State Variation in Frequent Mental Distress and Deaths of Despair among Adults

Alexia Málaga, MPH, Kristin Shaw, MPH, Laura Houghtaling, MPH, Elise Parks, MPH, Sarah Milder, MPH

Background

- Frequent mental distress (FMD) is a measure of perceived mental health that captures the population experiencing persistent and/or severe mental health issues
- FMD may be an indicator of future deaths of despair

Objective

Explore how strongly various deaths of despair measures correlate with FMD and how these measures vary across states

Methods

We analyzed four measures from two sources:
2017 BRFSS:
- FMD: percentage of adults who reported their mental health was not good 14+ days in the past 30 days

2017 WONDER Multiple Cause of Death files:
- Suicide [a] : number of deaths due to intentional self-harm per 100,000 population
- Premature death [a, b] : number of years of potential life lost before age 75 per 100,000 population
- Drug deaths [a, b] : number of deaths due to drug injury of any intent (unintentional, suicide, homicide or undetermined) per 100,000 population

All metrics were age-adjusted to the 2000 standard population

[a] rates were calculated for persons aged 15+
[b] data were log transformed

Pearson (r) correlation coefficients were calculated and graphs were created in Excel

Results

Variation across states
- FMD varied 1.9-fold across states, from 9.5% in Minnesota to 18.1% in West Virginia (US: 12.7%)
- Suicide varied 3.6-fold, from 10.2 in New York to 36.3 in Montana (US: 17.6)
- Premature death varied 2.2-fold, from 4,307 in Minnesota to 9,271 in West Virginia (US: 8,368)
- Drug deaths varied 7.2-fold, from 10.2 in Nebraska to 73.4 in West Virginia (US: 27.6)
- Only four states were in the same quintile across all four measures: California in the 1st quintile, Virginia in the 2nd, Missouri in the 4th, and West Virginia in the 5th
- Of the states in the bottom 10 (5th quintile) for FMD, seven were in the bottom 10 for premature death, two for drug deaths and two for suicide
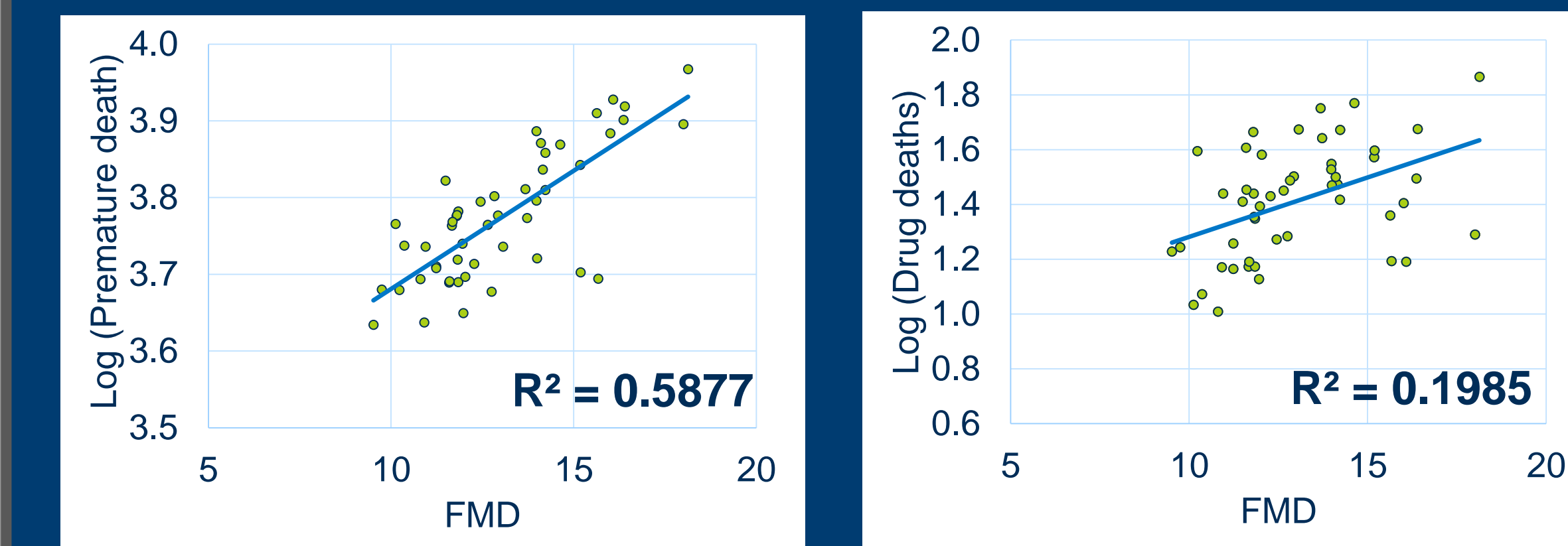
Correlations
- There was evidence for a high positive linear correlation between FMD and premature death (r=0.77*) and a low positive linear correlation with drug deaths (r=0.45*)
  - Significance (*) is based on the p-value threshold of <0.05
- Suicide had no linear relationship with FMD (r=0.09)

