

Manner and Leading Causes of Death among Midlife Adults with a Documented Psychiatric Diagnosis at Death

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BACKGROUND/SIGNIFICANCE

- Adults with mental illness (MI), on average, die 25 years earlier than the general population, purportedly due to chronic conditions
- Leading causes of death in the U.S. midlife population
 - Cancer, heart disease, unintentional injuries
- Mental illnesses differ in prevalence, symptoms, treatments, and associated health conditions, which may be associated with premature death
- To reduce premature mortality in midlife mentally ill, we need to know what to target

PURPOSE

- To examine differences in leading causes and manner of death among midlife adults with a psychiatric diagnosis documented on the death certificate

METHODS

Data source and sample

- Mortality data for midlife adults (50-64 years) who died in Minnesota between 2011 and 2017 (n=40,636)

Measures

Exposures

- Psychiatric Diagnoses** [from ICD10 Chapter F]: Depressive disorders, anxiety disorders, bipolar disorder, schizophrenia/psychotic disorders, and psychoactive substance use disorders (SUD) as ICD10 contributing cause codes
- Any Mental Illness:** Has any psychiatric diagnosis other than SUD, may be in addition to SUD but not SUD alone.
- Mental Illness Category:** Mutually exclusive: Mental illness only, SUD only, both, or neither

Outcomes

- Manner of Death:** Natural, accident, homicide, suicide, & undetermined as documented by medical examiner or medical certifier of death
- Leading Cause of Death: Underlying cause of death as documented by ICD10 codes

Covariates

- Sex, race/ethnicity, educational attainment, marital status, urban/rural residence

Analysis

- Summary statistics, cross-tabulations with chi-square tests
- Logistic regression to estimate odds of non-natural (suicide, accident, undetermined) death vs. natural and odds of specific psychiatric diagnoses at death
- Stata SE, version 15

RESULTS

Prevalence (Table 1)

- 4% (1,571) of midlife adults had a mental illness documented at death; 12.6% (5,103) when including psychoactive substance use disorder (SUD) as Mental Illness
 - Of those with any mental illness other than SUD, 16% had two or more diagnoses
 - Prevalence of mental illness documented at death 2.8 times higher in MN than US (1.3%)
- Prevalence of mental illness differs by manner of death
 - In midlife adults, documented mental illness ranged from 0% in homicides to 32% in suicides

Leading causes rank and percent of deaths (Table 2)

- Leading cause in midlife with mental illness was intentional self-harm (28% of deaths), while suicide was 7th leading cause (2% of deaths) for no mental illness
- Intentional self-harm was 3rd leading cause for midlife with mental illness in US; this represents only 14% of deaths to midlife with mental illness in US [data not shown]

Odds of manner of death (Table 3)

- Midlife adults with mental illness, with or without SUD, have more than 20 times higher odds of death by suicide compared to those with no MI or SUD
- SUD alone has 3-4 times higher odds of death due to accident or undetermined intent

Table 1. Prevalence of Mental Illness by Manner of Death, Midlife, MN 2011-2017

| | Total (40,365) | Natural (36,028) | Accident (2,891) | Suicide (1,370) | Undetermined (230) |
|--|----------------|------------------|------------------|-----------------|--------------------|
| Any Mental Illness | 3.9% | 2.6% | 4.3% | 32.3% | 22.2% |
| Depressive Disorders | 2.2% | 1.1% | 2.2% | 28.4% | 13.9% |
| Anxiety/Stress Disorders | 0.7% | 0.4% | 0.7% | 6.6% | 3.9% |
| Bipolar Disorder | 0.5% | 0.4% | 1.2% | 2.5% | 3.0% |
| Schizophrenia/Psychotic Disorders | 1.0% | 0.9% | 1.0% | 1.6% | 5.2% |
| Substance Use Disorder (SUD) | 9.6% | 7.8% | 28.6% | 12.3% | 29.6% |
| Mental Illness Category | | | | | |
| Only Mental Illness | 3.0% | 2.2% | 2.1% | 25.1% | 10.4% |
| Only Substance Use Disorder | 8.7% | 7.4% | 26.4% | 5.0% | 17.8% |
| Both Mental Illness and SUD | 0.9% | 0.5% | 2.2% | 7.2% | 11.7% |

Any mental illness includes those with any mental illness other than SUD; mental illness may be in addition to SUD, not SUD only.

