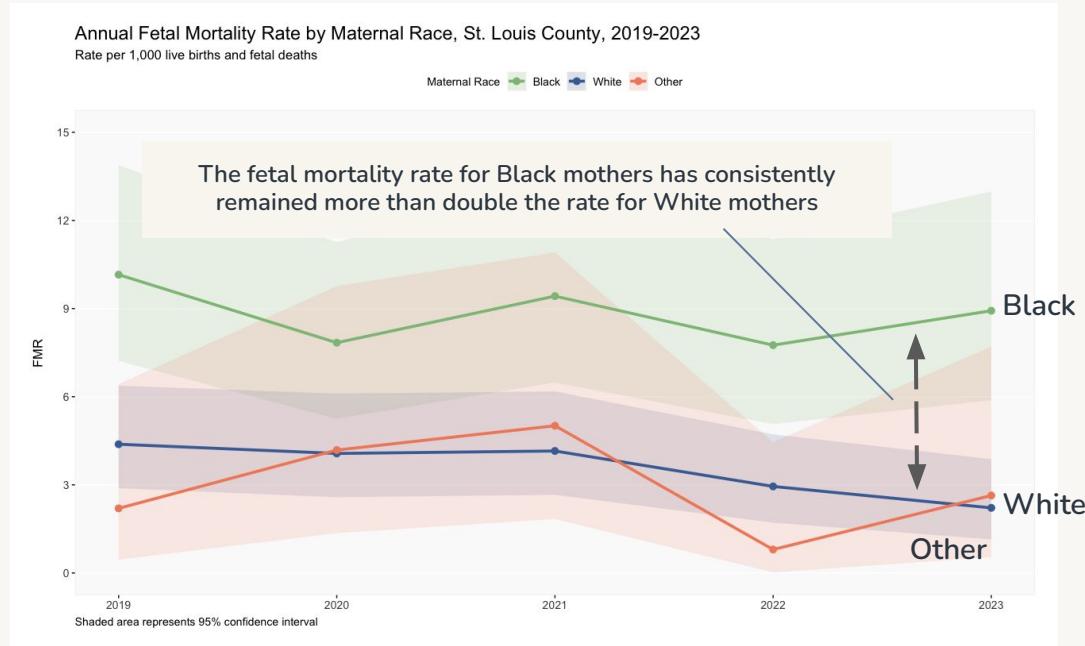
A measure of reliability. The shaded areas on our graphs show the range where we are 95% sure the true rate lies. Wider ranges mean less certainty, usually because of smaller numbers of events.

The Big Picture: Overall Fetal Death is Trending Downward

Annual Fetal Mortality Rate, St. Louis County 2019-2023
Rate per 1,000 live births and fetal deaths

6.05

6.05

5.57

5.97

4.21

4.35

4.35

FMR

8

6

4

2

0

The rate has decreased from 6.05 per 1,000 in 2019 to 4.35 in 2023.

