



October 26-28, 2020

# Maternal & Infant Health in the Digital World:

*Patient-Centered Care During COVID and Beyond*

**VIRTUAL CONFERENCE**

[hmhbga.org/event/beyondcovid2020](https://hmhbga.org/event/beyondcovid2020)

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# ***A Call to Action:***

## ***Evolving Disparities in Feto-Infant Mortality, Georgia 1981-83, 2001-03, 2013-18***

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# Research Questions

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1. Across the periods 1981-83, 2001-03, & 2013-18, did the feto-infant mortality rate change in Georgia?
2. For 2013-18, is there excess feto-infant mortality in Georgia by race/ethnicity or perinatal region?
3. What intervention strategies offer the potential to achieve the greatest reduction in Georgia's *current* excess feto-infant mortality?

# Total Feto-infant Mortality Rate, Georgia

## Data Rich, Information Poor

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FIMR = feto-infant mortality rate (deaths per 1000 births)

**1981-83**

Total  
FIMR  
27.0

**2001-03**

Total  
FIMR  
10.6

**2013-18**

Total  
FIMR  
10.7

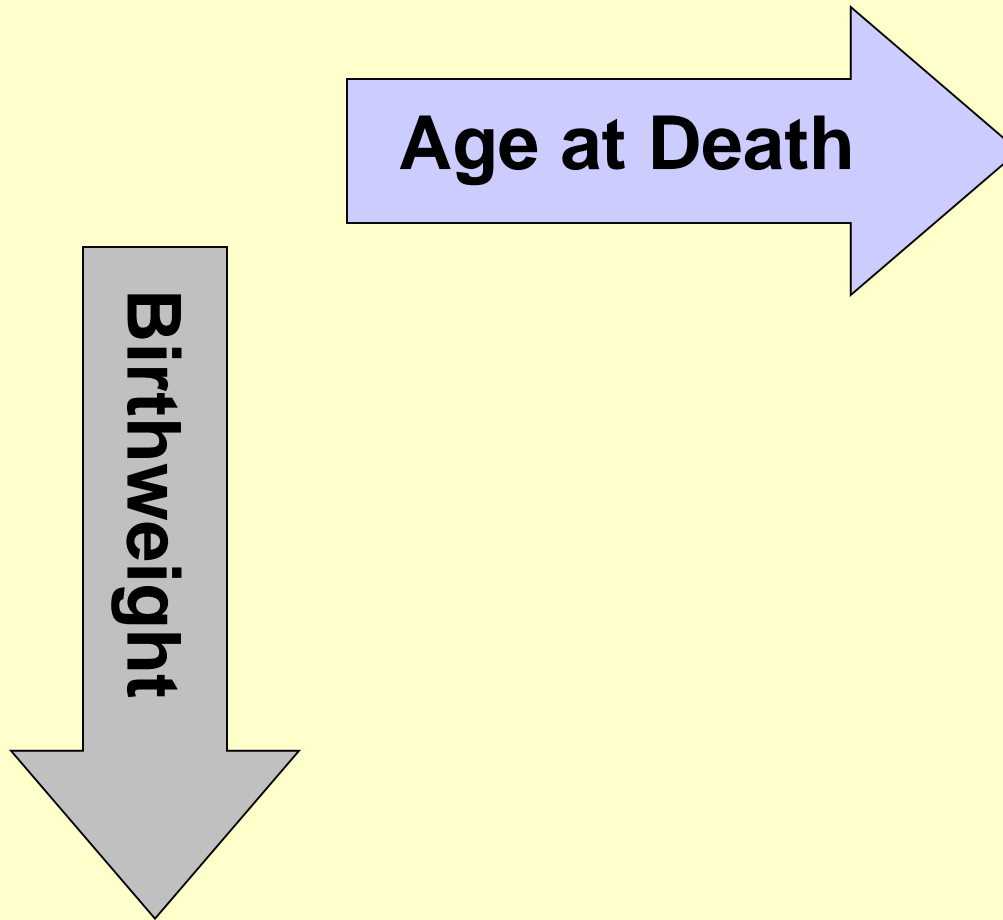
# BABIES Approach

*Birthweight & Age-at-death Boxes for Intervention & Evaluation System*

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- Maps feto-infant mortality along two axes (birthweight & age-at-death) to identify:
  1. Intervention strategies appropriate for reducing **overall** feto-infant mortality
  2. Intervention strategies most appropriate for reducing **excess** (or 'gaps') feto-infant mortality

# Map of Feto-Infant Mortality



# Map of Feto-Infant Mortality

	Late Fetal Death (20+ wks)	Early Neonatal Death (<7 days)	Late Neonatal Death (7-27days)	Post Neonatal Death (28+ days)
VVLBW (0-999gms)	1	2	3	4
VLBW (999-1499 gms)	5	6	7	8
IBW (1499-2499 gms)	9	10	11	12
NBW (2500+ gms)	13	14	15	16

