

GARRETT LEE SMITH YOUTH SUICIDE PREVENTION AND EARLY INTERVENTION PROGRAM NATIONAL OUTCOMES EVALUATION

Evaluation Findings: Report to Congress

July 20, 2016



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I. BACKGROUND

SUICIDE AND AMERICA'S YOUTH

Every 100 minutes a youth in the United States dies by suicide. Although the rate of death by suicide among youth aged 10–24 in the United States has been relatively consistent since 1999, in 2009, suicide surpassed homicide to become the second leading cause of death among young people aged 10–24 in the United States and has remained the number two cause among this age group behind unintentional injuries (Centers for Disease Control and Prevention [CDC], 2003; CDC, 2014). The 2013 Youth Risk Behavior Surveillance Survey (YRBSS) found that 17 percent of high school students had seriously considered attempting suicide, 13.6 percent had made a plan about how they would attempt suicide, and 8 percent attempted suicide in the previous 12 months. In the 12 months prior to the survey, 2.7 percent of students had a suicide attempt that required treatment by a doctor or nurse (Kann et al., 2014).

In addition to deaths by suicide and suicide attempts, suicidal ideation is prevalent among youth in the United States. According to the 2013 National Survey on Drug Use and Health (NSDUH) 2,568,000 young adults (18–25) had serious thoughts of suicide in the past year (7.4 percent of respondents). There were 434,000 attempts that received medical attention or required an overnight (or longer) stay in the hospital among respondents aged 18–25 in the previous 12 months (1.3 percent of respondents). Among youth ages 12–17 who received mental health services, 737,000 (25.2 percent) received these services because they had thought about or tried to kill themselves (Substance Abuse and Mental Health Services Administration [SAMHSA], 2014a; SAMHSA, 2014b).

In response to this ongoing, preventable public health problem, the federal government has committed resources to both bring attention to and address youth suicide in the United States. These efforts began with the issuance of The Surgeon General's Call to Action to Prevent Suicide (U.S. Public Health Service [USPHS], 1999). This document addressed suicide as a preventable public health issue and highlighted the need for the public to be aware of the problem of suicide; the improvement of the identification of persons at risk for suicide, referrals to care, and treatment; and the enhancement of suicide prevention-related research. In 2001 a National Strategy for Suicide Prevention (NSSP) was released, which established 11 goals and 68 objectives to improve and coordinate suicide prevention efforts across the nation (USPHS & the Office of the Surgeon General [OSG], 2001). Building upon these efforts and the original NSSP, in 2012 a revised National Strategy for Suicide Prevention: Goals and Objectives for Action was released, which featured 13 goals and 60 objectives that reflect the understanding of the problem of suicide as not only a mental health issue, but also a health issue (U.S. Department of Health and Human Services [HHS], OSG, & the National Action Alliance for Suicide Prevention, 2012). The revised NSSP also identified specific subgroups of the population that are considered to be at increased risk for suicide. The youth-related groups include: American Indians/Alaska Natives (AI/ANs); individuals bereaved by suicide; individuals in justice and child welfare settings; individuals who engage in non-suicidal self-injury; individuals who have attempted suicide; individuals with medical conditions; individuals with mental or substance use disorders or co-occurring mental and substance use disorders; lesbians, gay, bisexual, and transgender (LGBT) populations; and members of the armed forces and veterans.

Rates of suicide ideation, attempts, and deaths are even higher among youth in the populations identified in the NSSP as being at risk. AI/AN adolescents and young adults ages 15–34 have a suicide rate that is 1.5 times higher than the national average for that age group (CDC, 2015). A higher percentage of high school age Hispanics report seriously considering attempting suicide (18.9 percent) or making a plan (15.7 percent) compared to their White (16.2 percent and 12.8 percent) and Black (14.5 percent and 10.4 percent) peers (Kann et al., 2014). While data are scarce, a limited amount of research has shown that the rate of attempts and deaths by suicide among lesbian, gay, and bisexual youths is higher than that of straight youth (Suicide Prevention Resource Center [SPRC], 2008).

SAMHSA’S RESPONSE TO SUICIDE PREVENTION

As part of the United States government’s efforts towards suicide prevention, SAMHSA partners with the National Action Alliance for Suicide Prevention to advance the NSSP. To this end, it provides communities with several suicide prevention resources, including the National Suicide Prevention Lifeline, National Suicide Prevention Lifeline Crisis Center Follow-Up Program, SPRC, NSSP Grants, Cooperative Agreements for Tribal Behavioral Health/Native Connection, the Garrett Lee Smith Youth Suicide Prevention and Early Intervention (GLS) Program, and several suicide prevention publications.¹

The GLS Program

The GLS Program is administered by the Suicide Prevention Branch at the Center for Mental Health Services (CMHS) of SAMHSA in the U.S. Department of Health and Human Services. The Garrett Lee Smith Memorial Act (GLSMA) was authorized by legislation (Public Law 108-355) and provides funds to support the planning, implementation, and evaluation of state, tribe, and campus youth suicide early intervention and prevention strategies (GLSMA, 2004).

The purpose of the GLS State/Tribal grant program is to “support states and tribes (including Alaska villages and urban Indian organizations) in developing and implementing statewide or tribal youth suicide prevention and early intervention strategies” (SAMHSA, 2015b, p3).

In 2014, SAMHSA revised and enhanced the GLS State and Tribal Grant Program based on evaluation results showing that while there was evidence that the program was reducing youth suicide deaths and non-fatal attempts, these impacts faded after one year. The redesigned Funding Opportunity Announcement (FOA), which increased the length of the grants from 3 to 5 years and increased the amount available per year to \$735,000, emphasizes comprehensive suicide prevention strategies that include both community and health care focused efforts. Surveillance-based decision making and improving care transitions for at-risk youth discharged from inpatient units and Emergency Departments are also emphasized. Linkage with existing data systems such as the National Violent Death Reporting System and the Child Fatality Review System can, once established, provide ongoing information to guide planning and serve as a driver for change as more is learned about what systems are being touched by youth whose lives are tragically lost. Through this expansion, it is hoped that states and tribes will be better able to implement suicide prevention activities and to more permanently embed them within public and private youth serving

¹ This information and more can be found at <http://www.samhsa.gov/suicide-prevention>.

organizations. With a stronger emphasis placed on implementation of a comprehensive, sustainable approach, including emphasis on basing prevention activities on surveillance data that identify the youth serving systems that are interacting with youth prior to their death, and with maintaining clinical contact with youth identified at risk for suicide including those that have attempted suicide, the revised grant program requires the commitment to make suicide prevention a “core priority in statewide or tribal youth and young adult service systems” (SAMHSA, 2015b, p. 5).