2019   2020   2021   2022   2023

Shaded area represents 95% confidence interval
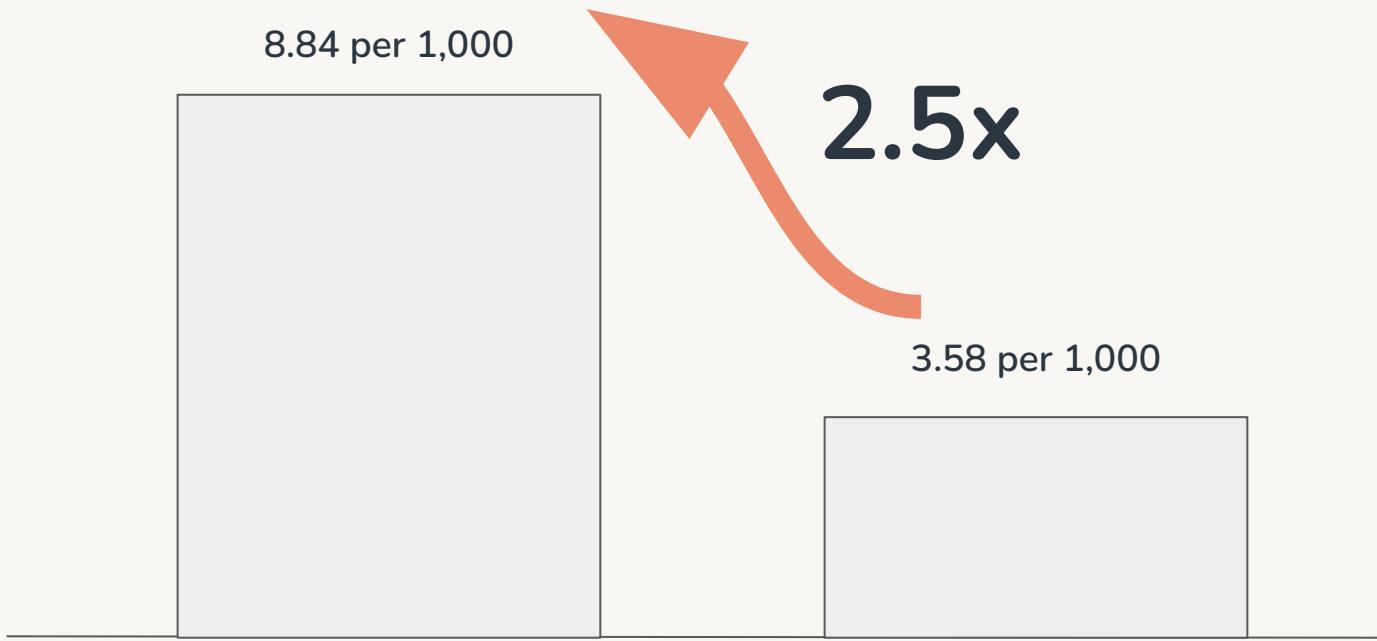
But... does this overall trend tell the whole story?
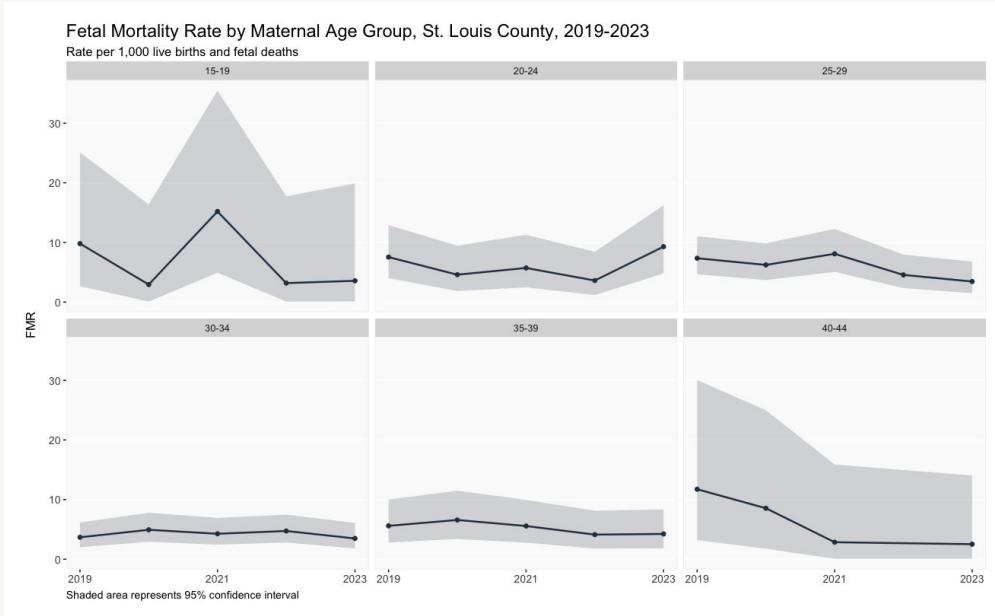
A tale of Two Realities: A Deep and Persistent Racial Gap