# Underlying Assumption

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- Feto-infant mortality is regarded as a barometer for the overall well-being of a community
- It reflects many factors:
  - Women's underlying health status
  - Mother's access to prenatal care & intrapartum care
  - Quality of services delivered to the mother & neonate
  - Care of the child following hospital discharge



# Interventions for Reducing Mortality

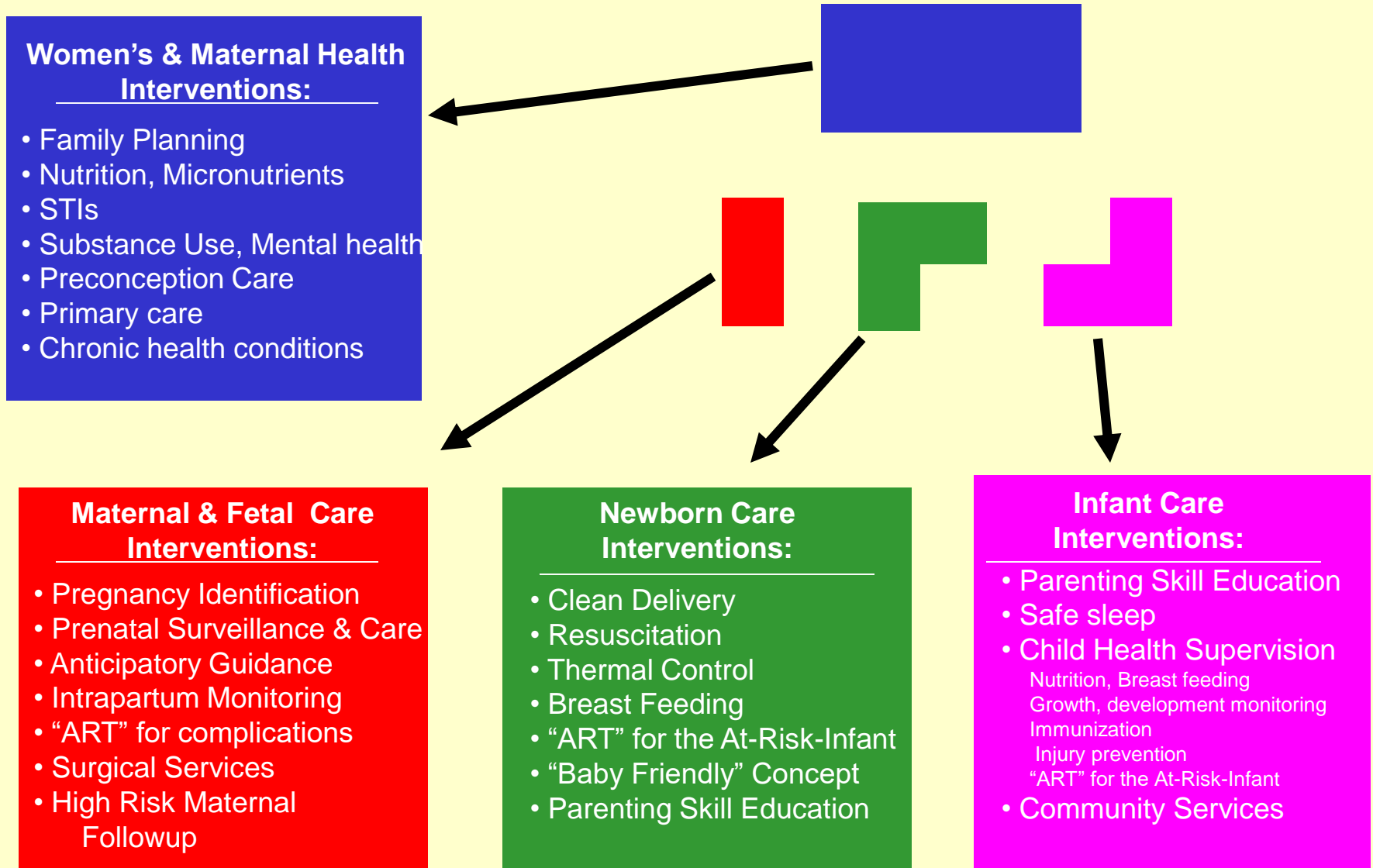
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- Women's and Maternal Health
- Maternal and Fetal Care
- Neonatal Care
- Infant Care

# BABIES Feto-Infant Mortality Map

	Late Fetal Death (20+ wks)	Early Neonatal Death (<7 days)	Late Neonatal Death (7-27days)	Post Neonatal Death (28+ days)
VVLBW (0-999gms)	W & M Health 1	W & M Health 2	W & M Health 3	W & M Health 4
VLBW (999-1499 gms)	W & M Health 5	W & M Health 6	W & M Health 7	W & M Health 8
IBW (1499-2499 gms)	M & F Care 9	Newborn Care 10	Newborn Care 11	Infant Care 12
NBW (2500+ gms)	M & F Care 13	Newborn Care 14	Infant Care 15	Infant Care 16

