

# PREVENTING INTENTIONAL DEATH BY RAIL

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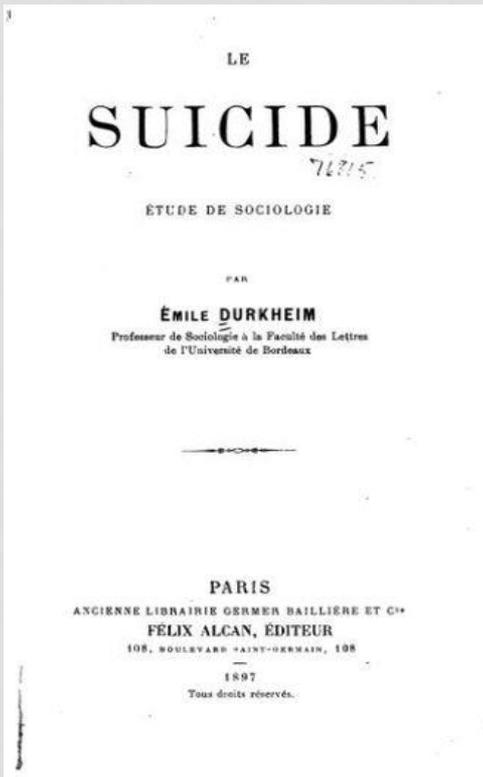
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# INTRODUCTION

“The body of research on rail suicide prevention is sparse. Although there is a small and growing international body of literature, cultural differences could affect mitigation strategies adopted from overseas.” - [\(Volpe, 2018\)](#)

# HISTORY

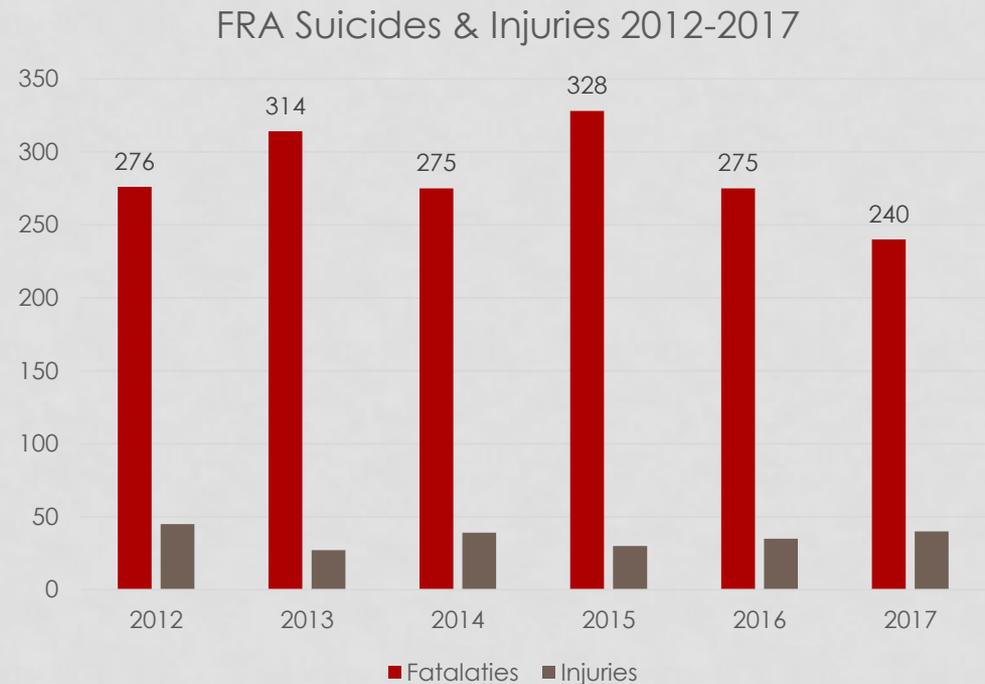


- Emile Durkheim (1858–1917) argued that suicide is more likely to occur when the social ties that bind people to one another in a society are weak.
- Also, that changes in modern society were altering the fundamental bonds that connected people to one another and to their community.
- And that life in a modern society tends to be individualistic and dangerously alienating.
- He identified four different types of suicides that they represent problems in individuals' adaptation to society.
- Published Suicide in 1897



# DEATH BY SUICIDE ON US RAILWAYS

- For each year from 2012 to 2017, more than 250 people have died by suicide each year.



