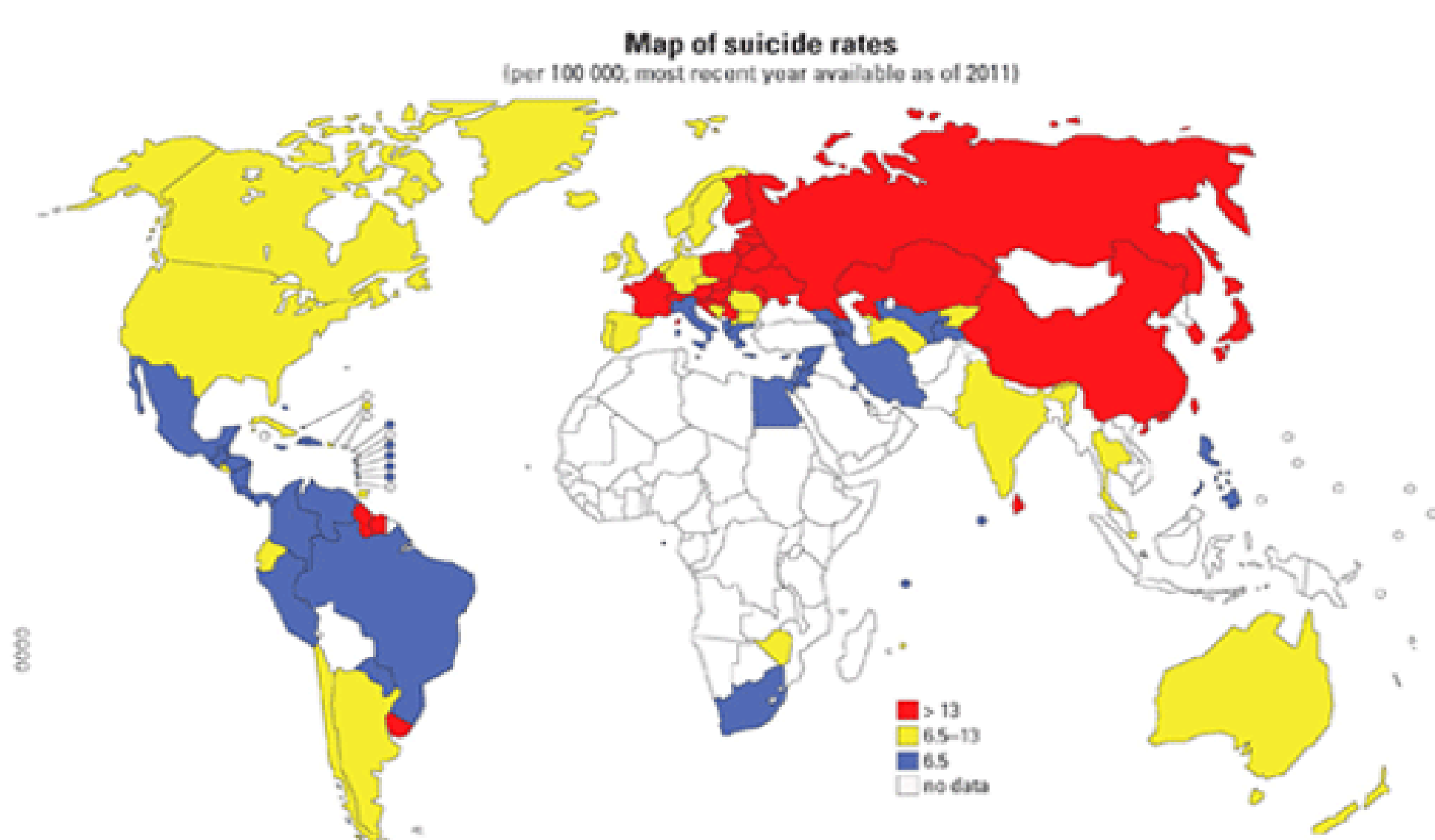
Adolescent Suicide: Risk Factors & Prevention

Doug Gray, MD
Director of Training and Education
Professor, Department of Psychiatry
University of Utah School of Medicine
VA Rocky Mountain Mental Illness Research, Education, and Clinical Center