	FMD (%)	Suicide (rate)	Premature death (rate)	Drug death (rate)
Minnesota	9.5	17.4	4307	16.9
Hawaii	9.7	19.1	4788	17.5
South Dakota	10.1	27.3	5828	10.8
Connecticut	10.2	13.2	4780	39.3
North Dakota	10.4	25.4	5463	11.8
Nebraska	10.8	18.3	4937	10.2
California	10.9	13.2	4336	14.8
Illinois	10.9	14.0	5443	27.5
Idaho	11.2	29.3	5130	18.1
Iowa	11.2	18.8	5104	14.6
Alaska	11.5	34.0	6637	25.7
Massachusetts	11.6	11.9	4888	40.4
Utah	11.6	28.5	4908	28.4
Kansas	11.7	24.1	5799	14.9
Wyoming	11.7	34.3	5865	15.5
Maryland	11.8	12.3	5967	46.1
Nevada	11.8	25.7	5986	27.5
Virginia	11.8	16.9	5236	22.6
Montana	11.8	36.3	6051	14.9
Colorado	11.8	25.3	4893	22.3
Texas	12.0	16.8	5495	13.4
New York	12.0	10.2	4460	24.7
New Jersey	12.0	10.5	4974	38.1
Wisconsin	12.3	19.3	5170	26.9
Georgia	12.5	17.1	6231	18.7
Arizona	12.6	22.8	5815	28.2
Washington	12.8	21.4	4755	19.2
North Carolina	12.8	17.9	6334	30.7
Florida	12.9	17.7	5980	31.8
New Hampshire	13.1	24.1	5443	47.1
Pennsylvania	13.7	19.0	6471	56.3
Maine	13.7	23.6	5932	43.8
Tennessee	14.0	21.1	7700	33.7
Michigan	14.0	17.7	6251	35.3
Vermont	14.0	23.3	5257	29.5
New Mexico	14.1	29.2	7432	31.6
Missouri	14.2	23.2	6861	29.7
South Carolina	14.2	20.4	7217	26.1
Delaware	14.2	14.8	6453	47.0
Ohio	14.6	18.5	7398	58.8
Indiana	15.2	20.6	6958	37.3
Rhode Island	15.2	14.8	5040	39.5
Alabama	15.6	20.7	8125	22.9
Oregon	15.7	23.8	4945	15.6
Oklahoma	16.0	24.1	7649	25.4
Mississippi	16.1	18.8	8467	15.5
Louisiana	16.4	19.2	7965	31.2
Kentucky	16.4	21.2	8293	47.3
Arkansas	18.0	26.2	7863	19.5
West Virginia	18.1	26.7	9271	73.4

Figure 1. Quintile-based heatmap for each measure, sorted by percentage of adults with FMD

Results, cont'd

Figures 2-3. Scatterplots of FMD and log transformed premature death and drug deaths
* Denotes statistical significance (p-value < 0.05)

Conclusions

- FMD and rates of deaths of despair vary widely by state
- Significant correlations with FMD were found between premature death (strongly) and drug deaths (moderately) among adults at the state-level
  - Seven of the states in the bottom 10 for premature death were in the bottom 10 for FMD

Future research:
- Explore outcome measures where there are significant differences across subpopulations (e.g. suicide by gender)

Limitations:
- Data included in this analysis are from different data sources with slightly different age-adjusted populations
- This is an ecological study, therefore data are aggregated to the state level; inferences at the individual level cannot be made

AMERICA'S HEALTH RANKINGS UNITED HEALTH FOUNDATION

Arundel Metrics