[From FRA 2018 \(web site\)](#)

# CHARACTERISTICS OF RAILWAY SUICIDE

- Suicide involving trains accounted for as high as 12% of all suicides but in the USA probably less than 1%
- Up to 94% of attempts were found to result in death.

Suicides occur in proximity of railroad crossings:

- 43% percent of suicides occurred within 0.1 mile from a crossing.
- 66% occurred within 0.3 miles from a crossing (Botha, Elmasu, & Leitzell, 2010).
- Canada has more on “open tracks” rather than stations or crossings- video surveillance questioned
  - Mishara, B. L., & Bardon, C. (2017).
- Suicides occur in proximity to psychiatric hospitals in Europe:
  - Austrian study ([Strauss, et. al.,2017](#)) found that one-third of identified hotspots, had psychiatric institutions not more than 1 km away
  - a study from Germany indicated that 75% of the German railway locations with highest suicide density had psychiatric institutions nearby

Behavioral patterns:

- Left personal belongings, avoided eye contact, and exhibited erratic gestures (Lukaschek, Baumert, & Ladwig, 2011)
- 84% had exhibited at least three risk factors
- 50% had five risk factors, namely: withdrawal, anger, anxiety, and statements of hopelessness.
- As many as 83% of the suicide completers had a psychiatric diagnosis (Krysinska & De Leo, 2008).

# KEY CHARACTERISTICS

Based on the review of the literature, key characteristics of people likely to die by suicide on US railways include:

- Male and under 50 years of age
- Have some involvement with alcohol and or drugs
- Highly likely to suffer from depression or other mental disorder
- Highly likely to have a substance abuse disorder
- Likely have no other means of suicide (i.e., firearms)
- Likely to seek high-density, regularly scheduled train routes
- Likely to live within close proximity (1 to 3 miles) of the railroad,
- Likely to be either living alone or renting
- Highly likely to have financial stressors for some time

# OVERVIEW

- **Prevention Measures**
  - **Signage & Hotlines**
  - **Barriers**
  - **Intrusion Detection Systems**
  - **Lethality means restriction**
  - **Community Education & Prevention**



# BLUE LIGHTS



# BARRIERS



# MEANS RESTRICTION ACTIVITIES

**The Means Restriction Advisory Committee for the City of Palo Alto** and the international literature in suicidology identify four types of best practices for prevention at suicide hotspots. These include

- (a) restricting access to lethal means;
- (b) encouraging help-seeking behavior by placing signs and telephones at hotspot locations;
- (c) increasing the likelihood of intervention by a third party through surveillance and staff training; and
- (d) encouraging responsible media reporting of suicide through guidelines for journalists.
- (e) There is strong evidence that reducing access to means (e.g., by way of physical deterrents, such as installation of suicide barriers at bridge sites) prevents death by suicide, with some evidence of positive improvement on overall suicide rates.
- (f) Importantly, evidence does not support suicides thereby occurring at other locations. The evidence is weaker though promising for other approaches.

# MEANS RESTRICTION ACTIVITIES

## “red flag laws”

- So called, “red flag” laws in Connecticut, in 1999, and Indiana, in 2005.
  - In Indiana, the study found a 7.5 percent reduction in firearm suicides in the ten years after enactment.
  - In Connecticut, at least initially.
    - 1999 -2007 - Gun suicides fell only 1.6 percent,
    - 2007 to 2015 , after Virginia Tech, Gun suicides fell 13.7%
  - “Our data shows that when red flag laws are utilized, they have the effect of preventing large numbers of suicides,” Aaron Kivisto, Professor, Univ of Indianapolis,
- [\(Kivisto & Phalen, 2018\)](#)



# INTRUSION DETECTION SYSTEMS

- Very favorable results from this pilot project.