# Summary of Health Care Intervention Strategies



# Birthweight Proportionate Feto-Infant Mortality

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$$\text{BWPR} = \frac{\text{Number of deaths in a given weight \& age group}}{\text{Total Number of births in all groups}} \times 1000$$

OR

All W & M  
Health

(# in block of cells)

x 1000

W & M Health	W & M Health	W & M Health	W & M Health
W & M Health	W & M Health	W & M Health	W & M Health
M & F Care	Newborn Care	Newborn Care	Infant Care
M & F Care	Newborn Care	Infant Care	Infant Care

(# in entire table)

*Answers: Are we doing the right things?*

# Excess BWPR Feto-Infant Mortality

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$$\text{Excess Mortality} = \text{BWPR}_{\text{TARGET POPULATION}} - \text{BWPR}_{\text{REFERENCE STANDARD}}$$

*Answers: What is the “opportunity gap”?*

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**The “Opportunity Gap”-** The potential for reduction in **excess** mortality based on a comparison between the lowest rate in one group and the rate in another group.

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# Methods: Analyses

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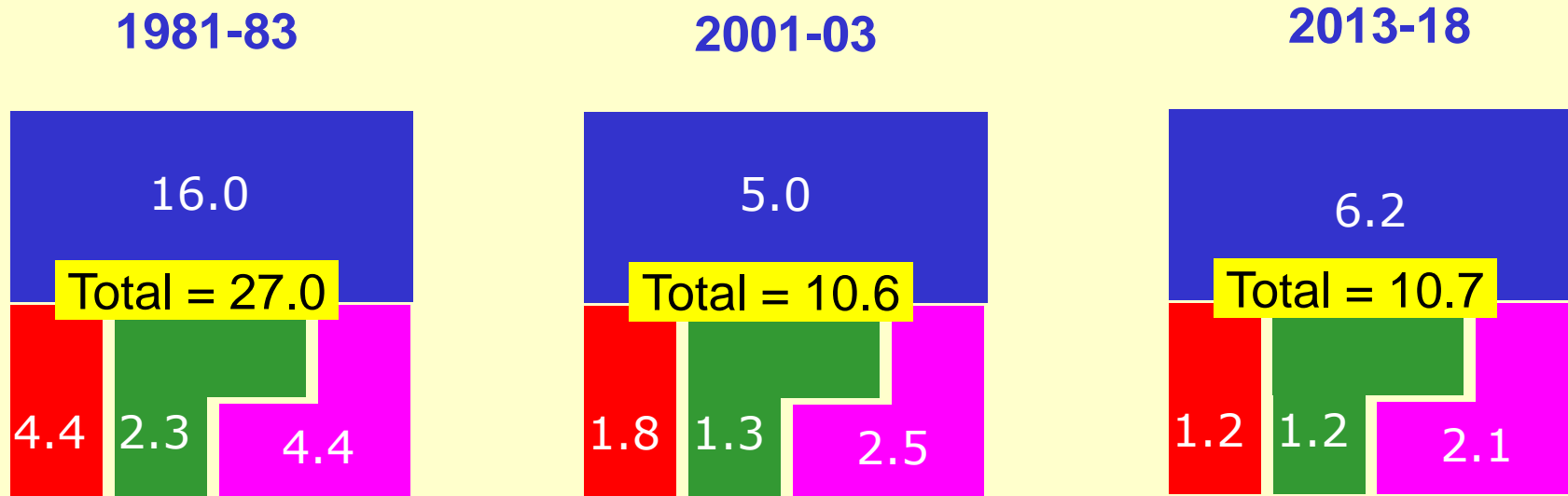
- Using BABIES approach, we calculated **total and excess** birth weight proportionate FIMR for Georgia overall for 1981-83, 2001-03, and 2013-18;
- For the most recent period (2013-18), we calculated **excess** birth weight proportionate FIMR by race/ethnicity and perinatal region.

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Based on Georgia vital record data for 1981-83, 2001-03, and 2013-18 (excluding fetal deaths of gestational age < 20 weeks).

# BABIES *Total* Feto-infant Mortality, Georgia

Data rich, Information rich



For Georgia, from 1981-83 to 2001-03:

- There was an ~60% drop in total FIMR, with the largest drop (~70%) in the **'Women's & Maternal Health'** intervention category

For Georgia, from 2001-03 to 2013-18:

- Total FIMR changed minimally
- Reductions occurred in **'Maternal & Fetal Care'**, **'Neonatal Care'**, & **'Infant Care'**
- Increase occurred in **'Women's & Maternal Health'** intervention category