Annual Fetal Mortality Rate by Maternal Race, St. Louis County, 2019-2023
Rate per 1,000 live births and fetal deaths

Maternal Race ● Black ● White ● Other

The fetal mortality rate for Black mothers has consistently remained more than double the rate for White mothers

Black
White
Other

FMR

Shaded area represents 95% confidence interval

Black Mothers Face 2.5 Times the Risk of Fetal Loss

8.84 per 1,000

2.5x

3.58 per 1,000

Risk is Highest among the Youngest

Fetal Mortality Rate by Maternal Age Group, St. Louis County, 2019-2023
Rate per 1,000 live births and fetal deaths

Shaded area represents 95% confidence interval
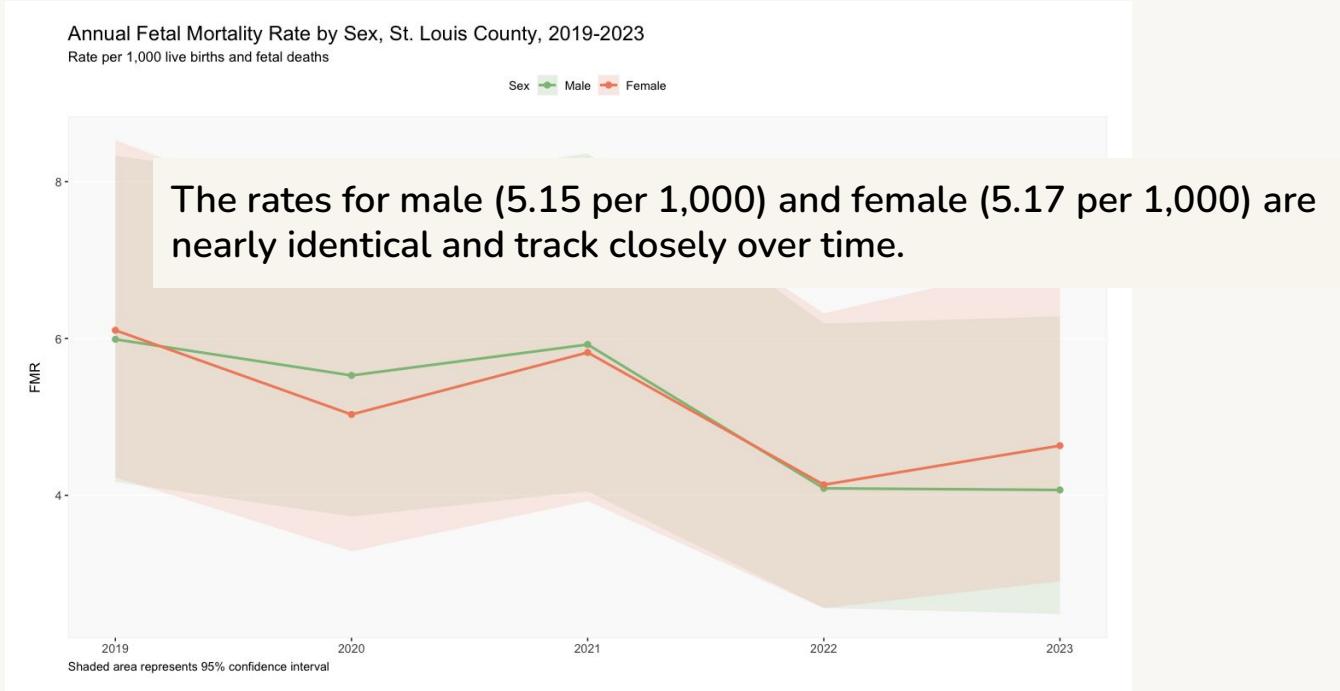
We see elevated rates among the youngest (7.18 per 1,000 for ages 15-19)
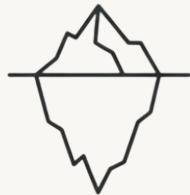
Fetal Mortality Rate by Maternal Age Group, Saint Louis County 2019 to 2023