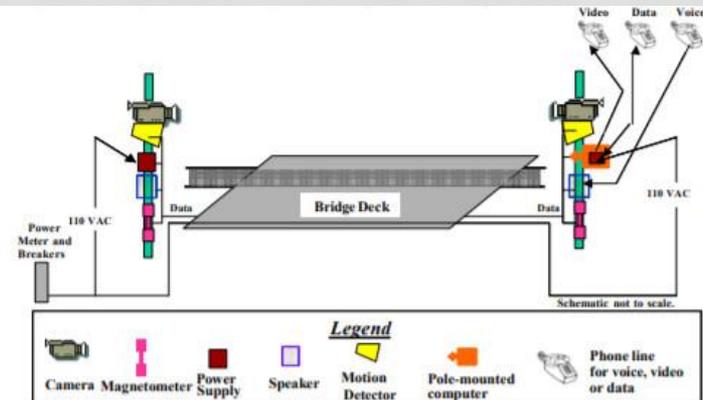


Figure 5. Illustration of the Surveillance System Technology

**System Components**

- Video Camera: daytime color and nighttime black and white.
- Infrared Illuminator: floods the scene with infrared lighting during nighttime, triggered by photoelectric sensor, invisible to human eye.
- Speaker: connected to a telephone line so that an authorized official can dial in and warn the trespassers via the amplified speaker system.
- Motion Detector: dual-technology motion detector combining stereo Doppler microwave technology (motion detection) with a dual element passive infrared sensor (heat detection).
- Magnetometer: used to screen out trains.

# INTRUSION DETECTION SYSTEMS

- Project Safety Net
- City of Palo Alto
- \$325,000 a year.



[http://storage.pardot.com/31052/127541/Palo\\_Alto\\_Intrusion\\_Detection\\_System\\_FINAL.pdf](http://storage.pardot.com/31052/127541/Palo_Alto_Intrusion_Detection_System_FINAL.pdf)

# EMPLOYEE STAFF TRAINING

In UK

- A partnership between UK Network Rail and charity Samaritans.
- 'Tackling Suicide on the Railways' involves train operators, freight operators and the British Transport Police.
- The campaign tackles the complex issues surrounding suicide through specialist training courses for staff, a wide-reaching public awareness campaign, targeted research and a host of infrastructure updates and alternations to the station environment.
- The dual purpose training attempts to develop skills to approach and manage a suicidal person on the platform and successfully
- And also deal with the emotional aftermath of witnessing a suicide, through a dedicated Trauma Support Training module
- The course is designed to equip railways staff with the "skills, confidence and knowledge to identify and approach people exhibiting suicidal behaviour." - from [Railway Technology , 2015](#)

# ANALYSIS OF TWO US EMPLOYEE TRAINING PROGRAMS

## Sample Questions

### **Attitudes:**

- Suicide prevention is not my responsibility.