To align with the revised NSSP Goals 8 and 9, including integrating suicide prevention into healthcare services and the promotion and implementation of effective clinical and professional practices for improved assessment and treatment of at-risk individuals, grantees must link with a behavioral healthcare program or system. Additionally, increased attention is now placed on direct services to meet the revised NSSP, including Objective 8.1, which promotes efforts towards “zero suicide.” GLS state and tribal grants now require grantees to provide direct client services or partner with a direct client service provider organization to ensure the availability of services to meet the needs of youth at risk for suicide. The GLS FOA emphasizes the importance of using evidence based practices while recognizing that there are settings and populations for which such practices do not yet exist. These practices should be utilized within the context of a data driven comprehensive suicide prevention plan. Grantees must monitor and utilize local surveillance data of non-fatal attempts and suicide deaths to make necessary modifications to their programs. In addition, SAMHSA is also working with grantees to find ways to improve care transitions and post-acute care follow up for at risk youth, and to align these activities with financing mechanisms in the evolving health care system to better ensure sustainability beyond the end of grant funding. State and tribal grantees are also required to incorporate principles from zero suicide models (see text box).

To further advance the efforts of the revised NSSP, state and tribal grantees are *required* to:

- utilize surveillance data to modify efforts throughout the grant;
- develop or adjust, implement, and monitor crisis response plans;
- link emergency departments and inpatient psychiatric units to ensure care coordination and the follow-up of youth who have been identified as at risk for suicide;
- incorporate efforts to reduce access to lethal means;
- provide a protocol for the response to suicide clusters;
- ensure that public awareness initiatives are tied to a larger strategic plan;
- encourage youth involvement, input, and feedback;
- utilize feedback from loss and attempt survivors and their family members; and,
- utilize materials appropriate to the specific populations (SAMHSA, 2015b).

In addition, state and tribal grantees can utilize grant funds for:

- outreach to increase access to and participation in treatment or prevention services;
- provision of direct treatment and “wrap-around”/recovery support services;
- provision of evidence-based or promising practice suicide prevention trainings;
- implementation of youth suicide early intervention and prevention strategies;

- support of institutions of higher education to coordinate or implement youth suicide early intervention and prevention strategies;
- collection and analysis of data to monitor the effectiveness of early intervention and prevention services, as well as to advance research;
- conducting/monitoring local surveillance on suicide attempts and completions;
- planning for post-grant sustainability;
- incorporation of activities that reach across the entire 10–24 age range; and,
- participation in or forming a public/private coalition of youth-service agencies or institutions that advises, participates in, and supports grant activities (SAMHSA, 2015b).

The overarching goal of the campus grants is to “facilitate a comprehensive public health approach to prevent suicide in institutions of higher education” (SAMHSA, 2015a, p3). These grants support activities intended to build a foundation for delivering and sustaining prevention, treatment, and recovery support services. In addition to the general student populations, campus grantees are asked to address the needs of those at-risk populations identified in the revised NSSP and incorporate the objectives and goals from the NSSP, including “the vision that one death is too many” (SAMHSA, 2015a, p6).

Campus grantees can utilize funds to:

- develop training for students and campus staff in effective ways to respond to students with mental or substance use disorders, which can lead to suicide or suicide attempts;
- link their institution with healthcare providers in the wider community by creating a networking infrastructure;
- develop and implement informative education seminars about suicide prevention, identification, and reduction of risk factors;
- create a local hotline or promote linkage to the National Suicide Prevention Lifeline;
- develop or obtain linguistically appropriate informational and awareness materials for students and families that describe the warning signs of suicide, describe risk and protective factors, and identify the appropriate response (SAMHSA, 2015a).

ABOUT THIS REPORT

This report is an update to the first report submitted to Congress by the Secretary of Health and Human Services and SAMHSA on January 31, 2014. Information presented in this report was gathered from state/tribal and campus GLS programs between October 2006 and June 2015 as part of the GLSMA-mandated evaluation of the GLS Program.² Appendix A.1 contains the underlying logic models for the evaluation.

As of August 2015, SAMHSA has awarded 180 state and tribal grants: state and tribal grants have been awarded to 50 states, 1 US territory, and 45 tribes. One hundred and ninety campus grants

² GLS State/Tribal Program (Cohorts 1–9) and GLS Campus Program (Cohorts 1–8).

have been awarded to 175 different colleges and universities. (See the maps in Appendix B for further detail.)

Table 1. Count of Grantees by Federal Fiscal Year (FY)^{3,4}

	FY 2005	FY 2006	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015
State⁵	13	16	2	18	14	16	13	5	16
Tribe	1	6	0	12	4	22	10	2	10
Campus	21	34	16	0	22	21	39	22	15

Source: Substance Abuse Mental Health Services Administration; SAMHSA Grants Archives.

Throughout this report, sample sizes (n) are presented along with relevant findings. Sample sizes vary by data collection instrument as well as by item within the instrument. Appendix A.2 features a brief overview of each instrument and response rates; Appendix B shows instrument participation for campus and state and tribal grantees. The evaluation complies with appropriate regulatory requirement as detailed in Appendix A.3. Data security and quality measures are described in Appendix A.4.

This report, guided by congressional direction in the GLMSA, is divided into three main sections:

1. **Program Activities**, which reviews the types of suicide prevention strategies implemented by GLS grantees;
2. **Program Achievements**, which reviews the trainings conducted by grantees, the identification and referral of at-risk youth, how exposure to suicide prevention programming can lead to greater awareness, infrastructure improvements, and the ability to follow up with youth at risk for suicide; and
3. **Impact**, which examines youth suicide and attempt rates in GLS and matched non-GLS communities, the cost of implementing GLS relative to the cost of mental health treatment, and on-campus mortality, attempt, and completion rates.

It concludes with a section that highlights critical action steps and next generation evaluation components that will advance the field of suicide prevention.

³ Throughout this report, “FY” refers to the Fiscal Year of the grant period.

⁴ No campus GLS grants were awarded in FY2010.

⁵ FY2008 and FY2012 had one territorial grant, which is included under the state grant count.

II. GLS PROGRAM ACTIVITIES

Over the course of a grant, GLS programs develop and support early intervention strategies through capacity building, infrastructure improvements, and collaborations with youth-serving institutions and agencies. Although program approaches and target populations in each grantee community vary according to local needs and priorities, the fundamental program components are consistent across grants and are dedicated to building a culture that supports effective and sustainable mental health services for youth. In this section, we will identify the

- types of suicide prevention strategies implemented by grantees,
- how grantees allocate their budgets toward the strategies, and
- changes in programming over time.

