Suicide Analysis

A closer look at a concerning trend….
Suicide Analysis

- Background to suicide
  - History lesson
  - Some facts
- Suicides trends
  - Globally
  - South Africa
- Underwriting considerations
  - Precipitating factors
  - Suicide Methods
- Suicide Exclusion Clauses
  - Analysis
- Risk Factors
- Case studies
- Issues and Conclusions
A background to Suicide

A short lesson

- “.the human act of self-inflicting one’s own life cessation” - WHO
- Historically suicide has been very prevalent
- Samurai in Japan – “seppuku” or “harakiri”
- “Suttee” in East India
- Self-immolation as form of protest
- Kamikaze
- Mass suicides
- A volcano?
- Suicide bombings

Source: http://en.wikipedia.org/wiki/Suicide
A background to Suicide  A few facts

- Global worrying trend
  - Suicide is among the top 3 causes of death for people aged 15 – 44 years
  - 2nd leading cause of death amongst university students (World Health Organization, 2010)

- Completed suicide vs. attempts

1 x death claim = 20 x disabilities
A background to Suicide  A few facts

- Global worrying trend
- Completed suicide = 20 attempts

- Mental illness often plays a role
- Men commit more suicides than women
  - 4 x in US and UK
  - 2 x Globally

- Suicide methods
- Global rates of suicide reported to be rising
  - Around a million deaths per year
  - 11.6 per 100,000 [2008]
  - But varies considerably by country (and year reported!)
Trends in Suicide
Trends in Suicide A Global perspective

- 49% increase for males, 33% for females over period 1950 – 1995
- WHO projects 1.53 million people will commit suicide in 2020

Source: “A Global Perspective in the Epidemiology of Suicide”, report [2002], Bertolote et al
Trends in Suicide A Global perspective

- UK Suicides for 2011
- Bi-Modal Distribution evident

Source: “Samaritans Suicide Statistics Report”, 2013
Trends in Suicide: A Global perspective

- UK Rates show an atypical trend over time
- Gender differences are typical

Source: Office for National Statistics, National Records of Scotland, Northern Ireland Statistics and Research Agency
Trends in Suicide A Global perspective

- UK, Canada and Australia rates seem to have decreased
- US has shown increase over decade between 2000 – 2010
- Financial crisis has played a part

Source: WHO – “Disease and injury country estimates”
Trends in Suicide: A Global perspective

2008 Suicide Rate by Region, Age and Gender

Source: WHO – “Disease and injury country estimates”
A background to Suicide World suicide rates 2008
South Africa has the 22nd (2005) or 8th highest (2010) rate of suicide in the world ~15.4

- Approximately 6000 – 8000 people commit suicide p.a.
- 3rd greatest cause of unnatural death in the country, after homicide and unintentional causes

Source: WHO – “Disease and injury country estimates”

Underwriting Considerations
Precipitating Factors

Underwriting Considerations

- Academic related problems
- Interpersonal problems / Family problems
- Family history (Qin et al, 2003)
- Past or present physical or sexual trauma
- Mental health problems
- High levels of stress and sense that one is unable to cope

Source: 16 American States in 2008 – James Heilman, MD
Precipitating Factors: Economic Link

- Insured population affected more; males too
- Ages 45 and older suicides rates increased more
- The average claim size increased
- Higher face amounts had the largest increase following 2008
- Following the recession, suicide became the most common non-medical cause of death.

Suicide Methods  Male vs. Female Dilemma

- Globally hanging seems to be most prevalent
- Men use more violent means; women use more poisoning as means

“Other” category MVAs

- Ability to disguise as accident
- Study in Australia
  - 14.8% conceived to have a motor vehicle “accident”
  - 8.3% had previously attempted this
  - All attempters reported having emotional or mental problems at time of event
  - Significantly more likely to be fully employed with partner and children
  - Motives behind usually financial benefits and eliminating stigma

“The intentional traffic accident is probably the most common means of suicide that is typically misclassified” [Moyle Information Services for Law Enforcement on Suicide Investigation]

- Study of suicidal intent in single-car accidents
  - 30 accidents with average 10 day hospitalisation
  - RFL showed higher than control for risk
  - Low suicide risk, but looking for solution to their problems
- What does this mean for insurance??
Suicide Clauses and its intended effects
Life Insurance Suicide clauses

- Insurance generally excludes *intentional acts*
- Direct or indirect – causation issues may occur
- Purpose
  - Recognition that cover for suicide is needed…to an extent
  - Balance between complete coverage and anti-selection
- Clauses are in favour of *the insured*

Accidents should be fairly uniform since random events
Suicide exclusion clause  
Timing of claims

RGA Claims Data 1999 - 2010

Source: RGA Internal Data
Suicide exclusion clause  
Timing of claims

Company A Claims Data (2800 Claims)

Proportion of Claims

Suicide exclusion clause
Timing of claims

Company A Claims Data (2800 Claims)

Source: RGA Internal Data
Suicide exclusion clause Timing of claims

- Term business & larger sums assured particularly at risk of anti-selection

Risk Factors
Suicide claims Impairment

- Study of 10,000 RGA Fac cases
- 2000-2009
- Significant correlation between impairment and claim cause?