### **Self-Efficacy**

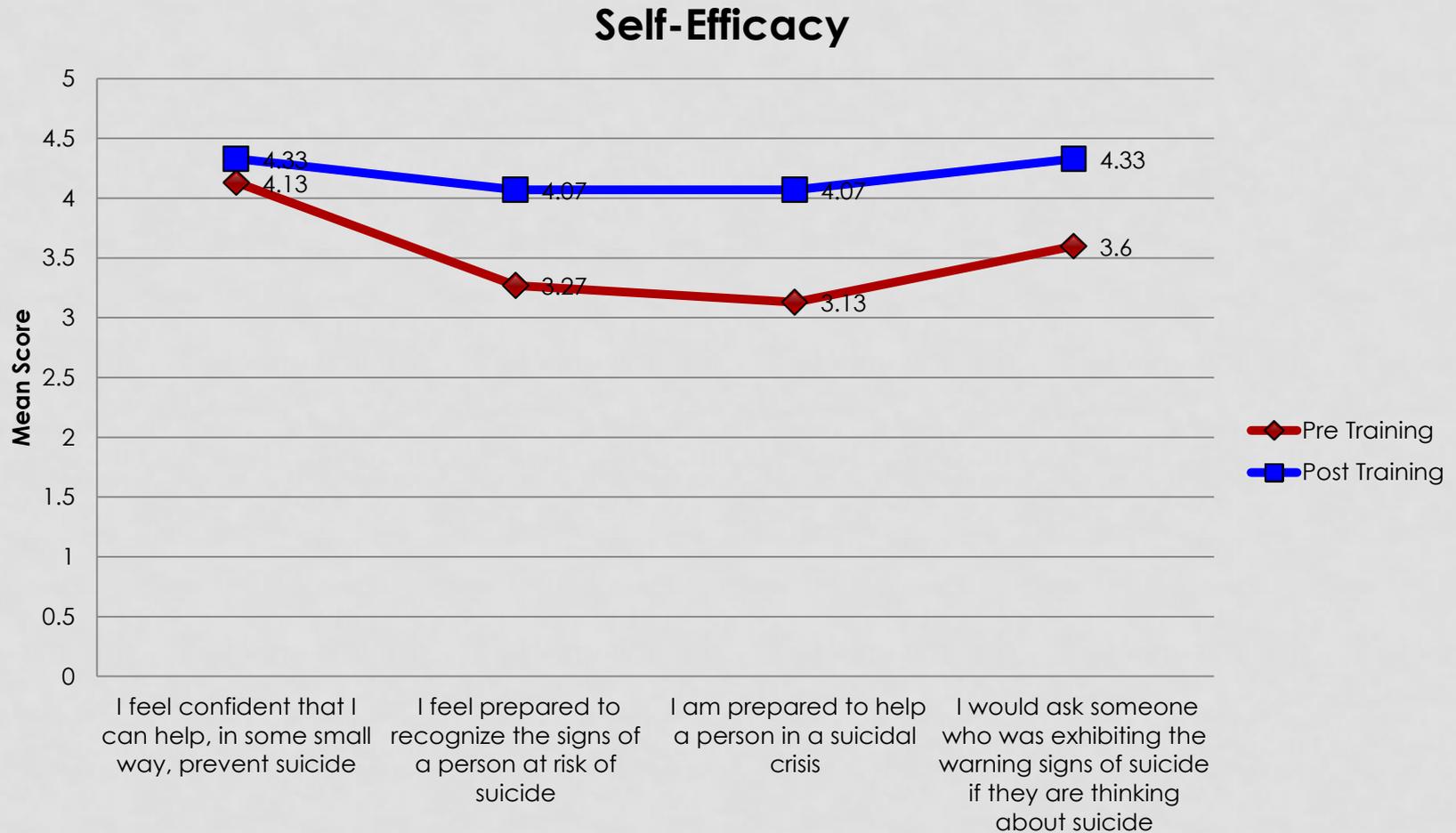
- I feel confident that I can help, in some small way, prevent suicide.

### **Knowledge**

- How would you rate your level of understanding of suicide risk factors

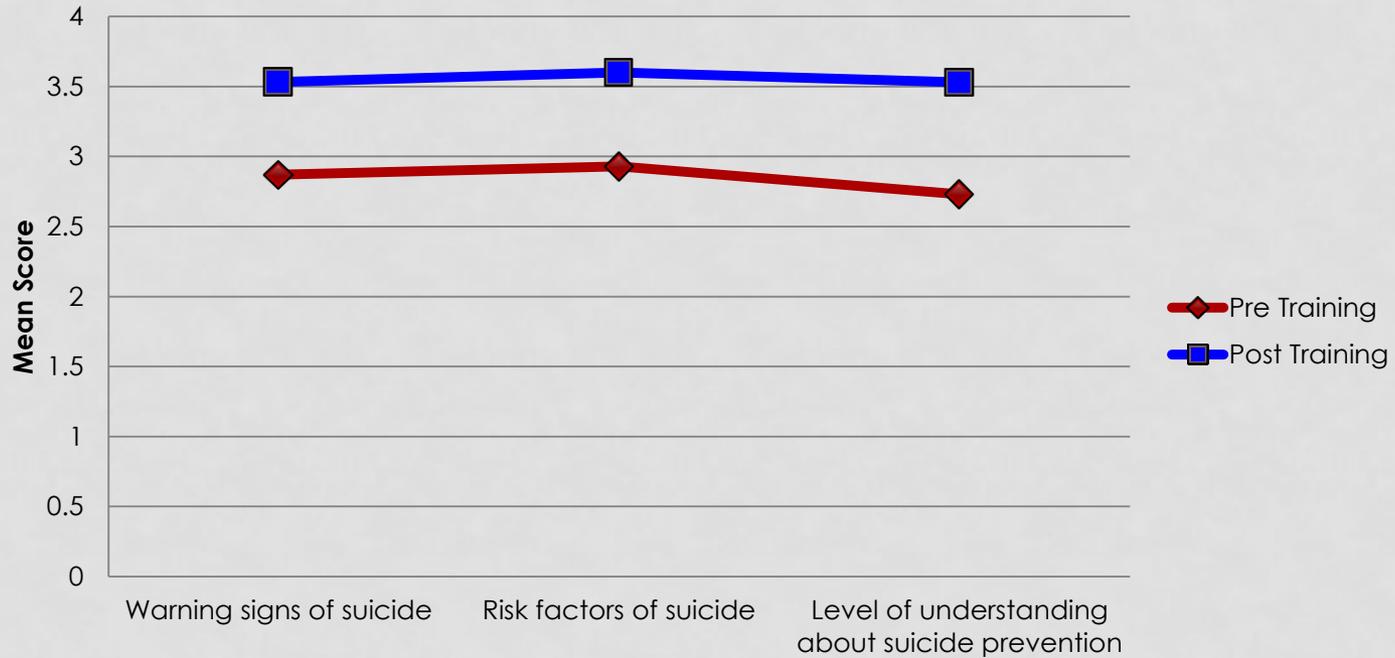
Scale	N	Mean	SD	Cronbach's Alpha
1. Attitudes	16	35.57	7.40	.808
2. Self-efficacy	13	47.51	6.57	.860
3. Declared Knowledge	6	17.92	4.32	.901