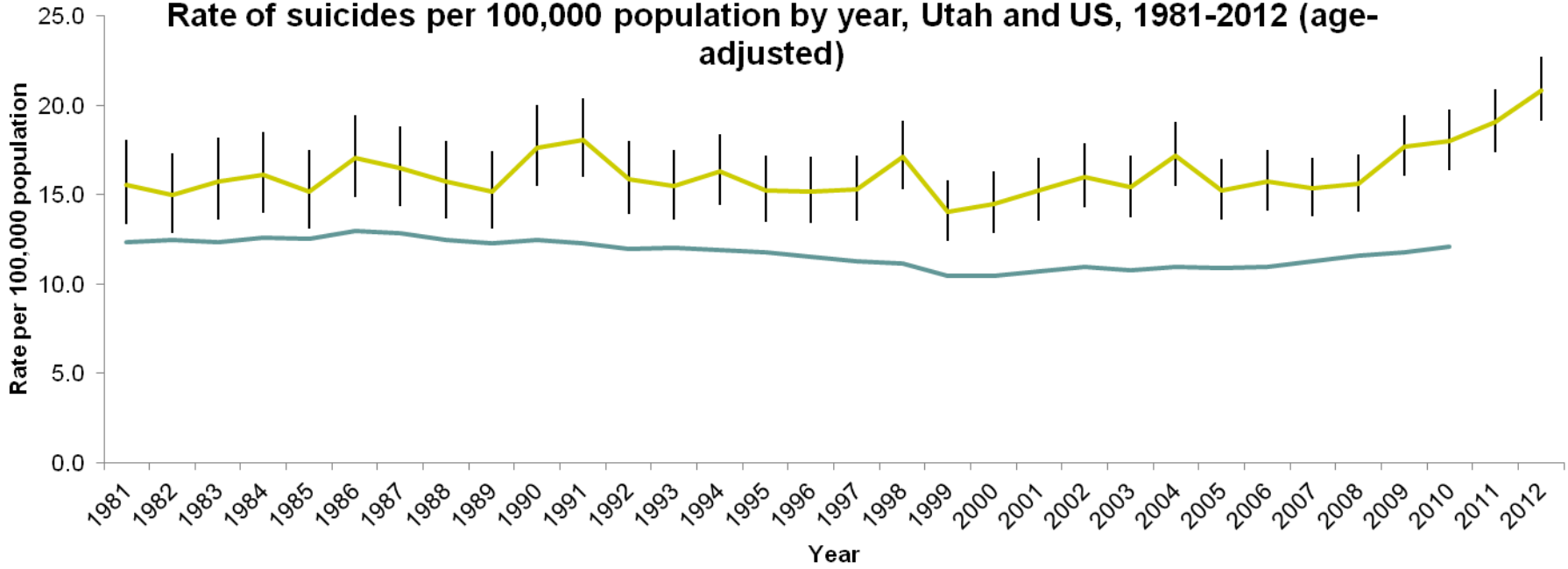
University of Utah

Background on Suicide Epidemiology: World, United States, Utah

Suicide Rates Worldwide



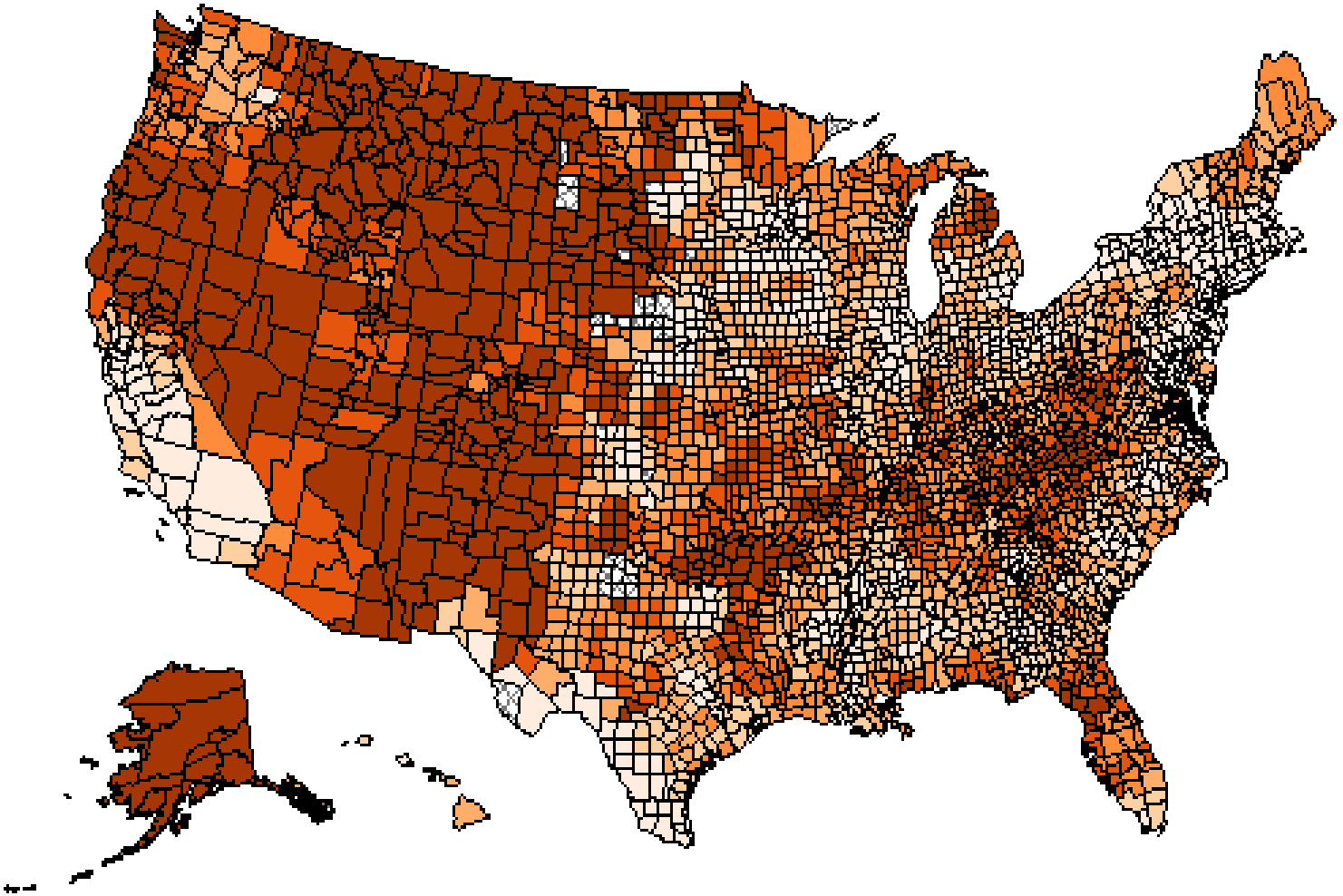
Utah vs. U.S Suicide Rates



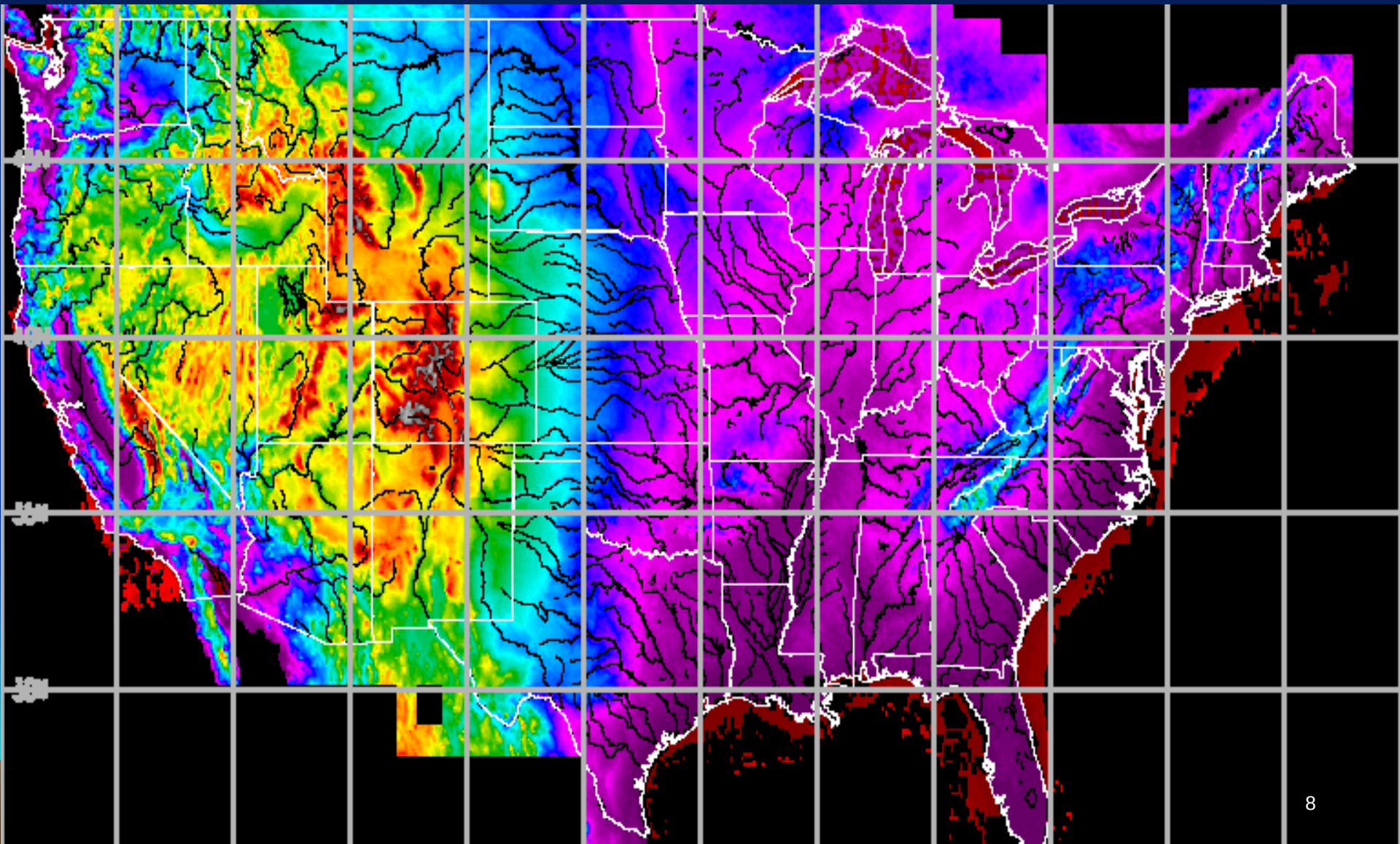
Center for Disease Control 2010 Suicide Rates

- US Suicide Rate decreased 1990-2000, then increased from 2000-2010
- Regional Suicide Rates
  - West 13.6, South 12.6, Midwest 12.0, Northeast 9.3
- Method
  - Firearm 50%
  - Suffocation (hanging) 25%
  - Poisoning 17%
  - Misc 8%

