

Typologies and Phenotypes of Youth Suicide Decedents

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BACKGROUND

- **Rising Rates:** Youth suicide is a growing public health crisis with increasing incidence rates.
- **Adult-Centric Models:** Current prevention and screening models are largely derived from adult data, which may not translate to pediatric populations.
- **The Gap:** Youth-specific risk profiles are poorly defined, making early clinical recognition significantly more challenging for providers

METHODS

- **Dataset:** Utilized the National Violent Death Reporting System (NVDRS) from 2013–2022.
- **Sample:** Included n=10,442 suicide decedents between the ages of 10 and 17.
- **Analysis:** Performed Latent Class Analysis (LCA) to identify distinct subgroups based on 35 variables.
 - LCA is a person-centered statistical approach that groups individuals into unobserved (latent) subtypes based on patterns across multiple variables.
- **Variables:** Included demographics, mental health history, recent life stressors (relationship/school), and toxicology/means data

RESULTS

Crisis
25%
Acute stress, no prior mental health care

Disclosing
12.6%
Prior attempts + disclosure to others

Hidden
21.2%
No known risk factors
Represents the greatest challenge to current healthcare-based screening protocols

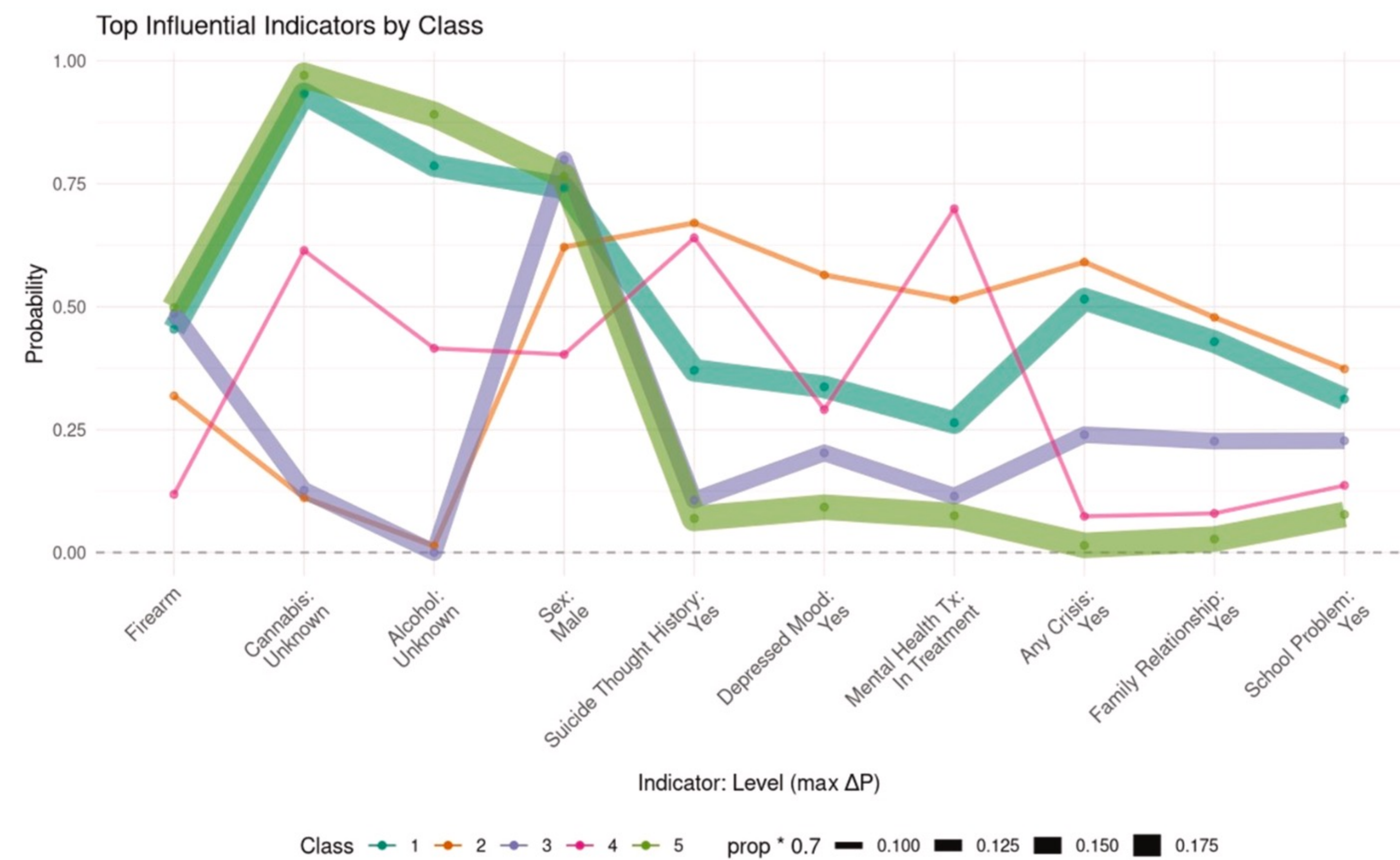
Identified
12.2%
Documented chronic mental health disorder, majority female

Surveillance
29%
Known to systems but with missing/unknown death data
Highlights need for better data collection

KEY FINDINGS:

~50% of youth had NO prior clinical contact or identifiable risk.
Current "high-risk" screening tools are likely missing half of the at-risk population.

FIGURE 1 The 10 Most Impactful Deviations by Class ("Crisis," "Disclosing," "Hidden," "Identified," "Surveillance")



Note: From left to right, the most to least impactful risk factor by change in overall impact in the model when excluding the variable are shown. For clarity, only 1 level of the risk factor is shown. That level was chosen by maximum absolute deviation from the base rate across classes. Please note color figures are available online.

CLINICAL & POLICY IMPLICATIONS

- **Universal Screening:** We must move beyond "at-risk" groups toward universal screening in schools and primary care to reach the "Hidden" class.
- **Lethal Means Safety:** Firearm safety counseling is a critical, immediate intervention, particularly for the "Crisis" phenotype.
- **Crisis Intervention:** Strengthening immediate-access support systems can intercept those driven by acute stressors.
- **System Improvements:** Enhancing surveillance and data-sharing systems is necessary to refine these phenotypes for real-time clinical use.

LIMITATIONS

- **Data Dependency:** The NVDRS relies on reports from coroners, medical examiners, and law enforcement, but if a family was unaware of a decedent's mental health history, it may be underreported in the system.
- **Retrospective Nature:** As a retrospective study of decedents, this analysis cannot account for "near-miss" cases or youth who experienced suicidal ideation but did not transition to an attempt.
- **Categorization Constraints:** While Latent Class Analysis identifies distinct phenotypes, some individuals may exhibit overlapping features across multiple classes.

CONCLUSION

- Youth suicide is highly heterogeneous and requires a diverse, multifaceted prevention strategy.
- Because many cases are missed by current medical approaches, we need broader, upstream prevention that reaches youth outside of traditional clinical settings

FUTURE DIRECTIONS

- **Prospective Validation:** Future research should aim to validate these phenotypes in clinical settings to determine if they can predict future risk in living pediatric patients.
- **Integrated Screening:** Investigating the efficacy of school-based vs. clinic-based screening tools specifically for the "Hidden" and "Crisis" phenotypes.
- **Provider Education:** Developing CME materials for pediatricians and residents to increase awareness of the non-traditional "Hidden" risk profile