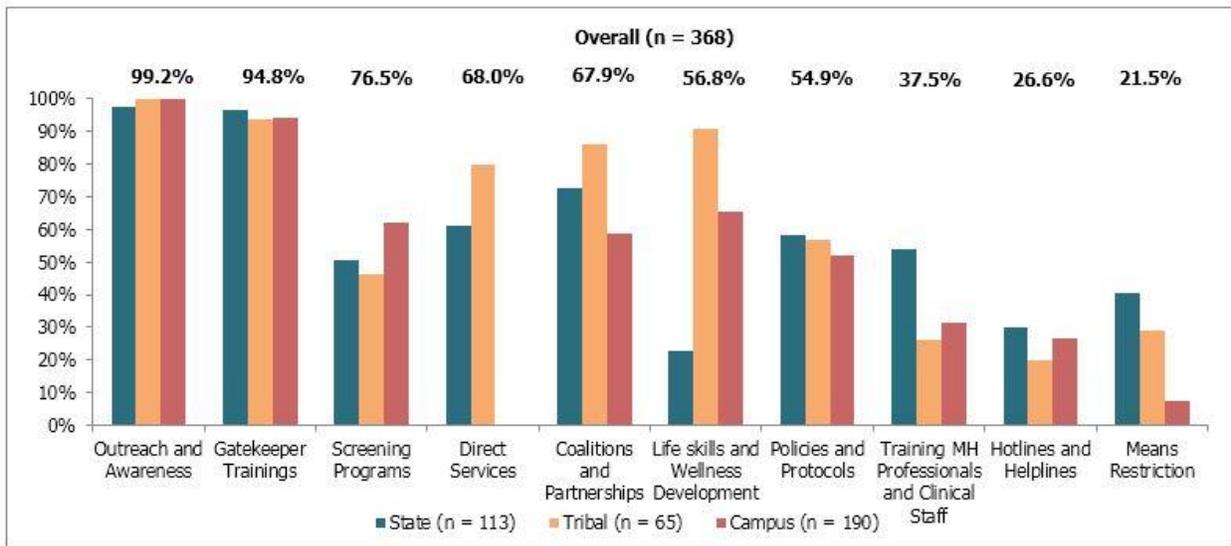
OVERVIEW OF SUICIDE PREVENTION STRATEGIES

Comprehensive suicide prevention requires a strong and coordinated community approach, as well as a strong and coordinated health system response. Thus, grantees work within communities to increase public awareness, train individuals to identify and respond to suicide risk, and foster collaboration among youth-serving agencies, while also improving upon the capacity of the health system and providers to effectively treat and support youth.

Program activities are classified into ten major strategy types: Outreach and Awareness, Gatekeeper Trainings, Trainings for Mental Health Professionals and Clinical Staff, Life Skills and Wellness Development, Screening Programs, Hotlines and Helplines, Means Restriction, Policies and Protocols, Coalitions and Partnerships, and Direct Services. Additionally, grantees may include postvention and related activities and products, cultural sensitivity trainings, advocacy and policy work, or inclusion of suicide prevention content into curriculum or coursework as part of their program.

Although there are differences in state, tribal, and campus programs, Outreach and Awareness strategies and Gatekeeper Trainings are the most commonly implemented activities, reported by 99 percent and 95 percent of grantees (n = 368), respectively. As displayed in Figure 1, other activities are more variable across programs. For example, state grantees identify Trainings for Mental Health Professionals and Clinical Staff and Means Restriction activities as program components more often than tribal or campus grantees. Tribal programs have a larger focus on Life Skills and Wellness Development and Direct Services than other programs, and campuses report Screening Programs more often than other grantees.

Figure 1. Percentage of State, Tribal, and Campus Grantees Implementing Each Strategy Type



Source: Prevention Strategies Inventory, October 2006–July 2014; State/Tribal Cohorts 1–9 and Campus Cohorts 1–8.

Outreach and Awareness

Outreach and awareness strategies are aimed at educating the public about suicide prevention and prevention-related grant activities. Over 97 percent of all state, tribal, and campus grantees (n = 368) have prioritized outreach and awareness as part of their program. The three main types of GLS Suicide Prevention Outreach and Awareness efforts are public awareness campaigns (58 percent), activities and events (93 percent), and products (91 percent).

Public awareness campaigns are systematic efforts utilizing multiple forms of communications to spread messages about suicide prevention to the general public or to targeted populations. Messages are typically meant to reach youth, parents, undergraduate students on campuses, or education staff, most commonly through print materials, such as brochures, posters, and flyers, websites, and products. The goals of campaigns include increasing knowledge of local resources, promoting wellness, and creating a sense of community. Public awareness campaigns are implemented by 58 percent of grantees (n = 277), most commonly in tribal and campus programs.



Public awareness activities and events are reported by 93 percent of grantees (n = 277). They include informational presentations where grantees promote local resources or educate groups about warning signs and suicide prevention facts; health fair tables, where grantees distribute products and information; awareness walks; and special awareness days. These activities commonly target youth, parents, and mental health professionals in state and tribal programs, and undergraduate students and faculty/staff in campus programs.



Public awareness products are any items intended to promote suicide prevention awareness. These include print materials, print media, billboards, radio or television advertisements, websites, and promotional items. Social media pages and development of mobile applications are increasing in popularity as ways to reach out to youth and students. Ninety-one percent of all grantees (n = 277) have reported use of products as a method of outreach.

Many grantees focus their outreach and awareness efforts on specific populations that have been identified as high-risk for suicide attempts and completions. These include veterans, active military, and military families; American Indian/Alaska Natives; LGBT persons; Hispanic/Latino populations; and transition aged-youth, ages 18–24.

Outreach and Awareness Efforts

Public Awareness Campaigns

- You Are Not Alone
- Life in My Shoes campaign for LGBT youth
- 100 Reasons to Live

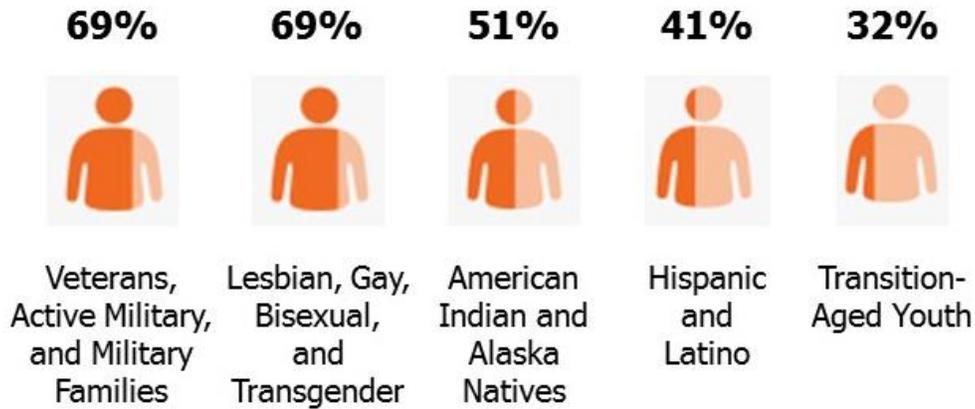
Activities and Events

- Presentation at campus orientation
- Booth at community health fair
- Out of the Darkness walk
- Children’s Mental Health Awareness Day

Products

- Wallet card with hotline numbers
- Local resource sheet
- Mobile application connecting students to resources
- Stress balls with hotline number

Figure 2. Percentages of State, Tribal, and Campus Grantees Who Have Identified Outreach and Awareness Strategies Focusing on Each Priority Population



Source: Prevention Strategies Inventory, October 2008–July 2015; State/Tribal Cohorts 4–9 and Campus Cohorts 3–8 (n = 161).