Age Group	Fetal Deaths	Live Births	Total	Fetal Mortality Rate per 1000 live births and fetal deaths	95% CI Lower	95% CI Upper	CI Method
15-19	12	1,659	1,671	7.18	3.71	12.54	Poisson
20-24	45	7,273	7,318	6.15	4.49	8.23	Poisson
25-29	83	13,605	13,688	6.06	4.82	7.53	Poisson
30-34	78	18,397	18,475	4.22	3.34	5.27	Poisson
35-39	50	9,547	9,597	5.21	3.87	6.87	Poisson
40-44	9	1,789	1,798	5.01	2.29	9.50	Poisson

Shows No Significant Difference by Fetal Sex

Annual Fetal Mortality Rate by Sex, St. Louis County, 2019-2023
Rate per 1,000 live births and fetal deaths

Sex — Male — Female

The rates for male (5.15 per 1,000) and female (5.17 per 1,000) are nearly identical and track closely over time.

FMR

2019   2020   2021   2022   2023

Shaded area represents 95% confidence interval

From Data to Meaning: The Story of Inequity

1. Averages Hide Disparities

Our overall progress is positive, but it masks a critical and ongoing crisis for Black families in our community.

2. This is a Systemic Issue

A gap this large and persistent is not about individual choices. It points to systemic factors like healthcare access, quality of care, and structural inequities.

3. This is a Call to Action

This data is not just information; it is a mandate to act.

How Can We Write a Different Story?

Listen & Learn: How do we center the voices and lived experiences to understand the "why" behind the numbers? to understand their lived experiences and co-design meaningful solutions
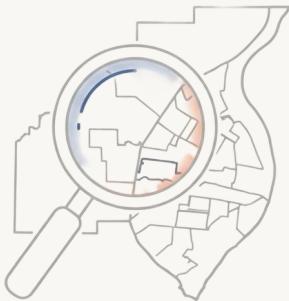
Strengthen Support: What community-based programs can we expand to provide culturally competent care? To improve the quality and availability of culturally competent care.

Demand Equity: How can we work with healthcare systems ensure equitable, respectful care for every mother? Champion policies that address social determinants of health, such as stable housing, food security, and economic opportunity

What We Need for a Clearer Picture

More Granular Data: Analysis by zip code or neighborhood to identify hotspots of disparities

Linkage to Social Determinants: Connecting outcomes to data on housing, income, and education.

Qualitative Insights: A formal process for gathering patient experience stories to complement the numbers.

Every pregnancy should have a healthy outcome.

Discussion & Questions

Thank You

Reference

1. Centers for Disease Control and Prevention. (2023). User guide to the 2023 fetal death public use file. https://ftp.cdc.gov/pub/Health_Statistics/NCHS/Dataset_Documentation/DVS/fetaldeath/2023fetaluserguide.pdf

2. MacDorman, M. F., & Gregory, E. C. W. (2015, July 23). Fetal and perinatal mortality: United States, 2013 (National Center for Health Statistics. Vital and Health Statistics, 64[8], 1–24). https://stacks.cdc.gov/view/cdc/231851

Fetal Mortality Rate, Saint Louis County 2019 to 2023

$$\text{Fetal mortality rate} = \frac{\text{Fetal deaths at 20 weeks of gestation or more}}{\text{Live births and fetal deaths at 20 weeks or more}} \times 1{,}000$$

For Normal Distribution (deaths $\geq$ 100):

$$\text{Lower: } R_1 - 1.96 * R_1 * \frac{\text{RSE}(R_1)}{100}$$

$$\text{Upper: } R_1 + 1.96 * R_1 * \frac{\text{RSE}(R_1)}{100}$$

$$\text{RSE of the fetal mortality rate:RSE} = 100 * \sqrt{\frac{1}{D} + \frac{1}{B}}$$