# SELF-EFFICACY



# KNOWLEDGE

## Rating of Knowledge



# IMPACT ON ATTITUDES

- 95.4% would recommend the training to their coworkers.
- 86.4% attitudes towards suicide changed since the training.
- 81.7% more confident of ability to prevent suicide.
- 77.3% report a clearer understanding of their role.

# GENDER DIFFERENCES

Overall, men seem to be less accepting of suicidal intent and may associate more stigma to suicide than women. There is no significant difference between men and women in regards to self-efficacy and knowledge

All transit employees post training N=60

Items	Group	N	Mean	t	Sig.
Attitudes	Male	35	38.80		
	Female	36	34.08	2.68	<b>.009</b>
Self-Efficacy	Male	34	47.41		
	Female	37	49.76	1.54	.128
Knowledge	Male	37	17.57		
	Female	36	18.03	.447	.657

# AGE DIFFERENCES

Overall, older participants seem to be less accepting of suicidal intent and may associate more stigma to suicide than women. There is no significant difference between age groups in regards to self-efficacy and knowledge

Items	Group	Mean	t	Sig.
Attitudes	20-40	33.86		
	41-80	38.23	-2.18	<b>.033</b>
Self-Efficacy	20-40	49.54		
	41-80	48.50	.608	.546
Knowledge	20-40	18.23		
	41-80	17.64	.506	.615

# PERSONAL EXPERIENCES

- Over 66% of transportation employees have some personal experience with suicide:
  - A close personal friend
  - An acquaintance
  - A person from work or school
- 50% know of an employee who has witnessed or been involved in an incident related to suicide.
- 34% of transportation employees do not know anyone who has committed suicide

# IMPACT ON STAFF

**The results suggest that for the most part, Transit employees...**

- ✓ Believe that they have a responsibility to helping prevent suicide.
- ✓ Have an open mind about suicide and suicide prevention.
- ✓ Did not feel prepared to recognize or help a suicidal person prior to training. **Improved following training.**
- ✓ Are willing to help someone in need. **improved following training.**
- ✓ Have mixed knowledge about the risk factors and warning signs of suicide. **Improved following training.**
- ✓ Initially did not rate their knowledge of risk factors and warning signs to be high indicating a need to improve self efficacy before the training. **Improved following training.**

**Training improved self-efficacy, actual knowledge and perceived knowledge about the risk factors and warning signs.**

# SOME IMPLICATIONS FOR TRAINING

- Continue suicide training programs.
- Target improving male's and older folks attitudes towards suicide prevention.
- Increase awareness of warning signs of suicide:
  - leaving possessions on platform
  - Intoxication
  - erratic behavior
- Create a safe environment for employees to discuss suicide prevention and share knowledge and experiences.
- Change message to community members and increase and enlist their support and participation in prevention.
- Inform community members about suicide's preventability.
- Results show that community feels it has responsibility. **But, no idea how to help.**
- **Next Steps:** Signage (pre-post community members), additional employee trainings, and additional community events.