US Suicide Rates



Topographic map of USA



Altitude and Suicide

- Perry Renshaw, MD, PhD, University of Utah "The Altitude Hypothesis"
  - Kim N, Renshaw P, *The American Journal of Psychiatry*, 2011, Jan 168(1):49-54
  - In the United States, Above 2000 feet, suicide rates go up exponentially!
  - Changes in brain metabolism — not every brain adapts
  - Evidence consistent — multiple studies
- Korean collaborators find the same association
  - Korea University College of Medicine
  - Kim J et al, Psychiatry Investigation, 2014, 2014, 11(4)492-4

Center for Disease Control 2010 Suicide Rates

- U.S. Rates
- For 2010
- Whites have the highest US suicide rate (14.1)
  - = 14.1 per 100K/year
- Native American have the 2nd highest US suicide rate (11.0)
  - Rates vary by tribe, each tribe is like a separate nation
- Asian/Pacific Islanders (6.2)
- Hispanics (5.9)
- African Americans (5.1)

Utah Teenagers

- Survey of Utah teens*
  - 27% sad or hopeless
  - 14% considered suicide
  - 12% made a suicide plan
  - 7.2% attempted suicide
  - 3.1% required medical attention after an attempt

*CDC Youth Risk Behavior Surveillance System

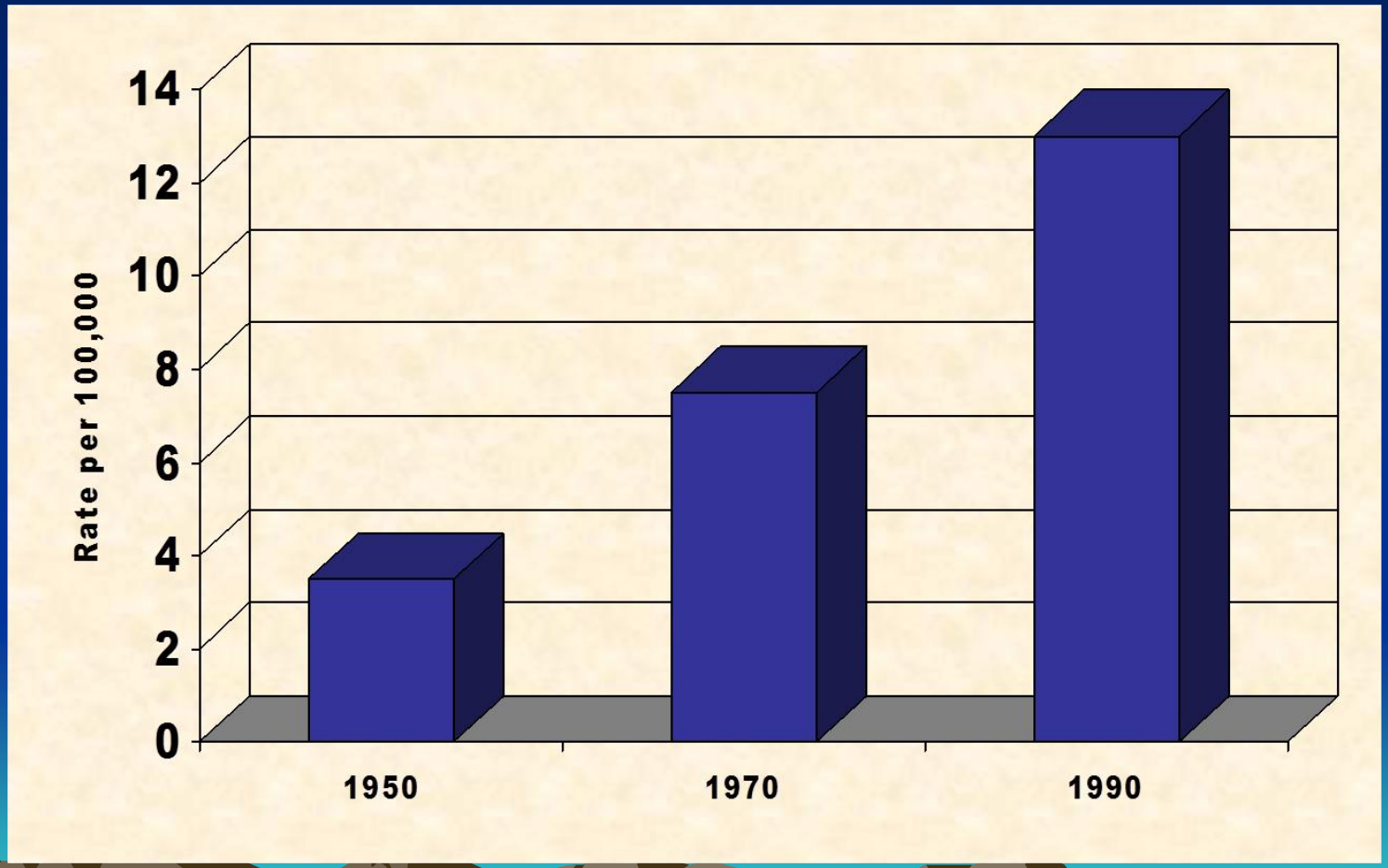
How Does a Child Psychiatrist become a Suicidologist?

