State-by-State Analysis of Key Maternal and Child Health Mortality Measures

Kristin Shaw, MPH and Sarah Milder, MPH

Abstract #0994-000412

Background

Infants, children and mothers are dying at an alarming rate in the U.S. compared with other developed countries.

The U.S. infant mortality rate has leveled off after decades of progress, while child mortality rates have been on the rise. Maternal deaths from complications during pregnancy or after childbirth have also been rising across the U.S.

National level data, however, can mask differences by state. *America's Health Rankings Health of Women and Children Report* tracks four key mortality measures.

We explore the geographic variation by state as well as state changes between editions 2016 and 2018.

Methods

Data from CDC WONDER mortality files were used to calculate rates at the state and national level.

- Maternal mortality is the number of maternal deaths per 100,000 live births (5-year average, 2011-2015)
- Teen suicide is the number of intentional deaths among adolescents aged 15-19 years per 100,000 population (3-year average, 2014-2016)
- Child mortality is the number of deaths among children aged 1-18 years per 100,000 population (3-year average, 2014-2016)
- Infant mortality is the number of deaths before age 1 year per 1,000 live births (2-year average, 2014-2015)

The heat map is shaded by quintile and sorted by maternal mortality. Dot graphs are based on absolute changes in mortality rates between 2016 and 2018.

Results: Mortality rates by state

	Maternal mortality	Teen suicide	Child mortality	Infant mortality
CA	4.5	6.4	17.2	4.4
MA	6.1	6.2	14.9	4.3
NV	6.2	10.9	25.3	5.4
CO	11.3	17.6	22.6	4.7
HI	11.7	13.0	18.6	5.1
WV	11.7	11.2	29.1	7.0
AL	11.9	9.1	31.5	8.5
MN	13.0	12.5	19.3	5.1
CT	13.2	5.5	12.8	5.2
OR	13.7	13.2	19.2	5.1
DE	14.0	9.9	20.6	8.0
WI	14.3	13.2	21.3	5.8
WA	14.8	12.5	19.2	4.7
VA	15.6	9.8	20.4	5.8
ME	15.7	15.2	19.6	6.6
NC	15.8	9.4	24.8	7.3
PA	16.3	8.2	20.3	6.0
IL	16.6	8.0	21.8	6.3
NE	16.8	11.6	22.6	5.4
NH	16.8	10.6	17.5	4.2
UT	16.8	21.2	24.5	5.0
KS	17.7	11.6	24.1	6.1
IA	17.9	11.4	22.8	4.5
RI	18.3	4.7	14.4	5.2
AZ	18.8	12.4	23.5	5.8
ND	18.9	17.0	22.3	6.1
KY	19.4	11.9	27.5	6.9
MI	19.4	11.0	23.5	6.5
OH	20.3	9.1	22.5	7.0
NY	20.6	5.0	16.0	4.6
ID	21.2	16.3	25.2	5.0
MS	22.6	8.0	36.0	8.8
TN	23.3	11.2	27.0	6.9
OK	23.4	15.0	32.6	7.8
MD	23.5	6.5	20.9	6.5
FL	23.8	7.9	23.8	6.2
MT	24.4	22.5	34.4	5.8
WY	24.6	28.9	28.3	5.6
NM	25.6	15.4	29.4	5.2
SC	26.5	9.4	29.3	6.7
SD	28.0	28.0	36.4	6.5
MO	32.6	12.8	27.3	6.3
TX	34.2	9.8	23.1	5.8
AR	34.8	11.0	29.9	7.5
NJ	38.1	5.0	15.9	4.5
IN	41.4	9.9	26.1	7.2
LA	44.8	10.4	35.4	7.5
GA	46.2	8.1	26.0	7.7
AK	-	35.1	34.0	6.8
VT	-	11.3	18.7	4.6

Quintile
1
2
3
4
5

Maternal mortality rates for three states: DE, NH and WY were calculated using 10 years of data due to small sample size; data suppressed at 10-year average for two states: AK and VT.

Teen suicide rates in DE, RI and VT were calculated using six years of data due to small sample size.