# COMMUNITY - ORGANIZATION PREVENTION PROGRAMS

- Ecological model for prevention suicide (Bean & Baber, 2011)
- Gatekeeper Training
- The US Air Force (USAF) community based intervention program focusing on training of community personnel in the recognition of early warning signs in potential victims that resulted in a reduction of 33% in suicide rates.
- The Toronto Transit Commission (TTC)

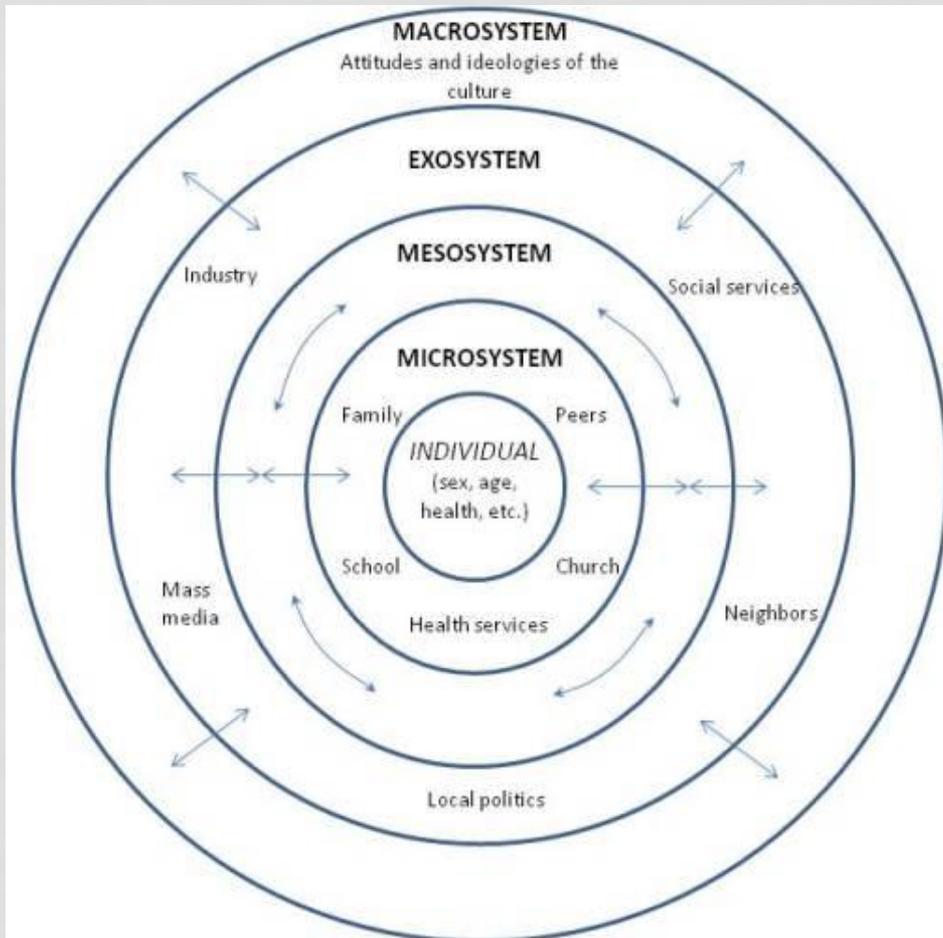
# COMMUNITY SURVEY

- N=453 Western city community members
- 51.8% male
- Age range from 13-80; mean of 44.32
- 44.8% White, 14.1% Hispanic, 6.8% Asian, 6.0% African American, 2.4% Multiracial, .4% Native American or Alaskan Native, 3.8% Other, 8.2% did not identify their race
- Education level ranged from haven't completed high school to doctoral degree
- 4.8% worked on the railroad in some capacity

