Suicide: Basic Facts

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[No conflicts to disclose]
Causes of Excess Mortality: Bipolar Disorder Patients

- All Violence: 50%
- All Medical: 50%
- Cardiovascular: 40%
- Suicide: 35%
- Pulmonary: 10%
- Accidents + Other Violence: 10%
- Endocrine: 5%

[From Osby et al. Arch Gen Psychiatry 2001; 58: 844–850]
Suicidal Risks: American Adults (2018)

- Ideation: 10.7M
- Plans: 3.3M
- Attempts: 1.4M
- Suicides: 48k

**Ratios:**
- Ideation/Attempt = 7.64
- Ideation/Suicide = 233
- Attempts/Suicide = 29

(Data from US CDC 2020)
General population suicidal risks (US)

<table>
<thead>
<tr>
<th>Measure</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ideation</td>
<td>3000/100k/year</td>
</tr>
<tr>
<td>Attempts</td>
<td>500/100k/year</td>
</tr>
<tr>
<td>Suicides</td>
<td>14/100k/year</td>
</tr>
<tr>
<td>Ideation/Attempts</td>
<td>6</td>
</tr>
<tr>
<td>Attempts/Suicides</td>
<td>36</td>
</tr>
<tr>
<td>Ideation/Suicides</td>
<td>214</td>
</tr>
</tbody>
</table>

Suicides + Attempts vs. Psychiatric Diagnosis in 6050 Subjects

[From Baldessarini & Tondo 2019]
Methods of Suicide (USA)

Data from US CDC 2018

% of Suicides

Method

Firearm
Hanging
Poison
Jump/Wreck

Male
Female
### Suicide Trends Around the World

The most recent data available on rates of deaths by suicide reported by seven countries.

<table>
<thead>
<tr>
<th>Country</th>
<th>Age-Standardized Suicide Rate (Per 100,000)</th>
<th>2000</th>
<th>2012</th>
<th>Percent Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Canada</td>
<td></td>
<td>11.0</td>
<td>9.8</td>
<td>-11.1%</td>
</tr>
<tr>
<td>China</td>
<td></td>
<td>7.8</td>
<td>19.4</td>
<td>-59.6%</td>
</tr>
<tr>
<td>Germany</td>
<td></td>
<td>11.1</td>
<td>9.2</td>
<td>-17.0%</td>
</tr>
<tr>
<td>Japan</td>
<td></td>
<td>18.8</td>
<td>18.5</td>
<td>-1.9%</td>
</tr>
<tr>
<td>Russian Federation</td>
<td></td>
<td>35</td>
<td>19.5</td>
<td>-44.4%</td>
</tr>
<tr>
<td>United Kingdom</td>
<td></td>
<td>7.8</td>
<td>6.2</td>
<td>-21.1%</td>
</tr>
<tr>
<td>United States</td>
<td></td>
<td>9.8</td>
<td>12.1</td>
<td>+24.2%</td>
</tr>
</tbody>
</table>

Source: Preventing Suicide: A Global Imperative, World Health Organization, 2014
Suicide Rate Trends in the United States

[CDC data, 2018]

A. Overall rate vs. years

Suicide Rate (per 100k/year)

Year


B. Groups

- Black
- Female
- Hispanic
- White
- Native
- Male

Suicide Rate

2 4 6 8 10 12 14 16 18 20

2003 2015
Recent Suicidal Trends: US

A. Location (all ages)

- Rural
- Small town
- Suburban
- Urban

Suicide Rate/100k/year


B. Juvenile Ideation & Behavior

- age 15-17
- age 12-14
- age 5-11

% of Inpatient & ER Admissions

[From 31 US pediatric hospitals [9.6M encounters]; Pleemons et al. Pediatrics 2018; 141; e2017426]
US Suicide Rates/100k/year by County, 2015

Factors associated with state suicide rates (2001)

<table>
<thead>
<tr>
<th>Factors in US</th>
<th>Correlation (r)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Population density</td>
<td>-0.735</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Male sex</td>
<td>+0.576</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Annual income/capita</td>
<td>-0.550</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Psychiatrists/100,000</td>
<td>-0.544</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Native-American (%)</td>
<td>+0.543</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Physicians/100,000</td>
<td>-0.528</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Federal MH aid</td>
<td>-0.443</td>
<td>0.001</td>
</tr>
<tr>
<td>African-American (%)</td>
<td>-0.430</td>
<td>0.002</td>
</tr>
<tr>
<td>Uninsured residents (%)</td>
<td>+0.391</td>
<td>0.005</td>
</tr>
</tbody>
</table>