Utah Department of Health

“We just need your help with one question”

U.S. Suicide Rates

15-24 Year-Olds



Becoming a Suicidologist

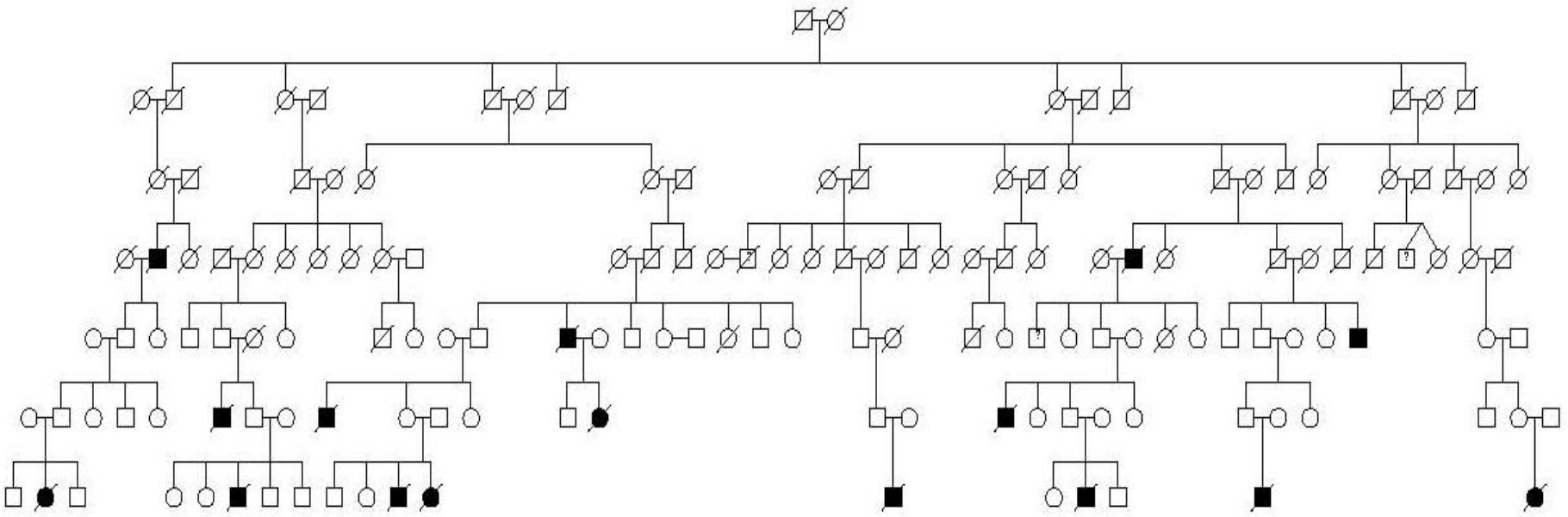
- The “Three Davids and the Madelyn”
  - David Shafer, MD, Columbia University
    - “We are hopeful the psychological autopsy method will give us some of the answers we need.”
  - David Brent, MD, University of Pittsburgh
    - “We don’t have good programs because we don’t do the research needed to design them”
  - David Clark, PhD, Rush University
    - “Once good controlled study is worth a thousand expert opinions!”
  - Madelyn Gould, Ph.D., Columbia University
    - “People want to do something immediate, but research takes time.”

Surprise, Research is Funded!

- Every Utah Agency serving children and adolescents agreed to turn over every piece of data prospectively for three years.
  - Utah Youth Suicide Prevention Task Force
    - All Utah government agencies and non-profit agencies serving children and adolescents
  - Utah Department of Health
  - University of Utah Department of Psychiatry


CASE #
HEART
R. LUNG
L. LUNG
LIVER
SPLEEN
R. KIDNEY
L. KIDNEY
BRAIN

Suicide Genetics Collaboration
Hilary Coon, PhD Geneticist



(22) Now I am going to read a list of symptoms to you, please tell me if you noticed *(name of decedent)* struggling with any of these symptoms in the last two months?

a) Sadness	1-Yes	2-No	3-Don't Know	i) Impulsive Behavior	1-Yes	2-No	3-Don't Know
b) Mood Swings	1-Yes	2-No	3-Don't Know	j) Hallucinations	1-Yes	2-No	3-Don't Know
c) Hopelessness	1-Yes	2-No	3-Don't Know	k) Appetite Change	1-Yes	2-No	3-Don't Know

d) Irri
e) An
f) Agg
g) An
h) Pa

r) Did

(31) a) Did *(name of decedent)* ever receive any psychiatric medication? 1-Yes* 2-No 3-Don't Know

If No, skip to question #35

b) *(If YES) Who prescribed these medications? *(circle all that apply)*

Family Doctor	1-Yes	2-No	3-Don't Know	Physician Assistant	1-Yes	2-No	3-Don't Know
Internal Medicine MD	1-Yes	2-No	3-Don't Know	Nurse Practitioner	1-Yes	2-No	3-Don't Know
Psychiatrist	1-Yes	2-No	3-Don't Know	On-line provider	1-Yes	2-No	3-Don't Know
Other_____	1-Yes	2-No	3-Don't Know				

c) Was he/she taking any prescribed psychiatric medication in the last two months?

