MATERNAL MORTALITY DATA

Big Data Spring 2024 Tega Oyibo



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INSIGHTS & CONCLUSION

Initial thoughts on the subject matter and my hypothesis for this project. Relevant information to take into consideration to come to an accurate conclusion

Source of data and how it was cleaned.

(Full page of sources will be shown at the very end!) Results of my findings. Was my hypothesis right? What can be taken away from the data?

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ASSUMPTIONS & HYPOTHESIS





ASSUMPTION(S)



Maternal mortality and diversity, equity and inclusion have been hot topics in the medical field as of late. With maternal mortality, we see that the groups that suffer the most from maternal mortality tend to be the least underrepresented.

HYPOTHESIS **



The groups disproportionately affected from high mmr would benefit the most from receiving care from health providers with the same ethnicity.

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FACTORS TO CONSIDER

FACTORS TO CONSIDER



WHAT CONSTITUTES AS MATERNAL MORTALITY?

The CDC's Pregnancy Mortality Surveillance System defines maternal mortality as **pregnancy-related** death occurring during pregnancy or within a year of the end of pregnancy from any cause related to or aggravated by the pregnancy or its management, but not from accidental or incidental causes.

SO WHAT DOES THAT MEAN?

- I must account for the race and ethnicity for health providers outside of a standard pregnancy team.
- Mental health can also be aggravated by the pregnancy, therefore suicide is considered a maternal death. So professionals that deal with mental health must be also looked at.



DATA AND SOURCES

WHAT KIND OF DATA WAS USED?

AND WHERE DID IT COME FROM?

- NIH.GOV & IHME.ORG: Maternal mortality count and rate for the years
 1999-2021 (race and ethnicity included) (US)
- CDC.GOV: <u>US Maternal mortality count</u> (2019-2023)
- HRSA.GOV: <u>Race and Ethnicity of providers for the years (2017-2021)</u>
- CDC.GOV: <u>If the death was considered</u> <u>preventable or not (2017-2019)</u>*
- CDC.GOV: <u>Timing of pregnancy related</u> death (2017-2019)*
- AAMC.ORG: <u>Number of black practicing</u>
 Obstetricians and Gynecologists & Other
 Specialties (2021)

HOW WAS THIS DATA CLEANED? AND WHY?

- Removed unwanted data from the datasets
 - EX: When cleaning the race and ethnicity provider data set, I removed irrelevant occupations such as dentist and dental hygienist.
- Fixed formatting issues.
 - Got rid of any formatting that would cause errors once importing information into **Tableau**.
 - Used MySQL and Excel to clean!



distribution_of_pregnancy_related_deaths_

when_death_occurred	n_count	percentage
During pregnancy	216	21.6
Day of delivery	132	12.2
1-6 days postpartum	120	12.0
7-42 days postpartum	233	23.3
43-365 days postpartum	301	30.0

active_black_physicians_2021

specialty	total_active_physicians	black_number	black_percentage
Cardiovascular Disease	18,378	767	4.2
Obstetrics and Gynecology	38,649	4,133	10.7
Pulmonary Disease	3,499	112	3.2
Vascular Surgery	3,769	151	4

mmr_state_race

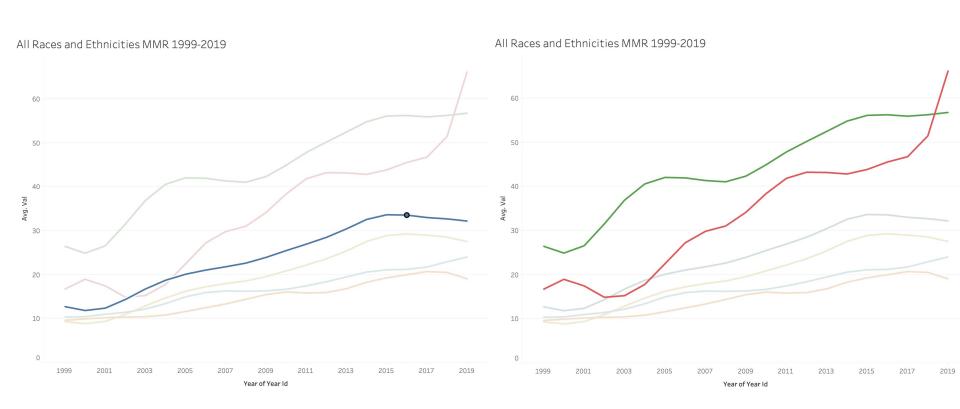
measure_name	location_name	race_group	year_id	val
Maternal mortality ratio	Alabama	Hispanic and any race	1999	7.054949692
Maternal mortality ratio	Alabama	Hispanic and any race	2000	6.854802233
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Maternal mortality ratio	Alabama	Hispanic and any race		8.23213718
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Maternal mortality ratio	Alabama	Hispanic and any race	2014	13.62227887
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Maternal mortality ratio	Alabama	Non-Hispanic American Indian and Alaska Native		2.510390974
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	United States United States		7775	17705	54292	199	4895			2100	13736
lounselors	United States		7776			198				414	1597