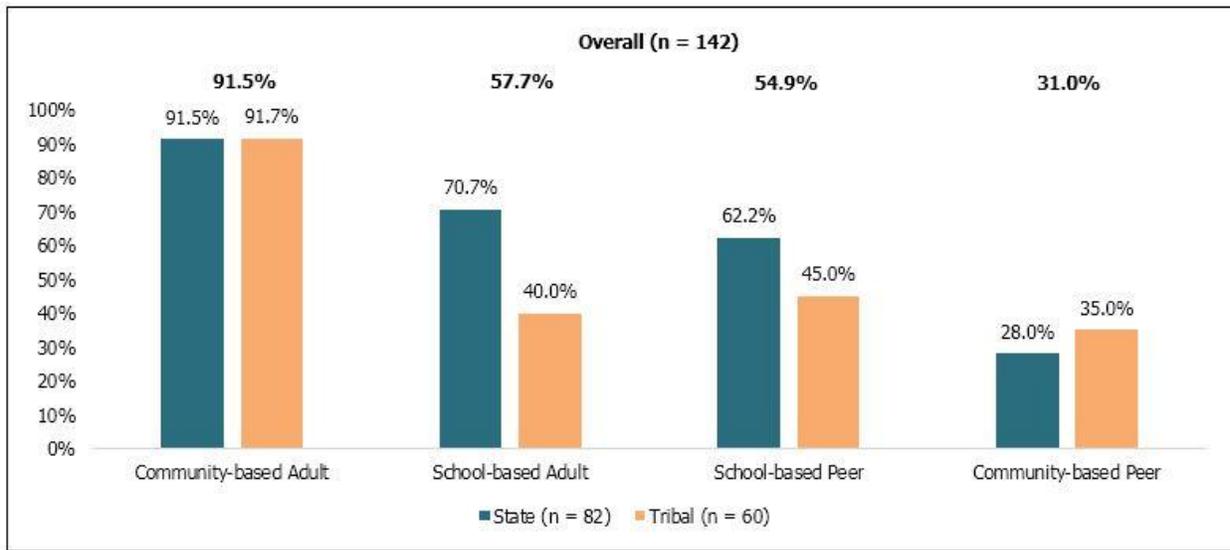
Gatekeeper Training

Gatekeeper trainings are designed to train participants to identify and refer people at risk for suicide and to teach the skills to do so. Curricula includes common risk factors and warning signs, how to speak to someone who may be suicidal, and how and where to refer an individual for help.

Campus grantees often implement gatekeeper trainings for students, faculty, staff, administration, and off-campus community members, such as law enforcement officials and parents. Ninety-four percent of campus grantees (n = 190) implement gatekeeper trainings.

State and tribal grantees often conduct school- or community-based gatekeeper trainings. In schools, trainees may include students (peers), teachers, administrative staff, and mental health clinicians. Community-based trainings often take place in mental health agencies, primary care settings, nonprofit organizations, or juvenile justice agencies, and are geared mainly toward mental health professionals, primary care, or child welfare staff. Some grantees also train youth in community settings.

Figure 3. Percentage of State and Tribal Grantees Implementing Gatekeeper Trainings



Source: Prevention Strategies Inventory, October 2008–July 2015; State/Tribal Cohorts 4–9.

Screening Programs

Screening programs involve the administration of a screening instrument developed to identify youth who are at risk for suicide. Grantees may also screen for mental health issues or behaviors associated with increased risk for suicide, such as depression, eating disorders, drug and alcohol use, and anxiety disorders.

Across all state, tribal, and campus grantees (n = 368), 77 percent report implementing screening programs. A majority of state and tribal screening programs are implemented in school settings and at mental health agencies. On campuses, approximately 40 percent of screenings are conducted online and another 40 percent are conducted at awareness events, such as health fairs or National Depression Screening Day.

Campus Screening: As part of the GLS Program, Hunter College Department of Psychology and Counseling and Wellness Services developed a screening tool to measure suicidal ideation, suicide attempts, non-suicidal self-injury, drug use, binge drinking behaviors, and feelings of hopelessness and stress in the incoming student population (first year, graduate, and transfer students). In Year 1 of the grant, the Campus was able to screen 847 students, and screened 1,286 in Year 2. Using the data, the program has been able to identify high-risk subgroups of students and guide outreach efforts to increase knowledge about available counseling services and treatment seeking among students.

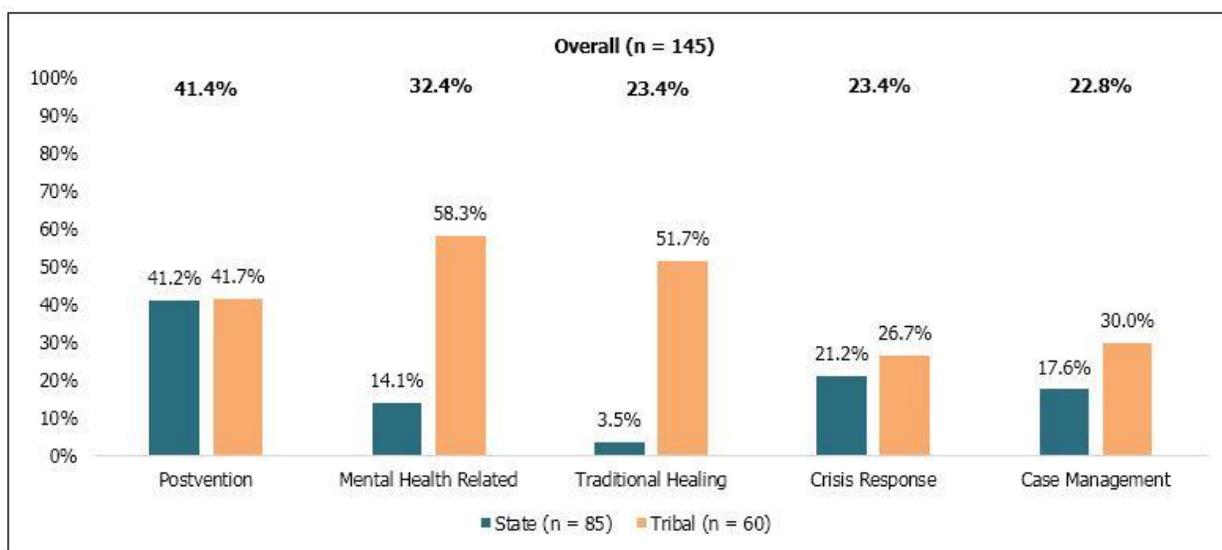
Direct Services

State and tribal grantees may use grant funds to provide direct services. The most common types of direct services provided are:

- mental health related services, including support groups, assessment, counseling, and family support services;
- postvention services, which includes providing resources and bereavement support following a suicide;
- case management, including care coordination and follow up services;
- crisis response, which includes on-call crisis response teams for immediate intervention;
- traditional healing practices, which include sweat lodges, talking circles, and spiritual ceremonies.

Approximately 68 percent of state and tribal grantees (n = 178) report direct services as part of their program. Postvention services are most common among state grantees, while mental health services and traditional healing practices are more commonly a component of tribal programs.

Figure 4. Percentage of State and Tribal Grantees Implementing Types of Direct Services



Source: Prevention Strategies Inventory, October 2008–July 2015; State/Tribal Cohorts 4–9.

Coalitions and Partnerships

Collaborations with community agencies and organizations are a requirement and an important component of grant activities. These relationships help to facilitate program implementation, achievement, and sustainability. Grantees may lead or support a coalition by convening individuals, groups, or organizations to work together toward the common goal of suicide prevention. Fifty-two percent of all programs (n = 277) report this activity, most commonly state grantees (78 percent, n = 82). Programs may also include leading coalitions related to youth prevention in areas such as LGBT issues, anti-bullying, alcohol and substance use, or veterans' advocacy. Twenty-four percent of grantees (n = 277) report engagement in this type of coalition. Thirty-nine percent of grantees (n = 277) participate in coalitions that exist outside of the grant,

such as veterans' groups, survivor groups, youth coalitions, Active Minds⁶ clubs on campuses, and state- or county-level initiatives. Most common for campus and tribal grantees are partnerships with agencies and organizations, reported by 63 percent of campus (n = 135) and 73 percent of tribal (n = 60) programs. Partnerships are formed with varying types of public and private agencies, which include mental health agencies, K–12 schools, local hospitals, juvenile justice systems, community service organizations, and campus clubs and departments. These partnerships allow grantees to build capacity, expand program reach, and improve surveillance and referral networks.

Life Skills and Wellness Development

Life skills and wellness curricula and activities aim to teach adolescents the social competencies and skills needed to support positive social, emotional, and academic development. These life skills include communication, problem solving, stress management, anger regulation, goal setting, and leading healthy lifestyles. Aside from structured curricula, grantees may promote skills through cultural activities—to provide youth with strengthened cultural identity and a sense of belonging—or general wellness activities.

Life skills development curricula

- American Indian Life Skills
- Life is Precious for young Latina women
- LGBT coping skills
- Drug and Alcohol Awareness education

Cultural activities

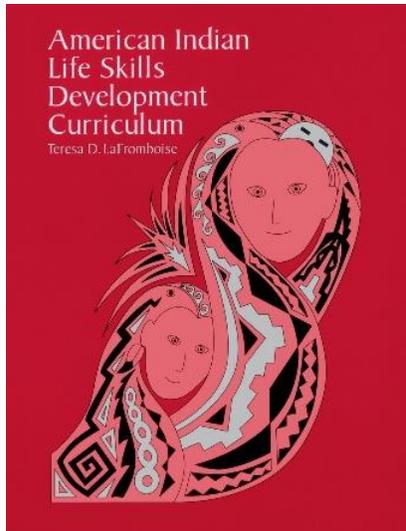
- Culture camps
- Talking circles
- Traditional crafts
- Support groups

Wellness activities

- Yoga and mindfulness classes
- Positive body image workshops
- Stress management events

⁶ Active Minds, Inc., is a nonprofit organization dedicated to raising mental health awareness among college students, on the peer level. See www.myactiveminds.org for more information.

Tribal grantees most commonly report life skills and wellness activities. Ninety-one percent (n = 65) of tribal grantees have identified life skills and wellness activities as a component of their grant program. Wellness activities, particularly those focused on stress management, alcohol and drug awareness, and healthy relationships, are also common among campus grantees (65 percent, n = 190). They are often integrated with other aspects of



campus culture and health promotion, which contributes to the sustainability of the wellness activity. Life skills strategies are only implemented by 23 percent of state grantees (n = 113), and rather than cultural or wellness activities, state grantees more commonly report utilizing life skills development curricula for youth in school and community settings.

Among all state, tribal, and campus grantees who have implemented life skills strategies with specific populations (n = 89), 60 percent have focused on American Indian/Alaska Native youth, and 54 percent have focused on LGBT youth.

Policies and Protocols for Intervention and Postvention

Policies and protocols are guidelines that outline the actions of agencies and staff responsible for responding to potential, attempted, or completed suicide. They aim to ensure that at-risk youth and their families receive a proper and efficient response in a time of crisis. Fifty-five percent of all grantees (n = 368) develop policies and protocols as part of their program. Policies related to intervention focus on assessing, referring, and connecting youth to treatment. For example, a campus may create a standardized plan to respond to a student at imminent risk of suicide including where to refer the student, who to contact, and how to follow up with the student to ensure treatment. State and tribal programs often work with schools and community agencies to create referral pathways and guidelines to support students and families after identification. Policies related to postvention generally deal with taking the appropriate actions to support the family and community after a suicide. Often these policies include strategies for communicating with families, peers, and the media, and offering grief support for the affected community.

Examples of Policies and Protocols

- Referral protocols
- Crisis response plans
- Protocols for improving upon surveillance and data collection
- Procedures for follow up after hospital or emergency department discharge
- Postvention plans

Training for Mental Health Professionals and Clinical Staff

Some training curricula focus on educating professionals on evaluating and managing suicide risk and making appropriate referrals. Grantees conduct these trainings most frequently with clinicians and staff responsible for directly working with youth in crisis, including mental health professionals or the staff and volunteers who work at prevention hotlines and helplines. Assessing and Managing Suicide Risk (AMSR) and Recognizing and Responding to Suicide Risk (RRSR) trainings for mental health professionals are commonly used training curricula. Other examples include training professionals to use screening instruments or training hotline staff members on identification and referral protocols.