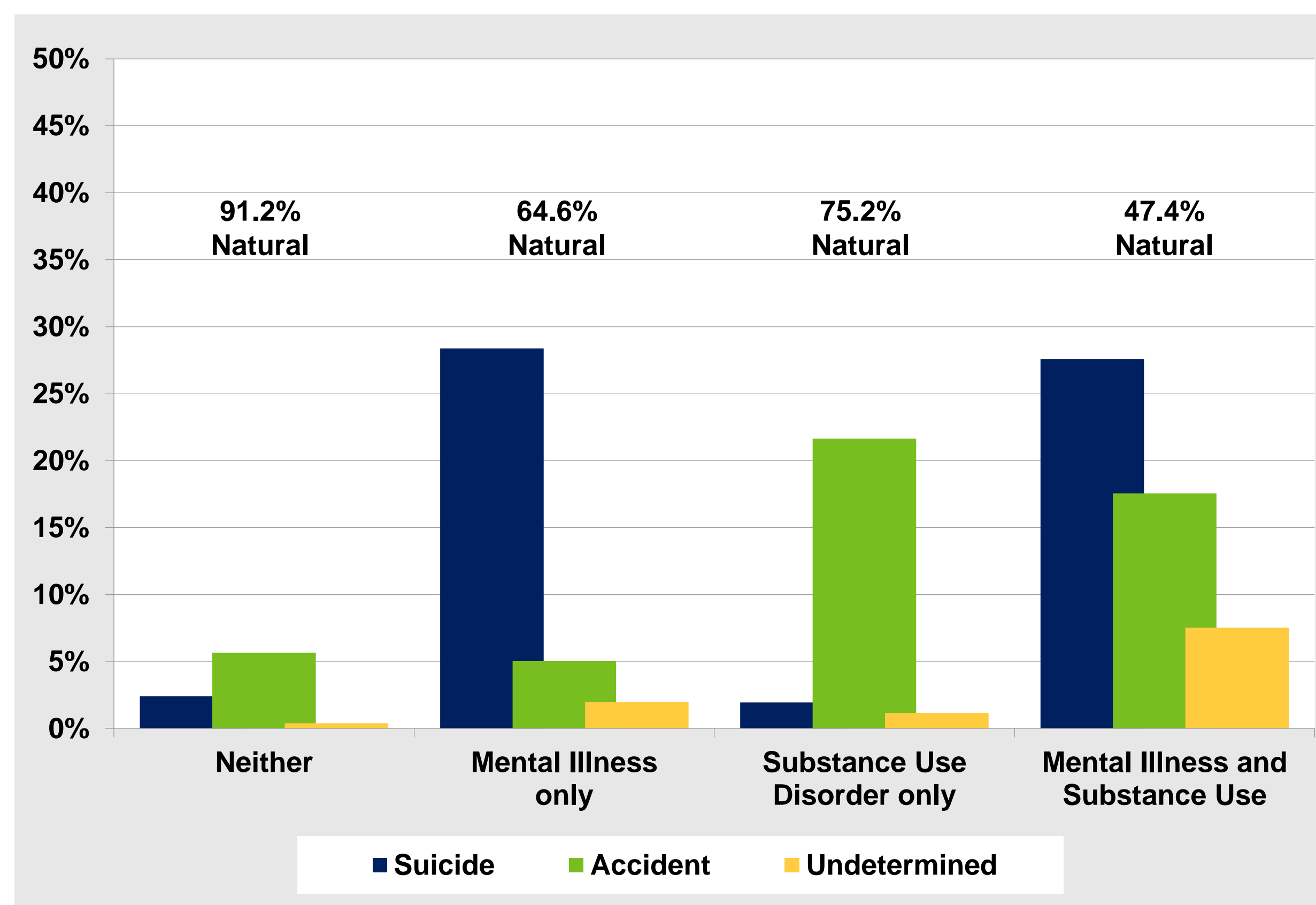


Figure 1. Manner of Death by Mental Illness Category, MN Midlife 2011-2017.