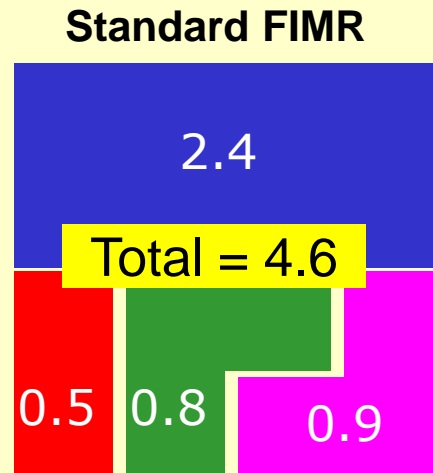


# BABIES *Excess* Feto-Infant Mortality, Georgia

Data rich, Information rich, Action oriented

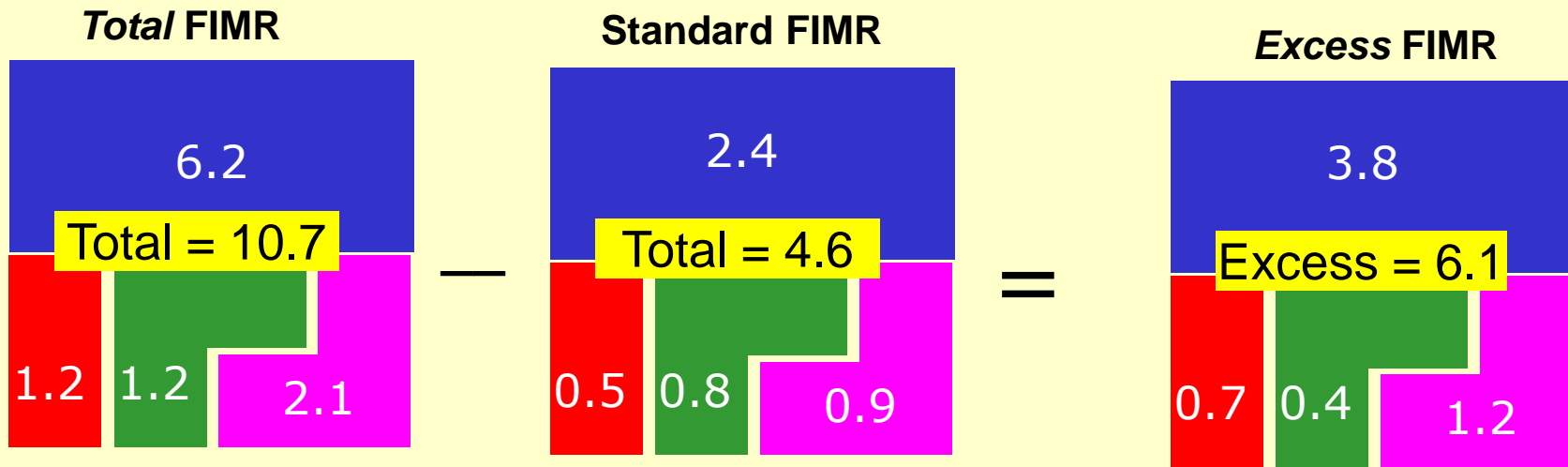
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- The remaining FIMR after subtracting the '**lowest FIMR**' (**reference standard**) from the group of interest
- *The lowest FIMR for 2013-18: non-Hispanic white women,  $\geq 20$  years old,  $\geq 13$  years education*



# BABIES *Excess* Feto-Infant Mortality, Georgia

Data rich, Information rich, Action oriented



For Georgia, the excess FIMR in 2013-18 occurred as follows:

- 62% (3.8/6.1) in **'Women's & Maternal Health'** intervention category;
- 20% (1.2/6.1) in **'Infant Care'** intervention category;
- 11% (0.7/6.1) in **'Maternal & Fetal Care'** intervention category;
- 7% (0.4/6.1) in **'Neonatal Care'** intervention category.

# ***Excess*** FIMR by Race/Ethnicity, Georgia 2013-18

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- Non-Hispanic Black women
- Non-Hispanic white women
- Hispanic women of any race