For Poisson Distribution (deaths < 100):

$$\text{Lower: } R_1 \cdot L(0.95, D_{\text{adj}})$$

$$\text{Upper: } R_1 \cdot U(0.95, D_{\text{adj}})$$

$$D_{\text{adj}} = \frac{D \bullet B}{D + B}$$

Using the CDC Poisson L/U confidence-limit table for fetal and perinatal mortality rates. Using qchisq in R, same values as the CDC Poisson L/U confidence-limit table

$$L = \frac{\text{qchisq}(0.025, 2n)}{2n}$$

$$U = \frac{\text{qchisq}(0.975, 2(n+1))}{2n}$$

Fetal Mortality Rate, Saint Louis County, 2019 to 2023

Fetal Deaths	Live Births	Total	Fetal Mortality Rate per 1000 live births and fetal deaths	95% CI Lower	Upper	CI Method
277	52,414	52,691	5.26	4.64	5.88	Normal

Annual Fetal Mortality Rate, Saint Louis County 2019 to 2023

Year	Fetal Deaths	Live Births	Total	Fetal Mortality Rate per 1000 live births and fetal deaths	95% CI Lower	Upper	CI Method
2019	69	11,343	11,412	6.05	4.70	7.65	Poisson
2020	59	10,539	10,598	5.57	4.24	7.18	Poisson
2021	63	10,494	10,557	5.97	4.59	7.64	Poisson
2022	44	10,416	10,460	4.21	3.06	5.65	Poisson
2023	42	9,622	9,664	4.35	3.13	5.87	Poisson

Fetal Mortality Rate by Race, Saint Louis County, 2019 to 2023

Race	Fetal Deaths	Live Births	Total	Fetal Mortality Rate per 1000 live births and fetal deaths	95% CI Lower	Upper	CI Method
Black	154	17,267	17,421	8.84	7.44	10.24	Normal
White	103	28,670	28,773	3.58	2.89	4.27	Normal
Other	18	6,127	6,145	2.93	1.74	4.63	Poisson
Missing/Unknown	2	350	352	5.68	0.69	20.52	Poisson

Fetal Mortality Rate by Race, Saint Louis County, 2019 to 2023

Year	Race	Fetal Deaths	Live Births	Total	Fetal Mortality Rate per 1000 live births and fetal deaths	95% CI Lower	Upper	CI Method
2019	Black	39	3,802	3,841	10.15	7.22	13.88	Poisson
2019	White	27	6,134	6,161	4.38	2.89	6.38	Poisson
2019	Other	3	1,361	1,364	2.20	0.45	6.43	Poisson
2020	Black	29	3,671	3,700	7.84	5.25	11.26	Poisson
2020	White	23	5,630	5,653	4.07	2.58	6.10	Poisson
2020	Other	5	1,190	1,195	4.18	1.36	9.76	Poisson
2020	Missing/Unknown	2	48	50	40.00	4.84	144.49	Poisson
2021	Black	33	3,469	3,502	9.42	6.49	13.23	Poisson
2021	White	24	5,754	5,778	4.15	2.66	6.18	Poisson
2021	Other	6	1,191	1,197	5.01	1.84	10.91	Poisson
2022	Black	26	3,327	3,353	7.75	5.07	11.36	Poisson
2022	White	17	5,752	5,769	2.95	1.72	4.72	Poisson
2022	Other	1	1,251	1,252	0.80	0.02	4.45	Poisson
2023	Black	27	2,998	3,025	8.93	5.88	12.99	Poisson
2023	White	12	5,400	5,412	2.22	1.15	3.87	Poisson
2023	Other	3	1,134	1,137	2.64	0.54	7.71	Poisson