1-_
2-_
3-_

(41) a) Was *(name of decedent)* ever physically abused? 1-Yes* 2-No 3-Don't Know

b) *If Yes, by whom? *(circle all that apply)*

1-BIOLOGICAL MOTHER	2- BIOLOGICAL FATHER	3-STEP MOTHER	4- STEP FATHER
5-BROTHER	6-SISTER	7-RELATIVE	8-NEIGHBOR
9-LEGAL GUARDIAN-FOSTER PARENT		10-STRANGER	

11-OTHER_____

c) *If Yes,* When was the most recent incidence of abuse?

1-Last week 2-Last Month 3-Last Six Months 4-Last Year 5-# of Years_____

(42) a) Was he/she *(decedent)* ever sexually abused? 1-Yes 2-No 3-Don't Know

b) *If Yes, by whom? *(circle all that apply)*

1-BIOLOGICAL MOTHER	2- BIOLOGICAL FATHER	3-STEP MOTHER	4- STEP FATHER
5-BROTHER	6-SISTER	7-RELATIVE	8-NEIGHBOR
9-LEGAL GUARDIAN-FOSTER PARENT		10-STRANGER	

Medical Examiner's Data

- 151 Consecutive Youth Suicides, 3 years
  - 89% Males, 11% Females
  - 58% Used Firearms
  - 60% Died at Home
  - 93% Caucasian

Mental Health and Child Protection Services

- **Most suicides not in treatment or on medication**
- Public Mental Health Service:
  - Only 27% had lifetime contact
  - Only one subject in treatment at time of death
- **Contact with Child Abuse Services?**
  - 19% had referral
  - age of referral 12.3 (older than standard referral)
  - physical abuse most common
  - mostly male (n=25)

Toxicology of Youth Suicide

- Utah Youth Suicide Study (ages 13-21)
  - toxicology on 151 Suicide Completers
  - Only 3% of suicides had any psychotropic medication in their blood at autopsy
  - Only 1.5% of decedents an Selective serotonin reuptake inhibitors
    - Gray D, J American Academy Child Adolescent Psychiatry, 2002, April 41(4):427-34
- New York City (17 years and younger)
  - 44 youth suicides, 36 had toxicology within 3 days
  - Only 1 of the 36 = 3% with a detectible SSRI
    - Leon AC, J Am American Academy Child Adolescent Psychiatry, 2006, Sept 45(9):1054-8

