Sameness and Suicide: Breaking Through Research Limits in the Face of Crisis

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Suicide: The Pressing Challenge

- Pervasive and devastating
  - Steady “quota” of victims until recently
  - Small towns to large communities, famous to infamous
  - New populations of concern – military, teens, middle aged white males, rural (JAMA 2019)
- Costly ($32 billion in lost productivity; $1 billion Tx)
  - $32 billion: Lost productivity
  - $1 billion: Treatment of self-inflicted injury
- Stubborn
  - Resistant to public health and medical interventions
  - Only 30% with history of utilization of MH services
- Challenge: Stalled progress?
  - Research: insufficiently progressive, innovative nor accumulative (Psychol Med 2017)

U.S. suicide rates (counties) per 100,000 by PUMA groups, 2000-2010 average, Compressed Mortality File (Red = NVDRS state; Blue = not NVDRS state).
Example: Religion and Suicide

Problems of: Ecological Fallacy

The Contextual Level (Social/Behavioral Science)

Transdisciplinary Agenda:
The Individual in Context

The Individual Level (Biological/Medical Science-BMS)

Problems of: Generalizability

**Complexity Perspective:** As defined by Luke & Harris (2007:357), complex systems “are made up of heterogeneous elements that interact with one another, have emergent properties that are not explained by understanding individual elements of the system, persist over time, and adapt to changing circumstances.”
The Problem of the Zeros

Community Level (Rates)

Essential Problem of Embedding

Suicides (Death Certificates)

Did Not Commit Suicide: “Zeros”

Committed Suicide: “Ones”
# The Complicated But Feasible, Big Data Solution

<table>
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<tr>
<th>Suicides – “ones”</th>
<th>Non-Suicides - “zeros”</th>
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<td><strong>Census Bureau, CPS (Mandated); Religious Congregations &amp; Membership Survey (1960-present) (All counties)</strong></td>
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| **NVDRS**  
(All Counties, 17 States) |
| Treatment for MH problems, toxicology screen |
| Proxies: intimate partner problem/ marital status, Job/school/ financial problems |
| Age, occupation, gender, veteran status, suicide history, crisis in past 2 weeks, mode, date |
| Current depressed mood, current MH problem, diagnosis |
| **ACS**  
(1996-present) |
| (all counties, 2005-present) |
| Marital status migration status |
| Age, occupation, gender, income |
| Physical/mental/ emotional problems |
Analytic Steps

- Acquiring data
- Harmonizing data
  - Full model (N=12,728,796)
  - Reduced models (Employment, N = 12,696,127; physical problems N=12,722,565)
- Logistic regression for binary outcome:
  - Linearity
  - Clustering, dependency, hierarchical nesting
- MSD1-US = Multi-level suicide data – U.S.
Considering “Sameness”