# **Excess FIMR by Race/Ethnicity, Georgia 2013-18**

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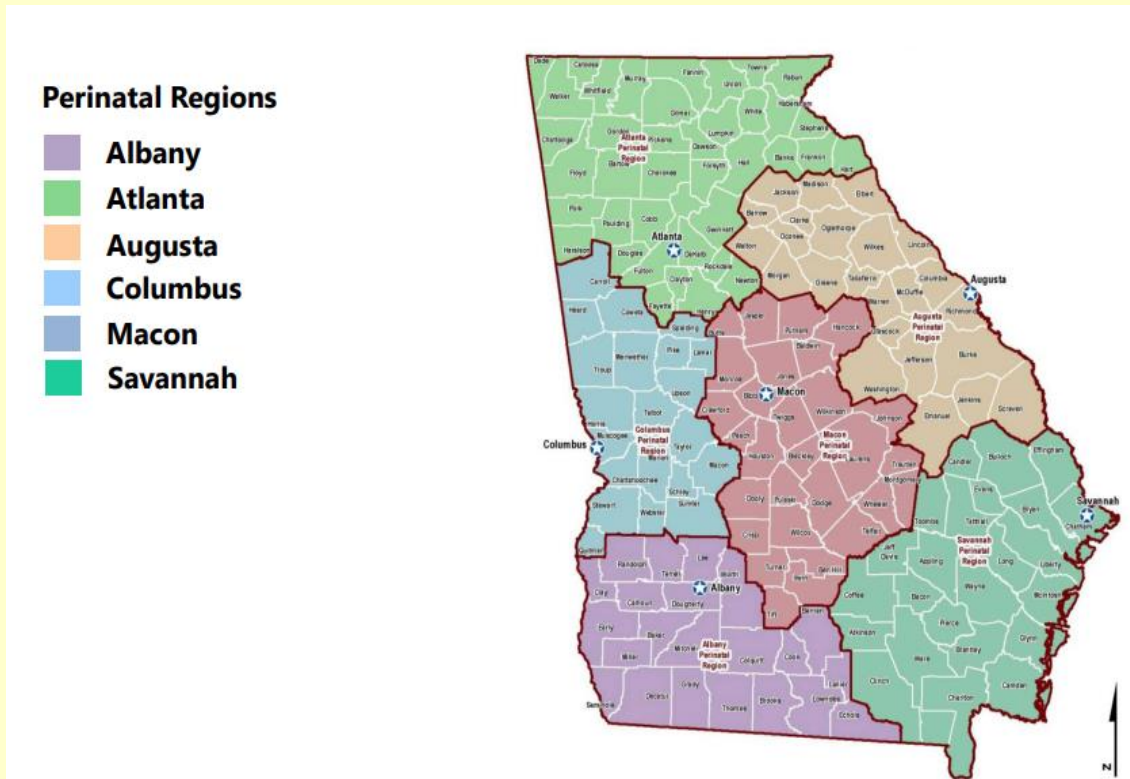
<b>REGION</b>	<b>Women's Health</b>	<b>Maternal &amp; Fetal Care</b>	<b>Neonatal Care</b>	<b>Infant Health</b>	<b>TOTAL EXCESS FIMR</b>
<b>GEORGIA</b>	3.8	0.7	0.4	1.2	<b>6.1</b>
NH-white	1.1	0.3	0.2	0.9	<b>2.5</b>
NH-Black	8.5	1.2	0.6	2.0	<b>12.4</b>
Hispanic-any	2.0	0.6	0.4	0.8	<b>3.8</b>

# % *Excess* FIMR by Race/Ethnicity, Georgia 2013-18

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REGION	Women's Health	Maternal & Fetal Care	Neonatal Care	Infant Health	TOTAL EXCESS FIMR
<b>GEORGIA</b>	62%	11%	7%	20%	<b>6.1</b>
NH-white	44%	12%	8%	36%	<b>2.5</b>
NH-Black	69%	10%	5%	16%	<b>12.4</b>
Hispanic-any	53%	17%	10%	20%	<b>3.8</b>

# Excess FIMR by Perinatal Region, Georgia 2013-18



# ***Excess* FIMR by Perinatal Region, Georgia 2013-18**

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<b>REGION</b>	<b>Women's Health</b>	<b>Maternal &amp; Fetal Care</b>	<b>Neonatal Care</b>	<b>Infant Health</b>	<b>TOTAL EXCESS FIMR</b>
<b>GEORGIA</b>	3.8	0.7	0.4	1.2	<b>6.1</b>
Albany	6.0	0.9	0.6	2.3	<b>9.7</b>
Atlanta	3.5	0.8	0.3	1.0	<b>5.5</b>
Augusta	3.5	0.4	0.4	1.4	<b>5.7</b>
Columbus	3.8	0.4	0.5	1.8	<b>6.5</b>
Macon	5.6	0.9	0.6	1.9	<b>8.9</b>
Savannah	3.3	0.7	0.3	1.5	<b>5.7</b>

# % *Excess* FIMR by Perinatal Region, Georgia 2013-18

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REGION	Women's Health	Maternal & Fetal Care	Neonatal Care	Infant Health	TOTAL EXCESS FIMR
<b>GEORGIA</b>	63%	12%	5%	20%	<b>6.1</b>
Albany	61%	9%	6%	23%	<b>9.7</b>
Atlanta	64%	14%	5%	17%	<b>5.5</b>
Augusta	62%	7%	7%	24%	<b>5.7</b>
Columbus	59%	6%	7%	28%	<b>6.5</b>
Macon	63%	10%	7%	20%	<b>8.9</b>
Savannah	57%	12%	5%	26%	<b>5.7</b>