O5. RESULTS







OUR GRAPHS

(4th) 2nd Lowest:

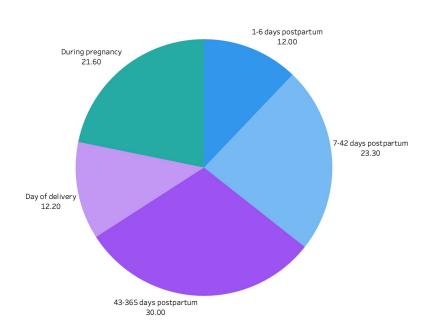
Time:

During Pregnancy **21.60%**

• (4th) 2nd Lowest:

Day of Delivery 12.20%

What I thought would be the highest!



(5th) Lowest:

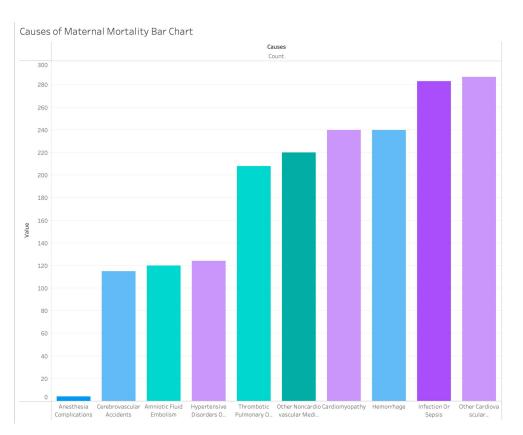
1-6 day postpartum **12%**

(Ist) Highest:

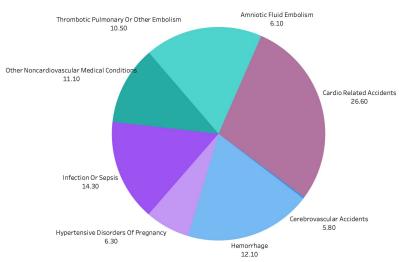
43-365 day postpartum **30.30%**

7-42 day postpartum **23.30**%

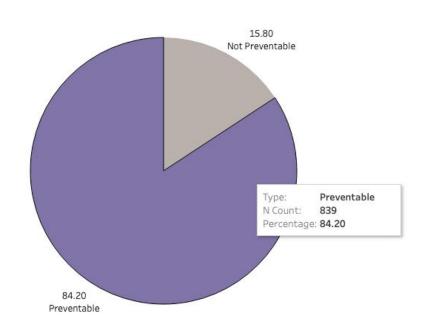
GRAPHS: CAUSES



Causes of Maternal Mortality Pie Chart



PREVENTABLE DEATHS VS NOT PREVENTABLE



A whopping **84.20%** of maternal deaths were considered preventable in a CDC study!

RESULTS

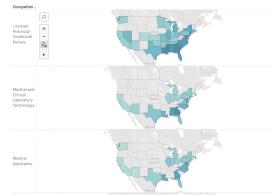
Provider Diversity Black (Top 3)

Country	Occupation Name	State	Count	Black Percen	American Or
United States	Advanced Practice Registered Nurses	Georgia	8,672	18	C
	(excl. Clinical Nurse Specialists)	Texas	20,917	14	(
	Counselors	Georgia	10,391	47	С
		Maryland	8,246	38	C
		Texas	23,059	16	С
	Diagnostic Related Technologists &	Georgia	13,792	27	C
	Technicians	Maryland	8,419	23	C
		Texas	35,772	11	C
	Dietitians and Nutritionists	Texas	9,163	15	C
	Emergency Medical Technicians and	Georgia	9,115	14	C
	Paramedics	Maryland	3,144	15	C
		Texas	17,323	7	C
	Health Practitioner Support Technologists and Technicians	Georgia	21,664	33	C
		Maryland	13,829	34	C
		Texas	62,651	13	C
	Licensed Practical/Vocational Nurses	Georgia	22,167	51	C
		Maryland	11,613	63	C
		Texas	69,057	27	C
	Medical and Clinical Laboratory	Georgia	11,826	48	C
	Technologists & Technicians	Maryland	6,488	38	C
		Texas	25,844	19	C
	Medical Assistants	Georgia	17,290	37	C
		Maryland	10,841	38	C
		Texas	50,635	12	C
	Medical Records & Health Information T	Texas	13,279	14	C
	Occupational Therapists	Texas	8,257	7	C

MMR by race and state for years (2017-2019) (GA, MD, TX)

				Year Id	
Country (M	Race =	Location Na	2017	2018	2019
United	Hispanic and	Georgia	21.08	20.61	21.97
States	any race	Maryland	19.08	18.40	16.90
		Texas	27.99	26.13	21.91
	Non-	Georgia	95.22	95.35	100.90
	Hispanic	Maryland	52.50	55.74	60.65
	Black	Texas	85.79	72.46	54.37

Provider Diversity Black by State Map



I compared mmr data to the states that had the highest black professionals percentage, Ga, MD, TX.