Fetal Mortality Rate by Sex, Saint Louis County, 2019 to 2023

Sex	Fetal Deaths	Live Births	Total	Fetal Mortality Rate per 1000 live births and fetal deaths	95% CI Lower	Upper	CI Method
M	139	26,828	26,967	5.15	4.30	6.01	Normal
F	133	25,584	25,717	5.17	4.29	6.05	Normal
U	5	NA	NA	NA	NA	NA	Poisson

Annual Fetal Mortality Rate by Sex, Saint Louis County 2019 to 2023

Year	Sex	Fetal Deaths	Live Births	Total	Fetal Mortality Rate per 1000 live births and fetal deaths	95% CI Lower	Upper	CI Method
2019	M	35	5,808	5,843	5.99	4.17	8.33	Poisson
2019	F	34	5,535	5,569	6.11	4.23	8.53	Poisson
2020	M	30	5,396	5,426	5.53	3.73	7.89	Poisson
2020	F	26	5,142	5,168	5.03	3.29	7.37	Poisson
2020	U	3	NA	NA	NA	NA	NA	Poisson
2021	M	32	5,370	5,402	5.92	4.05	8.36	Poisson
2021	F	30	5,123	5,153	5.82	3.93	8.31	Poisson
2021	U	1	NA	NA	NA	NA	NA	Poisson
2022	M	22	5,358	5,380	4.09	2.56	6.19	Poisson
2022	F	21	5,058	5,079	4.13	2.56	6.32	Poisson
2022	U	1	NA	NA	NA	NA	NA	Poisson
2023	F	22	4,726	4,748	4.63	2.90	7.02	Poisson
2023	M	20	4,896	4,916	4.07	2.49	6.28	Poisson
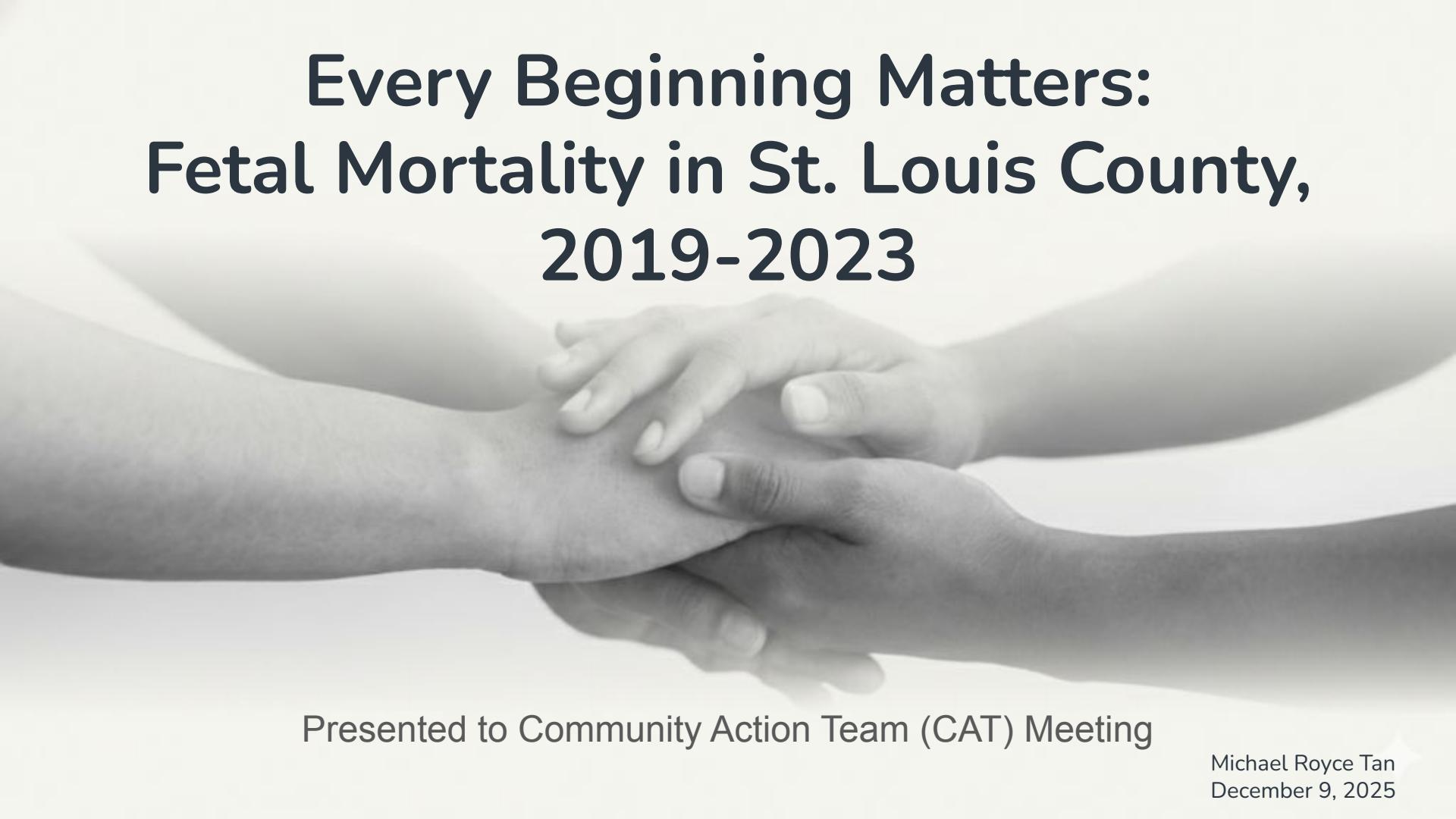
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2019	15-19	4	404	408	9.80	2.67	25.10	Poisson
2019	20-24	13	1,709	1,722	7.55	4.02	12.91	Poisson
2019	25-29	23	3,105	3,128	7.35	4.66	11.03	Poisson