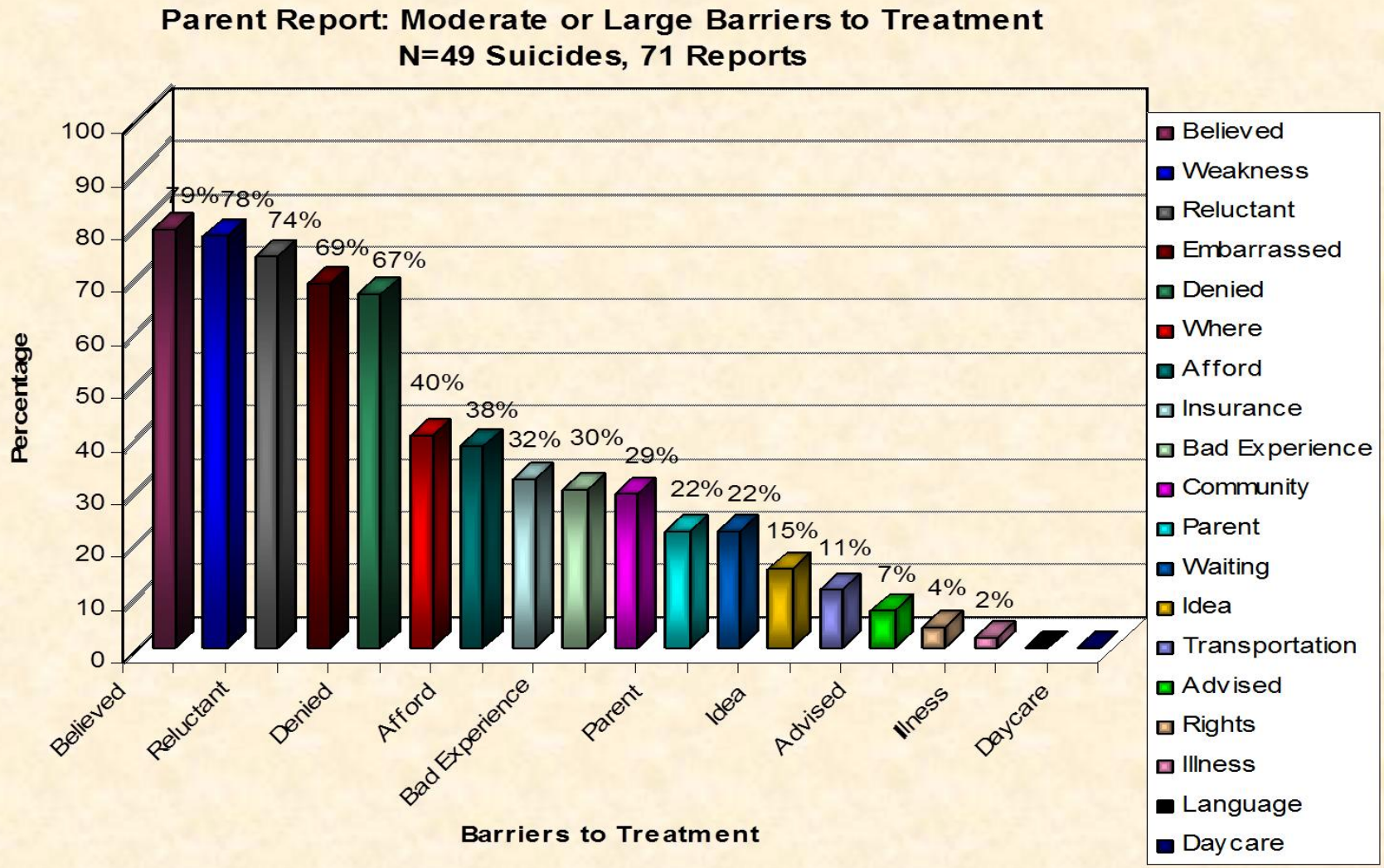
Youth Suicide: Juvenile Courts

- “Are there other places to find teenagers at risk”
- Utah Youth Suicide Study looked at the government records of all suicides ages 13-21
- Findings:
- 63% of suicide completers had a referral to Juvenile Courts (n=95 of 151)
  - Most for minor offenses ie truancy, MJ, cigarettes, curfew
  - Living at home with parents (only 12% ever in corrections)
- Doug’s “Rule of Thirds”

Utah Youth Suicide Study

- Psychological Autopsy
- Interview 49 families of suicide completers
- Interview 270 community contacts
  - Siblings, relatives, friends, school teacher, coach, others.
- What are the Barriers to getting help?
  - Insurance? Transportation? Language?

Parent Report: Moderate or Large Barriers



Barriers to Treatment

Term	Meaning
Believed	He/she believed nothing could help
Weakness	Seeking help was a sign of failure or weakness
Reluctant	He/she reluctant to admit having problems
Embarrassed	He/she was too embarrassed
Denied	He/she denied his/her problems
Where	He/she did not know where to go
Afford	Couldn't afford help
Insurance	Insurance won't cover help
Bad Experience	He/she had bad experiences seeking help before
Community	Nothing available in his/her community
Parent	Parents fear, dislike, or distrust professionals
Waiting	Waiting list for services
Idea	Hard for family to accept the idea of getting help
Transportation	Transportation problems
Advised	Family/friends advised him/her not to get help
Rights	Parents anticipation of our of home placement loss of rights
Illness	Physical illness/disability made it too hard
Language	Foreign language or language barrier
Daycare	Problem arranging daycare for children

What do other U.S. studies tell us about risk factors for youth suicide?

Mental Illness Psychological Autopsy Studies

- >90% of youth who suicide have mental illness
- Most common
  - Mood Disorders, Substance Abuse, Conduct Problems
  - Often co-morbid--multiple disorders increase risk
    - Brent D, J American Academy Child Adolescent Psychiatry, 1993;32(3):521-9
    - Shaffer D, Arch Gen Psychiatry, 1996;53(4);339-48
    - Shafii M, J Affect Dis, 1988;15(3);227-33

Firearm Availability

- Multiple methodologies: Firearm availability increases suicide rate
- David Brent: Case control study
- Match suicide completers with serious attempters (Hospitalized)
- Firearm availability double c/w attempters
- Handgun availability also double
  - Brent D, Journal of the American Medical Association,1991;266:2989-95

Additional Risk Factors

Risk Factors

- **Past Suicide Attempts**
- **Suicide Plan**
- **History of Inpatient**
- **Psychiatric Admission**
- **Personality Disorder**
- **Acute stressor, especially romantic breakup**

Risk Factors

- **Psychosis**
- **Victim of Abuse**
- **Stopping medication**
- **Lack of Treatment**
- **Social isolation**

Difference Between Youth Suicide Attempters and Completers

- Attempters
  - 80-90% Female
  - Peaks at 16 years old
  - Hispanics: High Rates
  - Non-Lethal Means
  - Common among teens
    - 8,000/100 K (self-harm)
    - 2,000/100 K (to Emergency Room)

- Completers
  - 80-90 % Male
  - Peaks in 45-64 y/o Range
  - Caucasian: High Rates
  - Lethal Means
  - Uncommon among teens
    - 15 per 100,000 per year

U.S. Effects of Gender

- Research: gender---teens read vignettes
- Males who attempt suicide: little empathy from their male peers
- Males who complete: Yes—empathy
- Attempting is culturally accepted for females, not males
  - Canetto SS, Suicide and Life Threatening Behavior, 1997;27:339-51
  - Moscicki EK, Ann Epidemiology, 1994;4:152-8.