# **% *Excess* FIMR by Perinatal Region, Non-Hispanic White, Georgia 2013-18**

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<b>REGION</b>	<b>Women's Health</b>	<b>Maternal &amp; Fetal Care</b>	<b>Neonatal Care</b>	<b>Infant Health</b>	<b>TOTAL EXCESS FIMR</b>
<b>GEORGIA</b>	44%	12%	8%	36%	<b>2.5</b>
Albany	46%	6%	10%	38%	<b>4.9</b>
Atlanta	49%	17%	7%	27%	<b>2.0</b>
Augusta	42%	10%	8%	40%	<b>3.0</b>
Columbus	31%	7%	7%	55%	<b>2.6</b>
Macon	31%	14%	9%	46%	<b>3.8</b>
Savannah	46%	16%	2%	36%	<b>2.4</b>

# **% *Excess* FIMR by Perinatal Region, Non-Hispanic Black, Georgia 2013-18**

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<b>REGION</b>	<b>Women's Health</b>	<b>Maternal &amp; Fetal Care</b>	<b>Neonatal Care</b>	<b>Infant Health</b>	<b>TOTAL EXCESS FIMR</b>
<b>GEORGIA</b>	69%	10%	5%	16%	<b>12.4</b>
Albany	68%	11%	5%	16%	<b>15.5</b>
Atlanta	69%	11%	4%	15%	<b>11.6</b>
Augusta	69%	5%	7%	19%	<b>11.2</b>
Columbus	68%	5%	7%	20%	<b>13.1</b>
Macon	71%	9%	5%	14%	<b>15.5</b>
Savannah	65%	11%	6%	19%	<b>12.1</b>

# **% Excess FIMR by Perinatal Region, Hispanic Any Race, Georgia 2013-18**

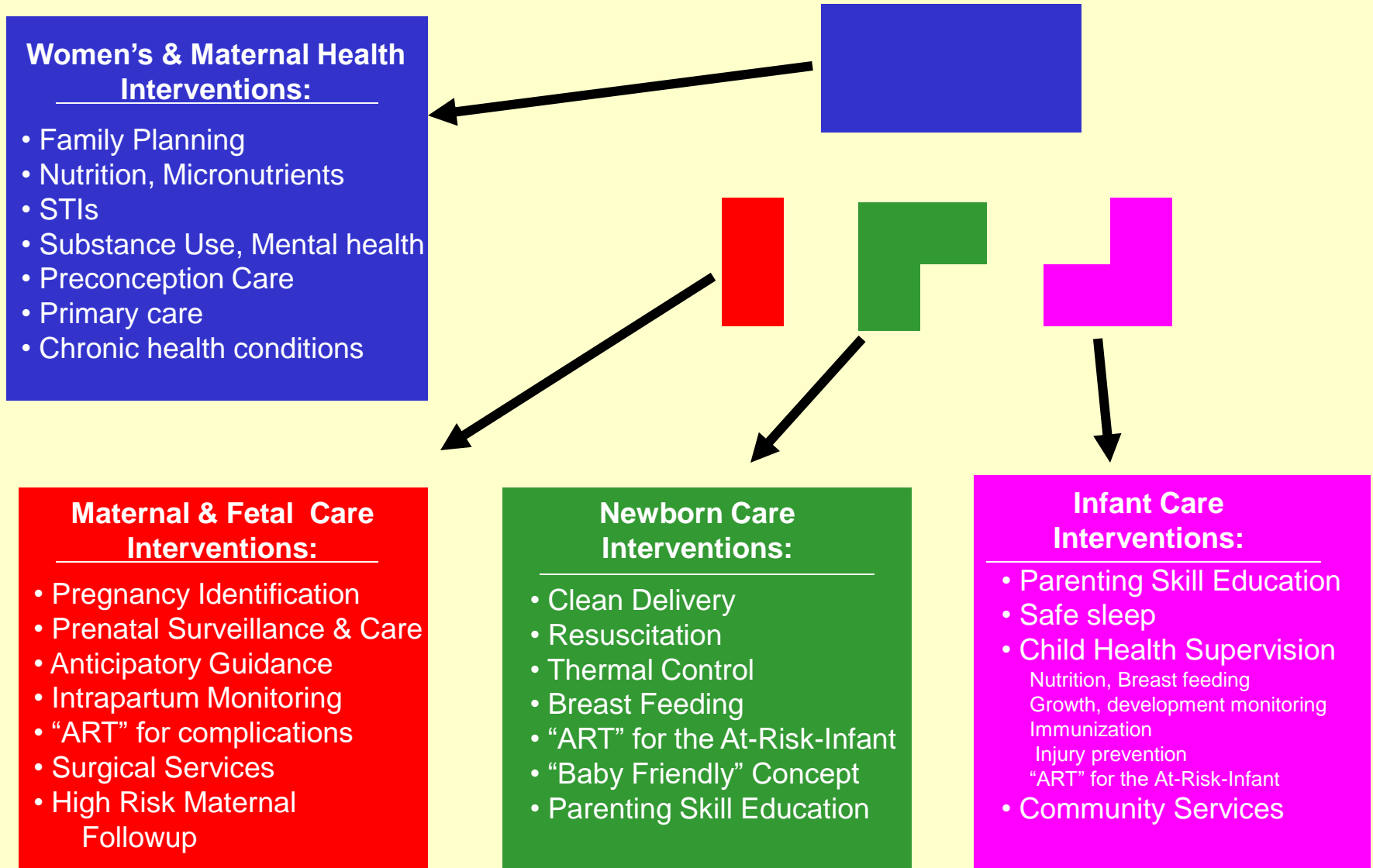
<b>REGION</b>	<b>Women's Health</b>	<b>Maternal &amp; Fetal Care</b>	<b>Neonatal Care</b>	<b>Infant Health</b>	<b>TOTAL EXCESS FIMR</b>
<b>GEORGIA</b>	54%	17%	10%	20%	<b>3.8</b>
Albany	24%	1%	18%	58%	<b>5.3</b>
Atlanta	56%	18%	9%	17%	<b>3.8</b>
Augusta	116%	1%	-3%	-13%	<b>1.3</b>
Columbus	58%	7%	7%	29%	<b>5.5</b>
Macon	45%	12%	45%	-2%	<b>2.7</b>
Savannah	37%	23%	5%	35%	<b>4.1</b>

