

# **Opportunities for Public Health Policy to Enhance Effective Detection and Response to Suicide Risk**

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# Disclosures

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No relevant disclosures, financial or otherwise

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# My lens

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- Internist
- Informatician
- Engineer
- > 10 years experience in data-driven modeling in healthcare
- 6 years studying informatics for suicide prevention
- Highly collaborative team of experts around me - including ethicists and policy experts!



# Caveats

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- NOT a policy expert or writer of policy
- Multiple projects interacting with government at multiple levels, but no government role
- None of the tech mentioned here is an endorsement

The focus today is on public health gaps that solutions like policy might bridge





# Our Work

## Predictive Decision Support



## Scalable Phenotyping



## Population Health Informatics





# Gaps in Data, Detection, and Response





# Data Gap #1: Completeness





# Data Gap #2: Lag





# Data Gap #3: Validity

## Results

A total of 5,543 patients with ICD codes for suicide and self-inflicted injury (i.e., E950–E959) formed the training data for this work. After expert chart review, only 3,250 (58.63%) had expert-confirmed histories of nonfatal suicide attempts. A total of 1,917 patients were judged not

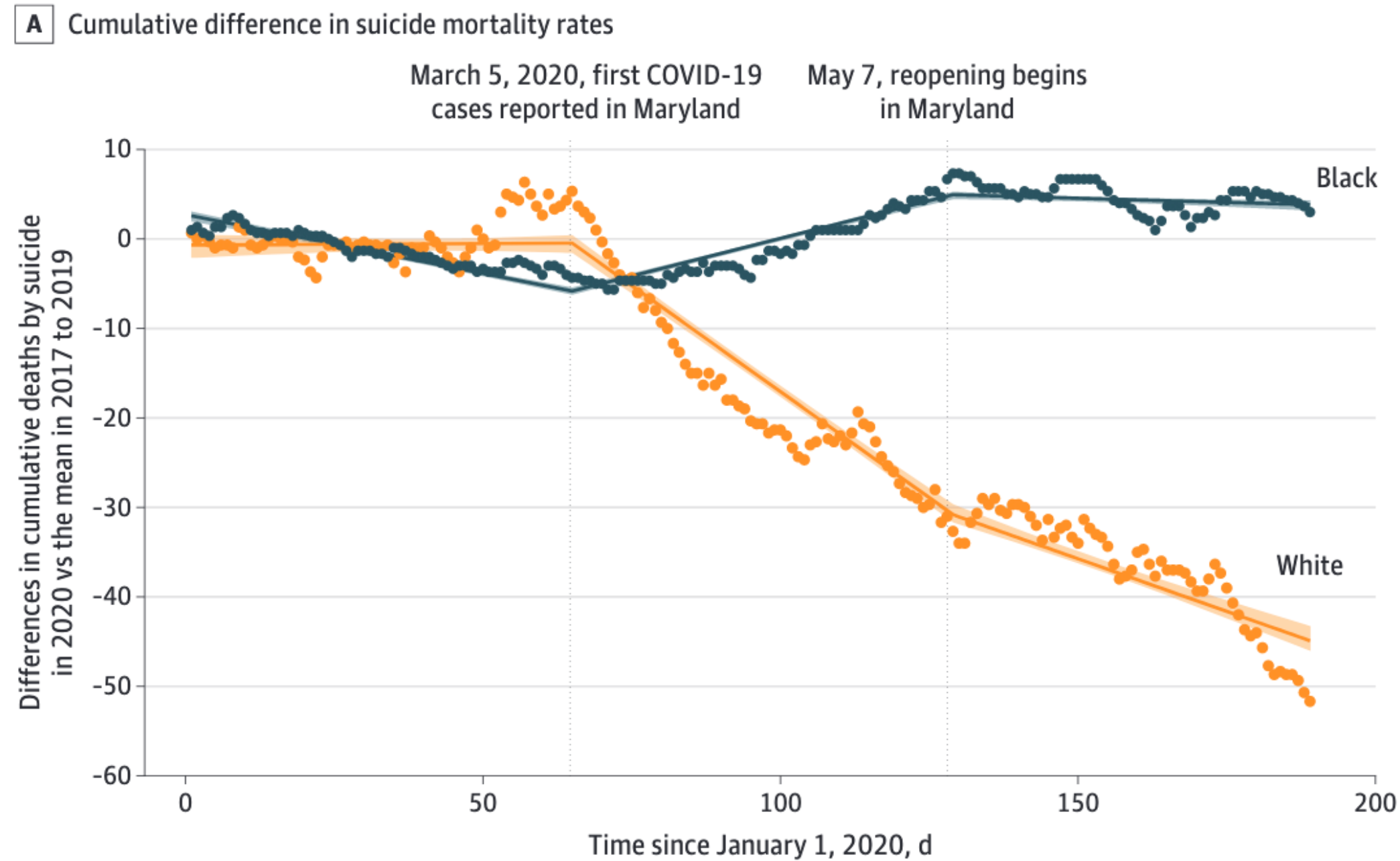


DOI: 10.1177/2167702617691560



# Detection Gap #1: Equity

Figure. Interrupted Time Series Analysis of Suicide Mortality During Coronavirus Disease 2019 (COVID-19)



doi:10.1001/jamapsychiatry.2020.3938

# Detection Gap #1: Equity

One "model" does not fit all