2019	30-34	14	3,802	3,816	3.67	2.01	6.16	Poisson
2019	35-39	11	1,956	1,967	5.59	2.79	10.01	Poisson
2019	40-44	4	337	341	11.73	3.20	30.03	Poisson
2020	15-19	1	339	340	2.94	0.07	16.39	Poisson
2020	20-24	7	1,517	1,524	4.59	1.85	9.46	Poisson
2020	25-29	18	2,870	2,888	6.23	3.69	9.85	Poisson
2020	30-34	18	3,633	3,651	4.93	2.92	7.79	Poisson
2020	35-39	12	1,813	1,825	6.58	3.40	11.49	Poisson
2020	40-44	3	348	351	8.55	1.76	24.98	Poisson
2021	15-19	5	324	329	15.20	4.93	35.47	Poisson
2021	20-24	8	1,390	1,398	5.72	2.47	11.28	Poisson
2021	25-29	22	2,697	2,719	8.09	5.07	12.25	Poisson
2021	30-34	16	3,735	3,751	4.27	2.44	6.93	Poisson
2021	35-39	11	1,966	1,977	5.56	2.78	9.96	Poisson
2021	40-44	1	350	351	2.85	0.07	15.87	Poisson
2022	15-19	1	313	314	3.18	0.08	17.74	Poisson
2022	20-24	5	1,378	1,383	3.62	1.17	8.44	Poisson
2022	25-29	12	2,620	2,632	4.56	2.36	7.96	Poisson
2022	30-34	18	3,787	3,805	4.73	2.80	7.48	Poisson
2022	35-39	8	1,932	1,940	4.12	1.78	8.13	Poisson
2023	15-19	1	279	280	3.57	0.09	19.90	Poisson
2023	20-24	12	1,279	1,291	9.30	4.80	16.24	Poisson
2023	25-29	8	2,313	2,321	3.45	1.49	6.79	Poisson
2023	30-34	12	3,440	3,452	3.48	1.80	6.07	Poisson
2023	35-39	8	1,880	1,888	4.24	1.83	8.35	Poisson
2023	40-44	1	396	397	2.52	0.06	14.03	Poisson

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