# Summary: *What do data show?*

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- From 1981-83 through 2013-18, there was a ~60% decline in **total FIMR**: 27.0 → 10.6
  - The largest drop (~70%) was in **'Women's & Maternal Health'**
- In 2013-18, substantial **excess FIMR** persists in Georgia
  - By Perinatal Region
  - By Race/Ethnicity
- For all Perinatal Regions and all Race/Ethnic groups, the largest excess FIMR occurs in the intervention categories of:
  - **'Women's & Maternal Health'**
  - **'Infant Care'**

# Summary of Health Care Intervention Strategies



# Interpreting Disparities Data

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- **‘Gaps’** in health outcomes can be classified as:
  1. Gaps in social justice (in efforts to ensure equity)
  2. Gaps in responsibility (in policy-making)
  3. Gaps in implementation (in allocation of resources)
  4. Gaps in knowledge (in knowing how to tackle problem)
- Gaps based on sociodemographic characteristics principally reflect **#1** (also #2, #3)
- Gaps based on geographic locale principally reflect **#2, #3**
- Gaps persist in setting of **#4 (inability to interpret data and link with appropriate action)**

# Women's Health Strategies

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- Improving access to family planning services and promoting intendedness of pregnancies
  - Title X services
  - 1115 Family planning waiver
- Improving access to primary health care for women and families (including preventive health care, care of chronic conditions and mental health)
  - Medicaid expansion, Closure of coverage gaps
  - 1115 Family planning waiver/Interpregnancy care program
- Addressing social determinants of health
  - #Blanket Change (March of Dimes): Equity, Access, Prevention

*Thoughts and additional points?*

# Infant Care Strategies

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- Addressing social determinants of health
  - #Blanket Change (March of Dimes): Equity, Access, Prevention
- Maternal education
- Safe sleep
- Breastfeeding support
- Mother-baby dyad care
- Home visitation programs

*Thoughts and additional points?*



# Conclusion

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- Further reductions in Georgia's total and excess fetoinfant mortality calls for attention to social determinants of health, equity and access to care, and compels multi-sectoral action:
  1. Communicating *information* about disparities to communities and law makers
  2. Policy-making and practice change to assure equity and access
  3. Appropriate allocation of resources

# Our Next Steps: Data to Action

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- Continue systematic analysis of Georgia births, fetoinfant deaths
  - Examine cause-specific infant mortality among infants with birth weight  $\geq 2500$  grams
  - Disaggregate intra-partum deaths by delivery mode (vaginal, C-section)
- Link maternal death events to fetoinfant death map
- Disseminate findings to stakeholders
- Seek input to develop data-based recommendations