Suicide attempt	
Medical center wide	0.797 (0.796 to 0.798)
Emergency department	0.7 (0.699 to 0.7)
Adult hospital	0.842 (0.841 to 0.842)
Behavioral health	0.544 (0.539 to 0.548)
Care Site	AUROC (95% CI)



doi:[10.1001/jamanetworkopen.2021.1428](https://doi.org/10.1001/jamanetworkopen.2021.1428)

# Detection Gap #1: Equity

Suicide and Life-Threatening Behavior 50 (2) April 2020  
© 2019 The American Association of Suicidology  
DOI: 10.1111/sltb.12598

## Reaching Those at Highest Risk for Suicide: Development of a Model Using Machine Learning Methods for use With Native American Communities

EMILY E. HAROZ, PhD , COLIN G. WALSH, MD, NOVALENE GOKLISH, MS,  
MARY F. CWWIK, PhD, VICTORIA O'KEEFE, PhD AND ALLISON BARLOW, PhD



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# Detection Gap #2: Rarity

**Fatal overdose within  
30-days of prescription  
over six years in TN:**

**0.007%**



doi: 10.1093/jamia/ocab218



The Individual

Mobile Crisis

Family

EMS

Clinicians

Social media

# Detection Gap #3: Communication



# Response Gap #1: Equity

JMIR Public Health Surveill. 2021 Sep; 7(9): e24377.

Published online 2021 Sep 2. doi: 10.2196/24377: 10.2196/24377

PMCID: PMC8446841

PMID: [34473065](#)

## Designing a Clinical Decision Support Tool That Leverages Machine Learning for Suicide Risk Prediction: Development Study in Partnership With Native American Care Providers

[Emily E Haroz](#), MA, PhD,<sup>✉1</sup> [Fiona Grubin](#), BS, MSPH,<sup>1</sup> [Novalene Goklish](#), BS, MS,<sup>1</sup> [Shardai Pioche](#), BA, MSW,<sup>1</sup> [Mary Cwik](#), BA, MA, PhD,<sup>1</sup> [Allison Barlow](#), BA, MA, MPH, PhD,<sup>1</sup> [Emma Waugh](#), BS, MPH,<sup>1</sup> [Jason Usher](#), BA, MPH,<sup>1</sup> [Matthew C Lenert](#), MS, PhD,<sup>2</sup> and [Colin G Walsh](#), MA, MD<sup>2,3,4</sup>