Table 2. Percentage of Grantees Implementing Training for Mental Health Professionals and Clinical Staff

Type of Grantee	Percent implementing Training for Mental Health Professionals and Clinical Staff
State (n = 113)	54.0% (61)
Tribal (n = 65)	26.2% (17)
Campus (n = 190)	31.6% (60)

Source: Prevention Strategies Inventory, October 2006–July 2015; State/Tribal Cohorts 1–9 and Campus Cohorts 1–8.

Hotlines and Helplines

Although most grantees promote the National Suicide Prevention Lifeline through their outreach efforts, some programs use funding to develop, maintain, or support hotlines or helplines in their communities. Approximately 27 percent of all grantees (n = 368) report these activities as part of their program.

Examples reported by grantees include developing a campus hotline, staffed by trained student volunteers, supporting extended hours for previously established call centers, developing online and text chat lines, and staffing hotlines for priority populations, such as a crisis hotline for tribal members or an LGBTQ peer-to-peer helpline.

Means Restriction

Means restriction is a prevention strategy used to limit access to lethal means used for suicide, such as firearms or controlled substances. Means restriction efforts may include public awareness campaigns, distribution of gun locks and medication lock boxes, events (such as prescription drug take back days and informational presentations), and products, such as brochures, posters, and websites. Youth and parents are the most common audiences for these activities. Means restriction strategies are most common among state grantees (41 percent, n = 113, report implementation).

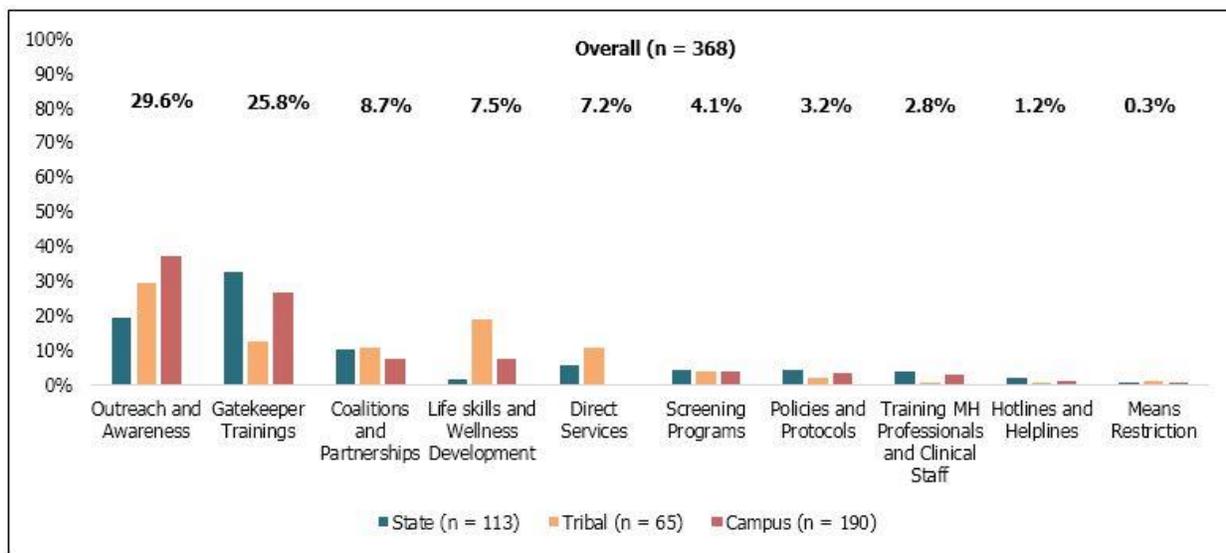
Some grantees report that means restriction activities are geared toward specific populations (n = 20). The most frequently reported populations are individuals with histories of suicide attempts (70 percent), individuals with mental illness, substance use disorders, or both (55 percent), and veterans, active military, and military families (40 percent).

SPENDING ON SUICIDE PREVENTION STRATEGIES AND IMPORTANCE TO PROGRAMS

Budget expenditures are variable across grant programs. However, Figure 5 displays the mean budget spending on each type of activity and shows a general trend that activities implemented by the largest percentage of grantees also had the largest budget allocations. For example, for state (n = 113) and campus (n = 190) grantees, a majority of the budget is spent on Outreach and Awareness and Gatekeeper trainings (51 percent and 64 percent, respectively). Tribal grantees (n = 65) also have high spending in these areas (42 percent of the budget), with the addition of Life Skills and Wellness Development activities (19 percent).

- Campus grant programs allocate more funding to Outreach and Awareness than other grantees (37 percent), while states typically spend the largest portion of funding on Gatekeeper Trainings (33 percent).
- Tribal grantees spend more on Direct Services (11 percent) than state grantees (6 percent), as they are more likely to report these activities as part of their programs.
- Across all grantees, Screening Programs hold similar importance in terms of spending (approximately 4 percent).
- For state and campus grantees, the least amount of the budget is allocated toward Means Restriction activities, but for tribal grantees, the least amount of funding goes toward Hotlines and Helplines.

Figure 5. Mean Percentage of State, Tribal, and Campus Budget Spent on Each Strategy Type