Table 2. Leading Causes of Death by Rank and Percent of Deaths in Midlife Adults with Any Mental Illness and No Mental Illness, MN 2011-2017.

| | No Mental Illness | | Any Mental Illness | |
|--|-------------------|-------------|--------------------|-------------|
| | Rank | % of Deaths | Rank | % of Deaths |
| Cancer | 1 | 37.3% | 2 | 12.8% |
| Cardiovascular Disease | 2 | 21.0% | 3 | 11.6% |
| Accidents | 3 | 7.1% | 4 | 8.3% |
| Chronic Liver/Cirrhosis | 4 | 4.1% | 7 | 3.0% |
| Chronic Lower Respiratory Disease | 5 | 3.8% | 5 | 7.1% |
| Diabetes | 6 | 3.7% | 6 | 4.8% |
| Suicide | 7 | 2.4% | 1 | 28.1% |

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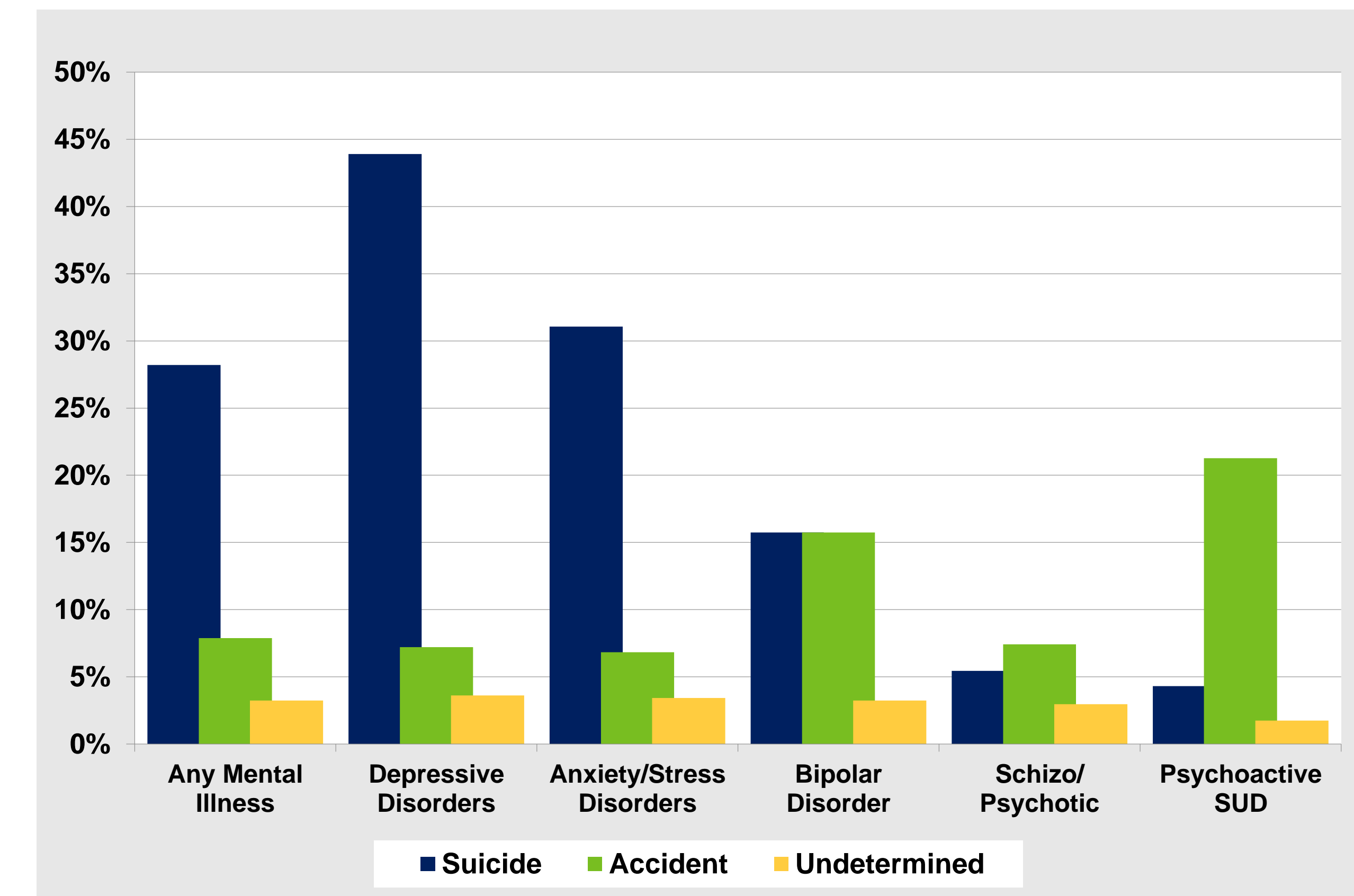