<table>
<thead>
<tr>
<th>Impairment Code</th>
<th>Cause of Death</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mental Disorder</td>
<td>Suicide</td>
</tr>
<tr>
<td>Oncology</td>
<td>Cancer</td>
</tr>
<tr>
<td>Motor Vehicle Record</td>
<td>Motor Vehicle Accident</td>
</tr>
<tr>
<td>Avocation</td>
<td>All Accidental Deaths</td>
</tr>
<tr>
<td>Cardiovascular Health</td>
<td>Heart Disease</td>
</tr>
<tr>
<td>Alcohol Use</td>
<td>Non-Transport Accidents</td>
</tr>
<tr>
<td>Diabetes</td>
<td>Diabetes</td>
</tr>
<tr>
<td>Build</td>
<td>Diabetes and Heart Disease</td>
</tr>
<tr>
<td>Aviation</td>
<td>Plane Crash</td>
</tr>
</tbody>
</table>

Suicide claims Impairment

<table>
<thead>
<tr>
<th>Cause of Death</th>
<th>Percent of occurrence of deaths in study</th>
<th>Percent of all 2005 U.S. Deaths</th>
</tr>
</thead>
<tbody>
<tr>
<td>Suicide</td>
<td>2.4%</td>
<td>1.3%</td>
</tr>
<tr>
<td>Cancer</td>
<td>32.5%</td>
<td>22.8%</td>
</tr>
<tr>
<td>Motor Vehicle Accident</td>
<td>1.9%</td>
<td>1.9%</td>
</tr>
<tr>
<td>All Accidents</td>
<td>5.1%</td>
<td>4.9%</td>
</tr>
<tr>
<td>Heart Disease</td>
<td>35.0%</td>
<td>37.9%</td>
</tr>
<tr>
<td>Other Accident</td>
<td>2.8%</td>
<td>3.1%</td>
</tr>
<tr>
<td>Diabetes</td>
<td>2.3%</td>
<td>3.1%</td>
</tr>
<tr>
<td>Plane Crash</td>
<td>0.35%</td>
<td>0.03%</td>
</tr>
<tr>
<td>Total</td>
<td>77.3%</td>
<td>70.1%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Population</th>
<th>Total Deaths</th>
<th>Suicides</th>
<th>Percent of Suicides</th>
</tr>
</thead>
<tbody>
<tr>
<td>No Mental Illness Impairment</td>
<td>9294</td>
<td>206</td>
<td>2.2%</td>
</tr>
<tr>
<td>Mental Illness Impairment</td>
<td>294</td>
<td>27</td>
<td>9.2%</td>
</tr>
</tbody>
</table>

Suicide claims Impairment

- Binomial probability of 27 suicides with mental disorder
- Significance level of < 0.000000001
  → Mental impairment is good indicator of suicide risk

Suicide claims Impairment

- Matched Pairs analysis to determine excess mortality
- Over 8 x higher risk of suicide
- 88% of these suicide cases were post 24 month period

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<th>Impairment</th>
<th>Cause of Death</th>
<th>Multiple of Increased Mortality Risk for Listed Cause</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aviation</td>
<td>Plane Crash</td>
<td>2400%</td>
</tr>
<tr>
<td>Mental Disorder</td>
<td>Suicide</td>
<td>855%</td>
</tr>
<tr>
<td>Diabetes</td>
<td>Diabetes</td>
<td>403%</td>
</tr>
<tr>
<td>Alcoholism</td>
<td>Non-Transport Accident</td>
<td>329%</td>
</tr>
<tr>
<td>MVR</td>
<td>Motor Vehicle Accident</td>
<td>198%</td>
</tr>
<tr>
<td>Oncology</td>
<td>Cancer</td>
<td>188%</td>
</tr>
<tr>
<td>Circulatory</td>
<td>Cardiovascular Event</td>
<td>108%</td>
</tr>
<tr>
<td>Build</td>
<td>Diabetes or Cardiovascular Event</td>
<td>84%</td>
</tr>
<tr>
<td>Avocation</td>
<td>Any Accident</td>
<td>9%</td>
</tr>
</tbody>
</table>
Risk factors in Insurance

- Larger sums assured
- Age group 15-44
- Males (death) and females (disability)
- Occupations
  - Anesthesiologists
  - Dentists
  - Pharmacists
  - Medical practitioners
  - Veterinarians
  - Police officers
  - Farm workers
  - Construction workers, and
  - Prison inmates
- Duration less than 36 months
- Mental Illness impairment
- Recession
Some Case Studies
Case studies  Intent vs. method

- Hanging from a tree
- Rat poison
- Jumping in front of car
- Sitting in middle of road, intoxicated
- Injecting toxic substance
- Bathtub anti-depressants
- Battery acid
Overall Issues and Conclusions
Issues with Suicide Claims

- Evidence relating to suicide
  - Possible motive (state of mind at time of death important)
  - Manner in which insured died – indicator of cause of death
  - Evidence is colourless – accident assumed
  - South African time

- Outside exclusion period = not reported as suicide

- The under-reporting of suicide:
  - Misclassification of deaths – intent difficult to establish
  - Males vs. females – methods contribute to gender differences
  - Subjective nature of Coronal system

- Inside exclusion period = onus on insurer

- Bad market image with rejected claims
  - Who suffers?
Conclusion

- Suicides are more prevalent than immediately evident
- Suicides between 5% - 15% of claims (amounts)
- Potentially closer to 30% - often difficult to prove
- Lengthening exclusion period may help to reduce number of insured deaths
- Pre-claim counselling
  - Additional cover for no or little reason
  - Mental illness impairment
  - Young
  - Occupations at risk
  - Engaging with consumers around 2 year mark
  - Possibly engaging more in recessionary periods

- Aim to pay claims, but avoid unnecessary claims
Thank you for your attention.
The security of experience.
The power of innovation.