Caution! Cluster Suicide

- Teenagers and young adults are particularly vulnerable to cluster suicide (to age 24)
- 1-2% of youth suicides are caused by a “Contagion”
- Clusters occur with at-risk youth
- Media reporting can lead to a cluster?--yes
  - Ref Madelyn S. Gould, Ph.D, MPH
  - Center for Disease Control recommendations for Media

Research: Control for Mental Illness

- Family relationship problems and parent-child conflicts are a significant factor in youth suicide, compared with community controls
- However….
- Parental Divorce: risk attenuated when you control for parental psychopathology
  - Gould M, Archive General Psychiatry, 1996;53:1155-62
- Parent-Child Conflict: in some studies, no longer associated with suicide once you control for the youth's psychopathology
  - Brent D, **Acta** Psychiatrica Scandinavica, 1994;89:52-58

Can Suicide Research Cause Suicide?

- Does asking about suicidal thoughts or behavior during a school screening program increase risk? No. Not even with those adolescents at higher risk.
  - Evaluating Iatrogenic Risk of Youth Suicide Screening Programs: A Randomized Controlled Trial. Gould et al, JAMA 2005 April 6;293(13):1635-43.
- How about with adults who participate in an intensive research protocol where they were asked about psychiatric and suicidal symptoms? No.
  - The Effect of Participating in Suicide Research: Does Participating in a Research Protocol on Suicide and Psychiatric Symptoms Increase Suicidal Ideation and Attempts. Cukrowicz K, et al in Suicide and Life Threatening Behavior, December 2010, 40(6)535- 543.

Prevention

- What works?
- Does anything work?

Garrett Lee Smith Substance Abuse and Mental Health Services Administration Grant: Suicide Prevention

- Pilot Study
  - Screen and treat at risk teenagers in the Juvenile Court
    - Psychiatric care
    - In home behavioral management
  - Outcomes
    - Improve mental health
    - Reduce number and seriousness of offenses
    - Reduce Cost!

Prevention: What Works?

- Programs that work involve collaboration and the entire system working together
  - Gotland Sweden
    - Intensive training of General Practitioners
    - Reduced suicide rate, Reduced psychiatric hospitalization
  - Henry Ford Health System
  - Air Force Suicide Prevention Program
  - VA Hospital System

Suicide Prevention Organizational Multilevel

- US Air Force (Air Force Suicide Prevention Program, Knox et al)
- Integrates 11 strategies for suicide prevention
  - Education
  - Gatekeeper training
  - Policy changes
  - Public education campaign
  - Additional Mental Health services
  - Leadership buy-in and vocal support
  - Integration of Mental Health into all medical clinics

Suicide Prevention in Public Schools

Is it effective? Are there some good programs out there?

National Programs

- Columbia Teen Screen
- Yellow Ribbon Program
- Surviving the Teens
- Signs of Suicide
- Sources of Strength

“Sources of Strength”

- 18 High Schools!
- Peer leader training with set curriculum:
  - Youth Leaders chosen from diverse social cliques
    - Leaders include at-risk youth
    - 2% of all students
  - Goal to change normal beliefs in high schools
    - Message based teaching over several months
      - Approach a peer leader when you are struggling
      - Help from trusted adults is needed
      - Don’t struggle alone
      - Coping strategies
  - Changes in “social norms” were noticed within the first three months of implementation.

“Sources of Strength”

- Program Results:
  - Increased help seeking behaviors, increased adult connectedness, and school engagement.
  - Peer Leaders who were struggling the most, benefited the most!
  - Protective factors developed during the program have been previously associated with reduced risk of substance abuse, depression, and suicidal behavior.
  - 25% of Peer Leaders did not stay engaged in the program.
  - Long term effects unknown.
    - Wyman PA, et al. American Journal of Public Health. 2010, 100(9):1653–1661.

Utah Suicide Prevention Programs for Schools

- NAMI (National Alliance on Mental Illness), Hope for Tomorrow
  - Education program. Videos and workshop materials.
  - Developed by University of Utah Faculty
- Power in You
  - First Lady Mary Kay Huntsman
  - School assemblies, website, goal to reduce stigma.
- Hope4Utah
  - Peer mentors = “Hope Squad”, with adult support
  - Collaboration: Schools and Mental Health Center
  - Started in the Provo School District.
  - Current application for Substance Abuse and Mental Health Services Administration Grant (Hudnall)

Utah Youth Suicide Study: Selected Publications

- The Utah Youth Suicide Study: best practices for suicide prevention through the juvenile court system. Psychiatry Services, December, 2011, 62(12):1416-8, Gray D, Dawson KL, Grey TC, McMahon WM.
- Utah Youth Suicide Study: Evidence Based Suicide Prevention for Juvenile Offenders, Journal of Law and Family Studies. 2007 10 (1):127-145
- Utah youth suicide study: barriers to mental health treatment for adolescents, Suicide Life Threat Behavior. 2007 Apr;37(2):179-86
- Utah youth suicide study: psychological autopsy. Suicide Life Threat Behavior. 2005 Oct;35(5):536-46
- Adolescent suicide myths in the United States. Crisis. 2004;25(4):176-82.
- Utah youth suicide study, phase I: government agency contact before death. Journal of American Academy Child Adolescent Psychiatry. 2002 Apr;41(4):427-34