MMR by race and state for years (2017-2019) (GA, MD, TX)

				Year Id	
Country (M	Race =	Location Na	2017	2018	2019
United	Hispanic and	Georgia	21.08	20.61	21.97
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	Non-	Georgia	95.22	95.35	100.90
	Hispanic Black	Maryland	52.50	55.74	60.65
		Texas	85.79	72.46	54.37

MMR by race and state for years (2017-2019) (CO,KY, WI)

				Year Id	
Country (M	Race =	Location Na	2017	2018	2019
United	Hispanic and	Colorado	20.43	24.98	30.29
States	any race	Kentucky	12.79	12.31	11.27
		Wisconsin	18.91	16.08	8.05
	Non-	Colorado	77.09	59.17	29.43
	Hispanic Black	Kentucky	73.72	75.25	75.03
		Wisconsin	37.03	40.85	39.79

Compared to the states with the highest

Black Pop (Acc. to Census):

GA- 33%

MD- 31.7%

TX- **13.4%**

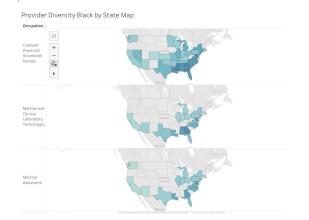
HYPOTHESIS: IS IT RIGHT?



Country	Occupation Name	State	Count	Black Percen	American Or
United States	Advanced Practice Registered Nurses	Georgia	8,672	18	0
	(excl. Clinical Nurse Specialists)	Texas	20,917	14	0
	Counselors	Georgia	10,391	47	0
		Maryland	8,246	38	0
		Texas	23,059	16	0
	Diagnostic Related Technologists &	Georgia	13,792	27	0
	Technicians	Maryland	8,419	23	0
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	Paramedics	Maryland	3,144	15	0
	Health Practitioner Support	Texas	17,323	7	0
		Georgia	21,664	33	0
	Technologists and Technicians	Maryland	13,829	34	0
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	Licensed Practical/Vocational Nurses	Georgia	22,167	51	0
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		Texas	69,057	27	0
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		Texas	25,844	19	0
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		Maryland	10,841	38	0
		Texas	50,635	12	0
	Medical Records & Health Information T	Texas	13,279	14	0
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MMR by race and state for years (2017-2019) (GA, MD, TX)

				Year Id	
Country (M	Race =	Location Na	2017	2018	2019
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	Non-	Georgia	95.22	95.35	100.90
	Hispanic	Maryland	52.50	55.74	60.65
	Black	Texas	85.79	72.46	54.37



Yes and No! While we see that underrepresented groups, like black women, do in fact suffer from high maternal mortality rate. We can not yet confirm that if they were represented their mmr would improve and here's why...









05. INSIGHTS AND CONCL.











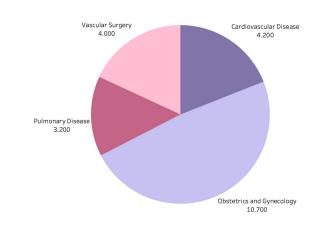


WHAT NOW?

While, my hypothesis could not be directly proven or disproven. I can say that the data does show that there's a need for higher percentages of black providers to see a change.



Black Physicians Specialties 2021



WHAT NOW?

These are the active physicians (as of 2021) in specialties that directly deal with the issues that cause mm. Obstetricians and Gynecologists are ranked #1 as the specialty with the highest percentage of black people... with 10%

DEDICATED PAGE FOR SOURCES



- •
 - NIH.GOV & IHME.ORG: Maternal mortality count and rate for the years 1999-2021 (race and ethnicity included) (US)
 - CDC.GOV: <u>US Maternal mortality count (2019-2023)</u>
 - HRSA.GOV: Race and Ethnicity of providers for the years (2017-2021)
 - CDC.GOV: If the death was considered preventable or not (2017-2019)*
 - CDC.GOV: <u>Timing of pregnancy related death (2017-2019)</u>*
 - AAMC.ORG: <u>Number of black practicing Obstetricians</u> and <u>Gynecologists & Other Specialties (2021)</u>

THANKS!

GOT ANY QUESTIONS? ASK NOW!