# Data, Data, Data

A LOT of useful data...more to come

Row #	Table	Pop #	Year	Region/District	Ethnicity	Age/MatEdu	MOD	BW	Unk	AP	IP-OUT	IP-IN	ENM	LNM	PNM	Alive@1	Total Births	Live Births	Total Births
5	Table 1 Y13-18 Region Dems	1	Total (2013- 2018)	Atlanta	W_NH	20+_13+	Vaginal	Unk	17	3	1	0	0	0	0	0	21	0	21
<500								55	33	7	6	63	1	0	4	169	74	169	
500-999								18	10	2	5	35	13	2	76	161	131	161	
1000-1499								4	6	1	2	7	0	2	149	171	160	171	
1500-2499								9	23	1	2	10	6	12	2,819	2,882	2,849	2,882	
2500+								19	22	1	3	25	7	40	79,857	79,974	79,932	79,974	
<b>Total (BW)</b>		<b>122</b>	<b>97</b>	<b>13</b>	<b>18</b>	<b>140</b>	<b>27</b>	<b>56</b>	<b>82,905</b>	<b>83,378</b>	<b>83,146</b>	<b>83,378</b>							
Unk		5	3	0	1	0	0	0	9	1	9								
<500		1	3	0	2	11	4	3	10	34	30	34							
500-999		4	2	0	2	31	16	15	229	299	293	299							
1000-1499		3	3	0	0	15	1	4	527	553	547	553							
1500-2499		5	5	1	4	24	7	13	3,800	3,859	3,848	3,859							
2500+		5	5	0	0	24	10	31	37,932	38,007	37,997	38,007							
<b>Total (BW)</b>		<b>23</b>	<b>21</b>	<b>1</b>	<b>9</b>	<b>105</b>	<b>38</b>	<b>66</b>	<b>42,498</b>	<b>42,761</b>	<b>42,716</b>	<b>42,761</b>							
Unk		22	6	1	1	0	0	0	30	1	30								
<500		56	36	7	8	74	5	3	14	203	104	203							
500-999		22	12	2	7	66	29	17	305	460	424	460							
1000-1499		7	9	1	2	22	1	6	676	724	707	724							
1500-2499		14	28	2	6	34	13	25	6,619	6,741	6,697	6,741							
2500+		24	27	1	3	49	17	71	117,789	117,981	117,929	117,981							
<b>Total (BW)</b>		<b>145</b>	<b>118</b>	<b>14</b>	<b>27</b>	<b>245</b>	<b>65</b>	<b>122</b>	<b>125,403</b>	<b>126,139</b>	<b>125,862</b>	<b>126,139</b>							
Unk		37	21	0	2	0	0	0	60	2	60								
<500		124	77	5	15	32	0	4	257	51	257								
500-999		32	25	4	9	27	11	5	50	163	102	163							
1000-1499	16	9	1	5	3	1	3	113	151	125	151								
1500-2499	37	24	1	4	12	4	12	2,258	2,352	2,290	2,352								
2500+	36	28	0	8	16	16	61	37,256	37,421	37,357	37,421								
<b>Total (BW)</b>	<b>282</b>	<b>184</b>	<b>11</b>	<b>43</b>	<b>90</b>	<b>32</b>	<b>81</b>	<b>39,681</b>	<b>40,404</b>	<b>39,927</b>	<b>40,404</b>								
Unk	5	1	1	0	0	0	0	7	0	7									
<500	4	2	0	1	11	2	1	9	30	24	30								
500-999	6	4	1	1	20	13	11	152	208	197	208								
1000-1499	6	1	2	0	7	3	7	276	302	293	302								
1500-2499	9	8	0	6	19	4	16	1,865	1,927	1,910	1,927								
2500+	22	7	3	5	13	13	32	15,400	15,495	15,463	15,495								
<b>Total (BW)</b>	<b>52</b>	<b>23</b>	<b>7</b>	<b>13</b>	<b>70</b>	<b>35</b>	<b>67</b>	<b>17,702</b>	<b>17,969</b>	<b>17,887</b>	<b>17,969</b>								
Unk	42	22	1	2	0	0	0	67	2	67									
<500	128	79	5	16	43	2	1	13	287	75	287								
500-999	38	29	5	10	47	24	16	202	371	299	371								
1000-1499	22	10	3	5	10	4	10	389	453	418	453								
1500-2499	46	32	1	10	31	8	28	4,123	4,279	4,200	4,279								
2500+	58	35	3	13	29	29	93	52,656	52,916	52,820	52,916								
<b>Total (BW)</b>	<b>334</b>	<b>207</b>	<b>18</b>	<b>56</b>	<b>160</b>	<b>67</b>	<b>148</b>	<b>57,383</b>	<b>58,373</b>	<b>57,814</b>	<b>58,373</b>								
Unk	54	24	1	2	0	0	0	81	2	81									
<500	179	110	12	21	95	1	0	8	426	125	426								
500-999	50	35	6	14	62	24	7	126	324	233	324								
1000-1499	20	15	2	7	10	1	5	262	322	285	322								
1500-2499	46	47	2	6	22	10	24	5,077	5,234	5,139	5,234								
2500+	55	50	1	11	41	23	101	117,113	117,395	117,289	117,395								
<b>Total (BW)</b>	<b>404</b>	<b>281</b>	<b>24</b>	<b>61</b>	<b>230</b>	<b>59</b>	<b>137</b>	<b>122,586</b>	<b>123,782</b>	<b>123,073</b>	<b>123,782</b>								
Unk	10	4	1	1	0	0	0	16	1	16									
<500	5	5	0	3	22	6	4	19	64	54	64								
500-999	10	6	1	3	51	29	26	381	507	490	507								
1000-1499	9	4	2	0	22	4	11	803	855	840	855								
1500-2499	14	13	4	10	43	14	20	6,665	6,786	6,759	6,786								

# Acknowledgements

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## Global Collaborating Center in Reproductive Health

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Casey Mohrien