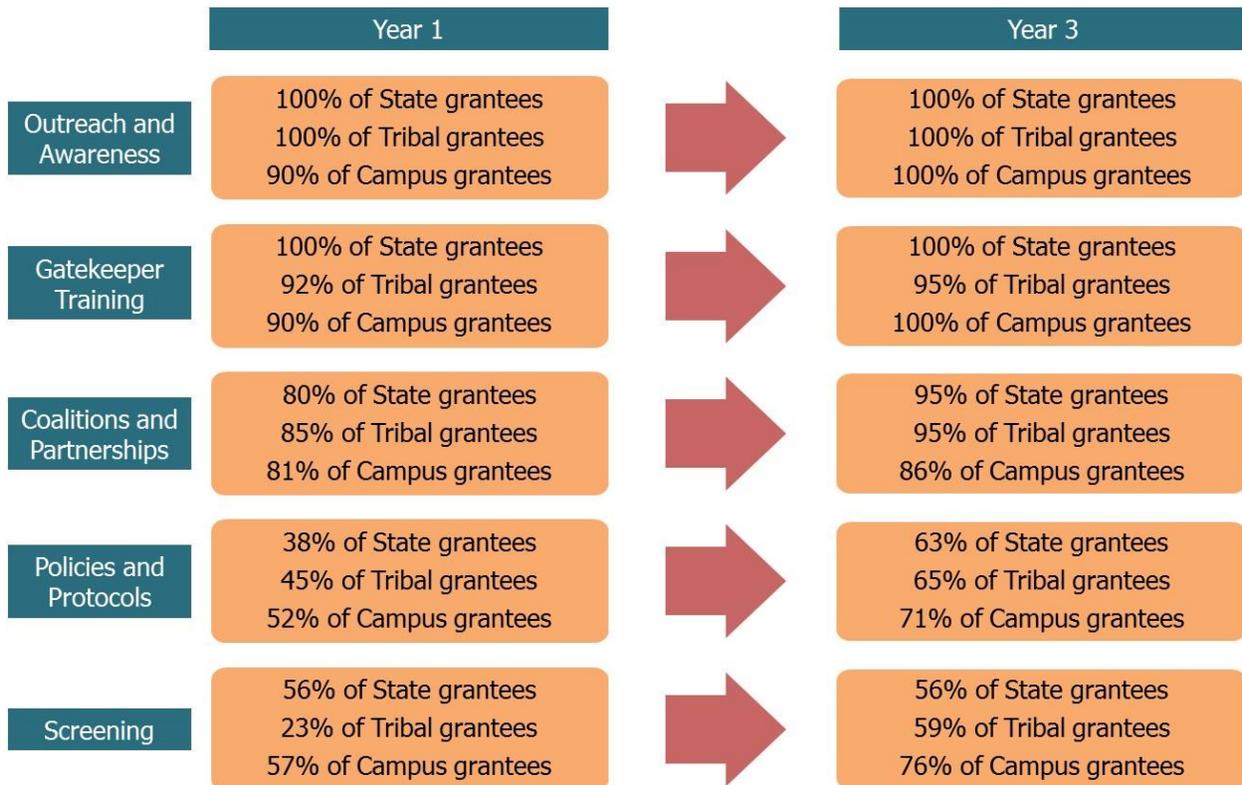
Source: Prevention Strategies Inventory, October 2006–July 2015; State/Tribal Cohorts 1–9 and Campus Cohorts 1–8.

DESCRIPTION OF PROGRAM CHANGE OVER THE COURSE OF THE GRANT

The beginning of a grant period is often spent understanding data collection activities, planning, and hiring grant staff. However, nearly all grantees implement Outreach and Awareness activities and Gatekeeper trainings in the first year of the grant. By the end of the grant cycle, there is an increase in the number of grantees reporting implementation of Policies and Protocols, which may create

improved infrastructure to support intervention and postvention efforts beyond the grant. Similarly, by the end of the grant, a majority of grantees are engaged in Coalitions and Partnerships, illustrating the ability of the grant to grow community networks. Recent cohorts of tribal and campus grantees also implement more screening programs at the end of the grant cycle, which suggests that program funding helps to increase capacity to identify and refer youth.

Figure 6. State, Tribal and Campus Program Changes over the Grant Cycle



Source: Prevention Strategies Inventory, September 2012 and September 2014; State Cohort 6 (n = 16), Tribal Cohort 6 (n = 22), and Campus Cohort 5 (n = 21).

The changes over the course of the grant show that grantees typically begin their programs by implementing primary prevention strategies, including outreach and awareness activities, which may be easier than others to put in place and help to spread awareness of the program and gain community support. Over time, grant activities evolve to address larger infrastructure development and sustainability planning. Policies and protocols emerge as grantees attempt to embed suicide prevention and postvention activities into the culture of the various agencies or campus departments. Screening young people may take more planning and more time to implement, as consent and various legal personal privacy issues may have to be addressed. Campuses may initially lack staffing resources to deal with large numbers of new referrals realized from screening large numbers of students.

EVOLUTION OF PROGRAMS SINCE GLS FUNDING BEGAN

Since the inception of GLS funding in 2005, seven cohorts of state/tribal grantees and six cohorts of campus grantees have completed the program. While core program elements such as outreach

and awareness and training have remained constant over the years of the GLS Program, other elements have become more prominent over time.

The following table illustrates some program activities that have become more common in grant programs since the beginning of funding. The first column represents activities of grantees who were active in the first year of GLS funding (2005–2006) and the second represents grantees who are currently active (2014–2015).

Table 3. Changes in Grant Program Activities Since GLS Funding Began

2005-2006	2014-2015
 <p>8% of State grantees implemented trainings for clinical, mental health and hotline professionals</p>	 <p>85% of State grantees implemented trainings for clinical, mental health and hotline professionals</p>
 <p>Less than 30% of State grantees participated in coalitions and partnerships in the first two years of GLS funding</p>	 <p>Over 90% of State grantees participated in coalitions and partnerships in the past three cohorts</p>
 <p>Less than 17% of Tribal grantees developed policies and protocols in the first two years of GLS funding</p>	 <p>Over 65% of Tribal grantees have reported policy and protocol development in the past three cohorts</p>
 <p>33% of Campus grantees implemented life skills and wellness activities</p>	 <p>82% of Campus grantees implemented life skills and wellness activities</p>
 <p>38% of Campus grantees reported participating in coalitions and partnerships and developing policies and protocols</p>	 <p>71% of Campus grantees reported policy and protocol development and 92% participated in coalitions and partnerships</p>

Source: Prevention Strategies Inventory, October 2006; State/Tribal Cohort 1–2 and Campus Cohort 1–2 and July 2015; State/Tribal Cohort 7–9 and Campus Cohort 6–8.

III. GLS PROGRAM ACHIEVEMENTS

The revised NSSP highlights the importance of training community members and clinical service providers to recognize and respond appropriately to signs of suicide (Goal 7); increasing awareness of suicide prevention through changing knowledge, attitudes, and behaviors (Goal 2); increasing collaboration and coordination across sectors and among youth serving agencies (Goal 1); and assessing and treating youth at risk for suicide with treatment services (Goal 9). GLS Program grants have advanced these elements by enabling communities across the country to strengthen their suicide prevention infrastructure, raise awareness about youth suicide prevention activities, and develop and implement methods for systematically identifying youth at risk for suicide and monitoring referrals and service outcomes. Grant-supported program activities have resulted in the following:

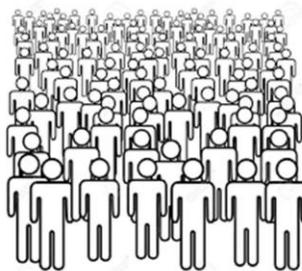
- Hundreds of thousands of individuals trained in youth suicide prevention.
- Early identification and assessment of thousands of youth at risk for suicide.
- Increased awareness about suicide and suicide prevention.
- Improved suicide prevention monitoring and infrastructure development.
- The establishment of comprehensive suicide prevention protocols and policies.