Suicide Attempt Risk in US Adolescents

- Mixed
- Alaskan native
- Black
- Hispanic
- Asian
- White

Attempt Rate (%)


Recent US (CDC) adolescent attempt rate: 8.9%/yr; suicide rate: 0.012%/yr; A/S ratio = 740:
Risk factors for suicide

- Previous suicide attempts
- Major depression or bipolar disorders
- Abuse of alcohol or drugs
- Losses, deaths, shame, poverty
- Social isolation, unmarried
- Lack of access to clinical care
- Access to firearms, toxins, medicines
- Soon post-hospital discharge
Long-Term Morbidity in Clinically Treated Mood-Disorder Patients

[Depression = 86.4% of the 45.3% of time ill in 9.4 yrs]

[From Forte et al. 2015]
Cumulative Proportion of Suicides + Attempts After Discharge from Psychiatric Hospital

Cumulative Proportion of Suicidal Acts (%)

Risk/month

[from Forte & Baldessarini 2019]
Forest plots of random-effects meta-analyses of studies of effects of A. modern drugs for psychosis other than clozapine (n=28 studies) or B. clozapine (CLZ; n=7) vs. suicidal acts (attempts or suicides), compared to indicated alternative treatments. Effects of CLZ are highly significant (pooled OR = 0.229 [CI: 0.110–0.476]; z-score = 3.94, p<0.001), but not drugs other than CLZ (OR = 0.941 [0.790–1.12]; z=0.680, p=0.497).

**A. Other SGAs**

- Khan et al. 2006 (A/PBO)
- Haukka et al. 2008 (ONZ/Other)
- Tiihonen et al. 2009 (ONZ/Other)
- Tiihonen et al. 2009 (QTP/Other)
- Tiihonen et al. 2009 (RSP/Other)
- Karayal et al. 2011 (ZPS/PBO)
- Ruengorn et al. 2011 (A/Other)
- Koek et al. 2012 (ONZ/Other)
- Koek et al. 2012 (QTP/Other)
- Koek et al. 2012 (RSP/Other)
- Khan et al. 2013 (A/PBO)
- Kiviniemi et al. 2013 (A/C)
  - (A/Other-None)
  - (APZ/Other-None)
  - (ONZ/Other-None)
  - (QTP/Other-None)
  - (RSP/Other-None)
  - (ZPS/Other-None)
- Weisler et al. 2014 (QTP/PBO)
- Hayes et al. 2016 (ONZ/C)
- Hayes et al. 2016 (QTP/C)
- Hui et al. 2018 (QTP/PBO)
- Montastruc et al. 2019 (APZ/Other)
- Tournier et al. 2019 (A/C)
- Tournier et al. 2019 (APZ/C)
- Tournier et al. 2019 (ONZ/C)
- Tournier et al. 2019 (QTP/C)
- Tournier et al. 2019 (RSP/C)

**B. Clozapine**

- Walker et al. 1992 (CLZ/Pre)
- Meltzer et al. 2003 (CLZ/ONZ)
- Modestin et al. 2005 (CLZ/Pre)
- Haukka et al. 2008 (CLZ/Other)
- Tiihonen et al. 2009 (CLZ/Other)
- Ringbäck-Weitof et al. 2014 (CLZ/Other-None)
- Thomas et al. 2015 (CLZ/ONZ)

**Pooled OR = 0.229**

- [CI: 0.110–0.476]
- z=3.94; p<0.001

[From Forte et al. J Psychopharmacol 2021]
Effects of Lithium: Suicides & Attempts

[From Baldessarini & Tondo
Bipolar Disord 2008; 10:114–115]

[n=34 studies; N=3200 subjects]

Pooled RR [CI]
4.14 [3.02–5.67]
(p<0.0001)
Summary & Conclusions

- Major mental illnesses can be fatal: suicide in younger, with medical illnesses in older patients.
- Suicide risks rising in US (declining in many other countries), with all locales & ages.
- Suicide risk: higher with BD than MDD; also high with substance abuse.
- Lethality ratio (attempt/suicides) ca. 30 in general pop.; <10 in mood disorders.
- Risk factors: prior attempt, substance abuse, mood disorder, unresolved depression, social isolation, losses, post-hospital.
- Medical treatments vs. suicide: clozapine (schizophrenia), lithium (mood disorders).