CA and MA have the lowest maternal mortality rates and fall in the healthiest quintile across all four measures; KS also falls in the middle quintile across measures.

Despite lower rates of infant and child mortality and teen suicide, NJ and NY are challenged with high rates of maternal mortality.

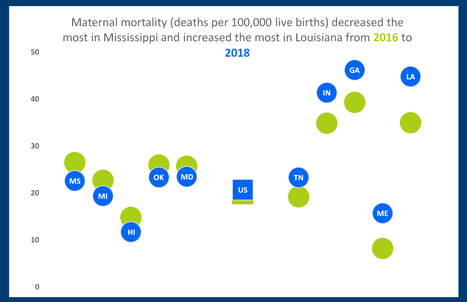
MS and AL have higher rates of child mortality but lower rates of teen suicide compared with other states.

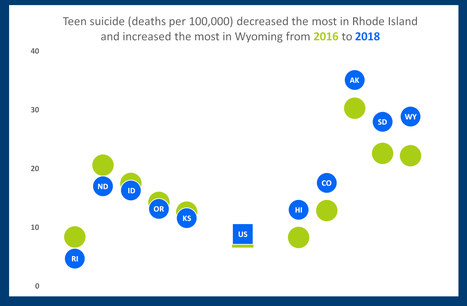
10X Maternal mortality is 10-fold higher in GA (46.2) than in CA (4.5)

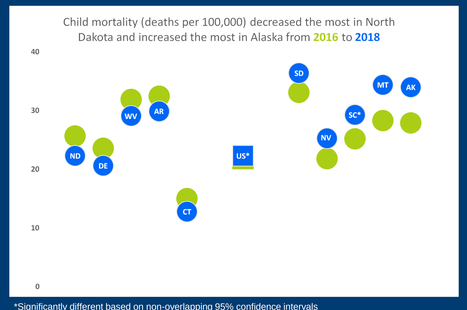
8X Teen suicide is 8-fold higher in AK (35.1) than in RI (4.7)

3X Child mortality is 3-fold higher in SD (36.4) than in CT (12.8)

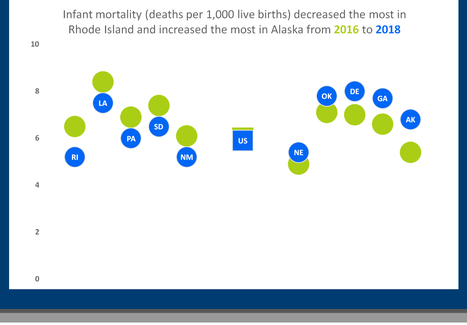
2X Infant mortality is 2-fold higher in MS (8.8) than in NH (4.2)







*Significantly different based on non-overlapping 95% confidence intervals



Results: State changes

Despite mortality rates increasing nationally, some states improved between 2016 and 2018.

- RI experienced the greatest decline in both infant mortality and teen suicide rates.
- HI and CT saw declines in maternal mortality and child mortality, respectively, despite having lower rates than the nation in 2016.

AK had the largest increase in infant and child mortality rates.

The teen suicide rate in CA increased significantly from 5.3 to 6.0 deaths per 100,000 aged 15-19 (not shown in graph).

Conclusions

Maternal, infant and child mortality rates vary widely by state and within states by measure.

Teen suicide and child mortality have unique geographic profiles despite overlapping definitions.

Improvements in mortality rates from 2016 to 2018 are not shared by all states.

Public Health Implications

Public health professionals can use this information to identify how their state compares with other states in these key mortality measures, as well as share best-practice solutions with each other to help reduce mortality rates and improve the health of women, infants and children.

Future analysis could explore the influence of teen suicide on the child mortality rate, and how infant and child mortality rates vary across states by subpopulation and cause of death.

Acknowledgments

We thank the advisory committee, who provided guidance in the development of the *America's Health Rankings® Health of Women and Children Report*, and United Health Foundation for their continued support of this project.

Disclosure

Arundel Metrics receives funding from United Health Foundation to produce America's Health Rankings. Arundel Metrics (arundelmetrics.com) is a small, data-driven consulting firm specializing in public health measurement and index generation.