# COMMUNITY ATTITUDES

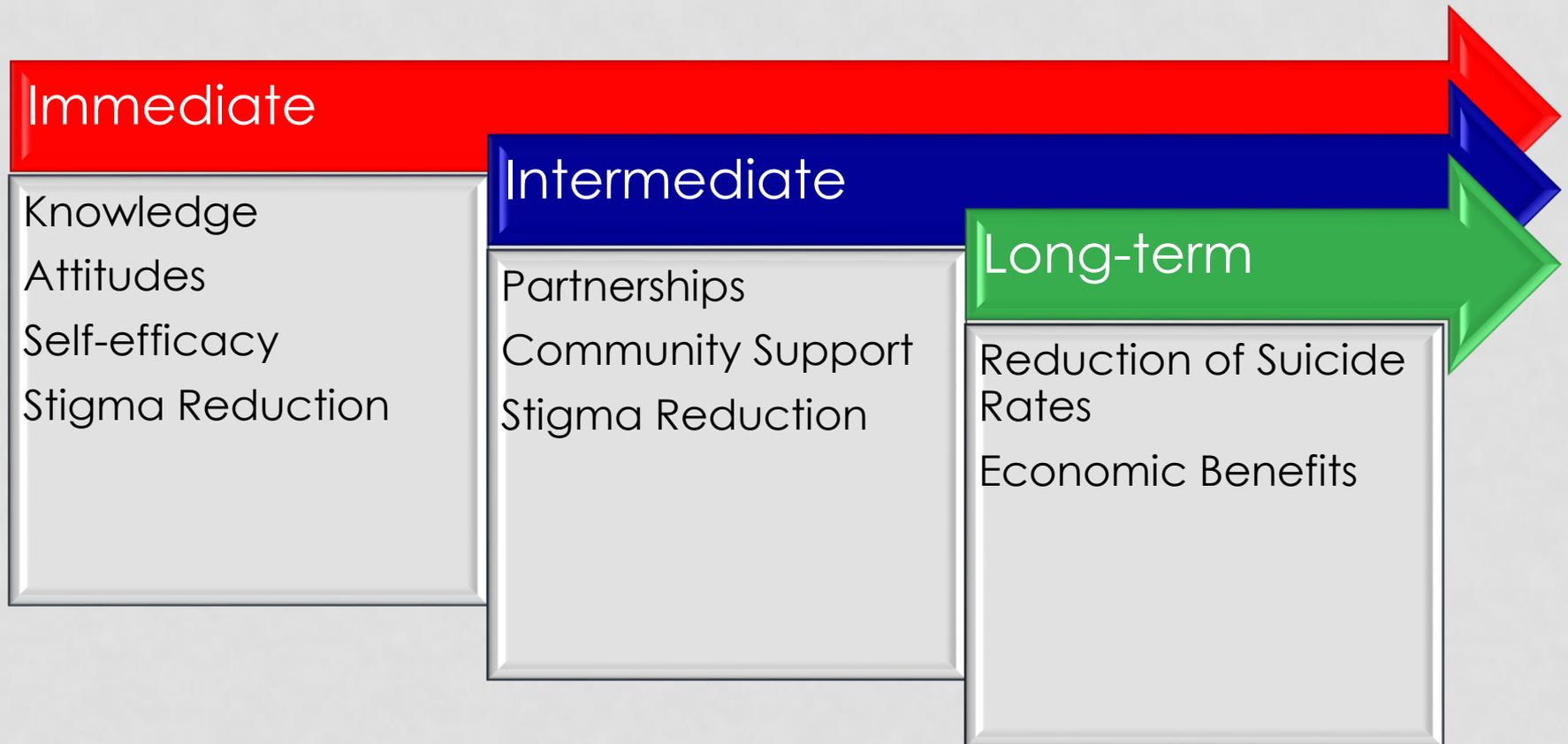
- 64.6% of people feel that you can talk to suicidal people without making it worse. **This is an area of intervention!**
- General agreement (80.0%) that suicide is preventable.
- General agreement (71.6%) that suicide is a community responsibility.
- 67.4% say they would ask about intent if they observed that there were warning signs for suicide.
- Participants were unsure about whether there were warning signs of suicide. **Another area of intervention!**
- Younger adults believe that suicide is preventable, believe that they can help prevent suicide, and feel more prepared to recognize warning signs than older adults
- Women appear to have better attitudes about suicide prevention.

# OUR COMMUNITY FOCUSED APPROACH



- ✓ Increase Awareness
- ✓ Reduce Stigma
- ✓ Engage Community
- ✓ Improve Identification/Surveillance
- ✓ Enhance Employees' Self-efficacy
- ✓ Prevent Premature Deaths/Suicides

# PROGRAM EVALUATION: THEORY OF CHANGE MODEL



# COMMUNITY COLLABORATION NEEDED

- While railway operators around the world recognize their responsibility in preventing suicide on their networks, it is important to remember that, as WHO points out, suicide results from “many complex socio-cultural factors” and **“the health sector but also education, employment, social welfare, the judiciary and others”** should all become involved in its prevention in order for significant progress to be achieved.
  - [From - Railway Technology , 2015](#)

THANK YOU!