Figure 2. Manner of Death by Mental Illness Type, Midlife Adults, MN 2011-2017.

Table 3. Odds of Non-Natural Death by Mental Illness, MN Midlife, 2011-2017.

| | Suicide vs. Natural | | | Accident vs. Natural | | | Undetermined vs. Natural | | |
|--|---------------------|------|------|----------------------|-----|-----|--------------------------|------|------|
| | AOR | LCI | UCI | AOR | LCI | UCI | AOR | LCI | UCI |
| Any Mental Illness | | | | | | | | | |
| No | 1.0 | | | 1.0 | | | 1.0 | | |
| Yes | 19.4 | 16.9 | 22.2 | 1.6 | 1.3 | 1.9 | 9.0 | 6.5 | 12.5 |
| Mental Illness/Substance Disorder | | | | | | | | | |
| None | 1.0 | | | 1.0 | | | 1.0 | | |
| Mental Illness | 18.4 | 15.9 | 21.4 | 1.2 | 0.9 | 1.6 | 6.1 | 3.9 | 9.5 |
| SUD only | 0.9 | 0.7 | 1.2 | 4.3 | 3.9 | 4.7 | 3.0 | 2.1 | 4.2 |
| Both | 23.1 | 17.7 | 30.2 | 5.7 | 4.2 | 7.6 | 31.4 | 20.0 | 48.7 |

Adjusted for sex, race/ethnicity, educational attainment, marital status, and urban/rural residence.

DISCUSSION

- Chronic conditions are not leading causes of death in MN midlife adults with MI
 - Suicide is the leading cause (28% of deaths to midlife adults with mental illness)
 - 29% of deaths due to chronic conditions (cancer, CVD, and diabetes combined)
- Preventing premature death in midlife adults with mental illness needs attention
 - Chronic condition management is necessary, but we also need to address mental illness
 - Mental health promotion and mental illness prevention
 - To reduce deaths due to unintentional injuries and suicides
 - To improve mental health, which can lead to better chronic condition self-management
 - Creative solutions to reach midlife mentally ill
 - Our prior research shows midlife adults with mental illness are less likely to access healthcare
 - We also previously found more social isolation (e.g., unmarried, unemployed, activity limitations) in midlife mentally ill making it harder to identify (other than self-identify) and provide services

Limitations/Issues

- Mental illness higher in MN may be due to more complete documentation
- Deaths with mental illness in MN do not reflect patterns for region or nation
 - Differential (under) documentation may indicate that national story is not entirely accurate