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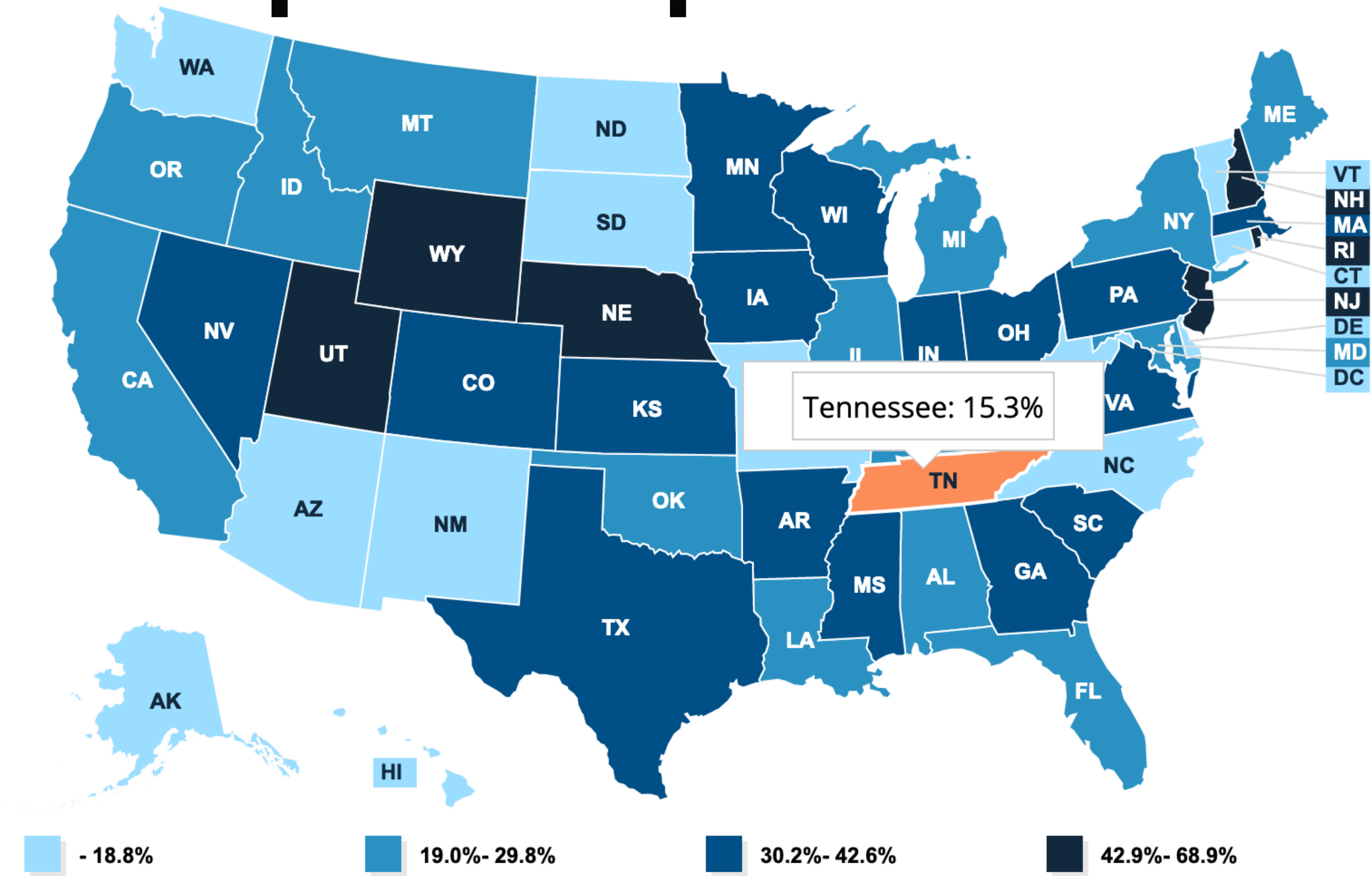
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# Response Gap #2: Access





# Response Gap #3: Workforce



# **Response Gap #4: Disintegration**

**Work as a collaborative team.**

**Cultivate human connection.**

**Build bridges.**





# Building Bridges





# TN Suicide Prevention Network ([tspn.org](https://tspn.org))



In Tennessee, 100% of Hospitals with Emergency Departments  
Report into ESSENCE as of May 2022

## Suicide-related syndromic surveillance



**Brittany Willis,  
Suicide Prevention  
Program Director**



# TSPN Task Force

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Dozens of diverse stakeholders across TN

- First responders
- Clinicians
- Law enforcement
- Educators
- Nonprofits
- Academics
- Survivors and those with lived experience

# TSPN Resource Directory

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Includes two pages of relevant policies on suicide prevention training in TN

Helpful both for what's current - and to see what might be missing!

# Discussion?

## DATA

**Completeness**  
**Lag**  
**Validity**

## DETECTION

**Equity**  
**Rarity**  
**Communication**

## RESPONSE

**Equity**  
**Access**  
**Workforce**  
**Disintegration**