As of 2015, GLS grantees have trained more than 800,000 individuals across state, tribal, territory, and campus programs. Among state and tribal grantees, over 86 percent of grantees have implemented gatekeeper trainings and more than 61 percent have implemented screenings. As a result of these activities, more than 600,000 individuals have been trained in youth suicide prevention and early intervention and over 73,000 youth have been screened for suicide risk. Campus grantees have conducted almost 9,000 trainings and trained over 270,000 individuals in suicide prevention.

The evaluation of these program activities has provided insights into how suicide prevention programs are implemented, whether they work as they were intended, and if they connect at-risk youth with appropriate prevention and early intervention services. Highlights of these findings follow.

COMMUNITY-BASED SUICIDE PREVENTION TRAINING

Goal 7 of the NSSP is to “Provide training to community and clinical service providers on the prevention of suicide and related behaviors.” More specifically, Objective 7.1 of Goal 7 is to “Provide training on suicide prevention to community groups that have a role in the prevention of suicide and related behaviors” (HHS et al., 2012). Training of individuals who are in contact with youths at risk for suicide is a commonly



As of August 2015 Campus, State, and Tribal grantees have trained 879,566 people and implemented 29,457 training activities as part of their GLS Suicide Prevention Programs.

implemented and important prevention effort. For most GLS grantees, gatekeeper training is an essential component of their program, with 95 percent of grantees implementing trainings as part of

their grant according to data submitted via the Prevention Strategies Inventory. These trainings are delivered in settings such as schools, mental health centers, college campuses, law enforcement agencies, and other community settings. Many trainings implemented are evidence-based, while others are locally adapted or developed to meet specific needs of the community being served.

Over the course of the GLS grant, Question Persuade Refer (QPR) has consistently been the most commonly implemented training curricula. While Applied Suicide Intervention Skills Training (ASIST) has also been a popular training curriculum for state/tribal grantees, it has been implemented less in recent years, perhaps due to the time and financial resources required for this curriculum. Also, the ASIST is often intended for individuals who interact more intensely with at-risk individuals. In addition to evidence-based training curricula, other trainings and locally developed and modified trainings are implemented at a high rate (40.8 percent) by college campuses. GLS campuses often identify components of evidence-based curricula along with their own material to adapt trainings to meet the needs of their audience.

Table 4. Top Three Gatekeeper Training Curricula Implemented by GLS Grantees

	Description	Percentage of Trainings	
		State/Tribal n = 20,045	Campus n = 5,868
	Approximately 1–2 hour training that focuses on teaching three steps to help prevent suicide: recognizing the warning signs; know how to offer hope; and know how to get help and save a life.	47.1%	47.2%
	Two-day training that teaches participants to intervene and help prevent the immediate risk of suicide. The session includes video, discussion, and skills practice.	8.8%	2.3%
	A half-day awareness workshop with tailored video vignettes along with intervention resources to identify and avert suicide risks.	6.0%	2.1%

Source: Training Activity Summary Page, October 2006–July 2015; State/Tribal Cohorts 1–9 and Campus Cohorts 1–8.
 Source: Training Activity Summary Page, July 2011 to June 2015; State/Tribal Cohorts 5–9 and Campus Cohorts 4–8.

Some grantees provide follow-up training to participants in an effort to sustain suicide awareness and knowledge shared at training events.

- 4.3 percent of state/tribal trainings and 2.7 percent of campus trainings were booster sessions.
- Some grantees planned booster training in the future (for 13.8 percent of state/tribal and 12.1 percent of campus initial trainings).

Additionally, grantees work to build community capacity to conduct trainings and sustain training efforts by hosting a number of training of trainer events.

- 3.0% of state/tribal and 3.2% of campus trainings were classified as train-the-trainer events.

In order to reach more potential gatekeepers and address time constraints, some grantees offer online trainings in place of or in addition to traditional face-to-face formats. Since January 2014, approximately 2 percent of state/tribal and 7 percent campus trainings have been implemented through a web-based portal. Kognito offers an online gatekeeper training that has been modified

to focus on various professions and backgrounds including college faculty and students, emergency department staff, primary care health providers, and more. The QPR Institute has recently developed an online version of their training, and grantees make use of other web-based training curricula as well.

Over 608,000 individuals have participated in state/tribal grantee trainings, according to data collected at trainings. In many cases grantees were able to collect the primary setting or role of trainees. In those instances, more than half (62.4 percent) of state/tribal trainees were teachers and other secondary education staff. There were 270,000 participants in campus-sponsored trainings and over half (64.8 percent), from the data available, were undergraduate students. Mental health providers, parents and other caregivers, college faculty and staff, child welfare staff, clergy, and law enforcement staff are among the group of people trained by the GLS Program.

Table 5. State/Tribal Trainee Characteristics

Participant Primary Setting	Number	Percentage
Education (K–12)	78,926	62.4%
Other community settings	13,520	10.7%
Mental health	12,854	10.2%
Higher education	12,259	9.7%
Primary health care	2,210	1.7%
Child welfare	1,949	1.5%
Emergency response	1,600	1.3%
Juvenile justice/probation	1,237	1.0%
Substance abuse	1,142	0.9%
Tribal services/tribal government	835	0.7%
Total	126,532	

Source: Training Activity Summary Page, October 2006–July 2015; State/Tribal Cohorts 1–9.

Table 6. Campus Trainee Characteristics

Participant Role	Number	Percentage
Undergraduate students	72,385	64.8%
Campus staff	13,846	12.4%
Graduate students	7,598	6.8%
Faculty staff	5,594	5.0%
Off-campus community group members	5,408	4.8%
Other	4,492	4.0%
Campus administrators	2,421	2.2%
Total	111,744	

Source: Training Activity Summary Page, October 2006–July 2015, Campus Cohorts 1–8.

IDENTIFICATION AND REFERRAL OF AT-RISK YOUTH FROM TRAINING PARTICIPANTS

For a number of years training participants were asked to complete a posttest immediately following the activity to assess their knowledge gained, self-efficacy, and intention to use the information learned in the training. Approximately 98 percent of state/tribal (n = 56,723) and 97.2 percent (n = 32,060) of campus trainees reported that they had intentions to use the knowledge and skills gained. For a separate data collection activity, a subset of trainees was contacted for a phone-based survey 3 months following the training activity. The primary focus of the follow-up survey is to learn about individuals' retained knowledge and utilization of the training during that period. The follow-up survey asked participants to indicate agreement that they gained knowledge in areas of focus for most gatekeeper trainings. Table 7 shows the top three areas where trainees indicated an increase in knowledge 3 months following training; trainees most commonly reported knowing how to get help for someone at risk for suicide as an area where their knowledge increased 3 months following the training.

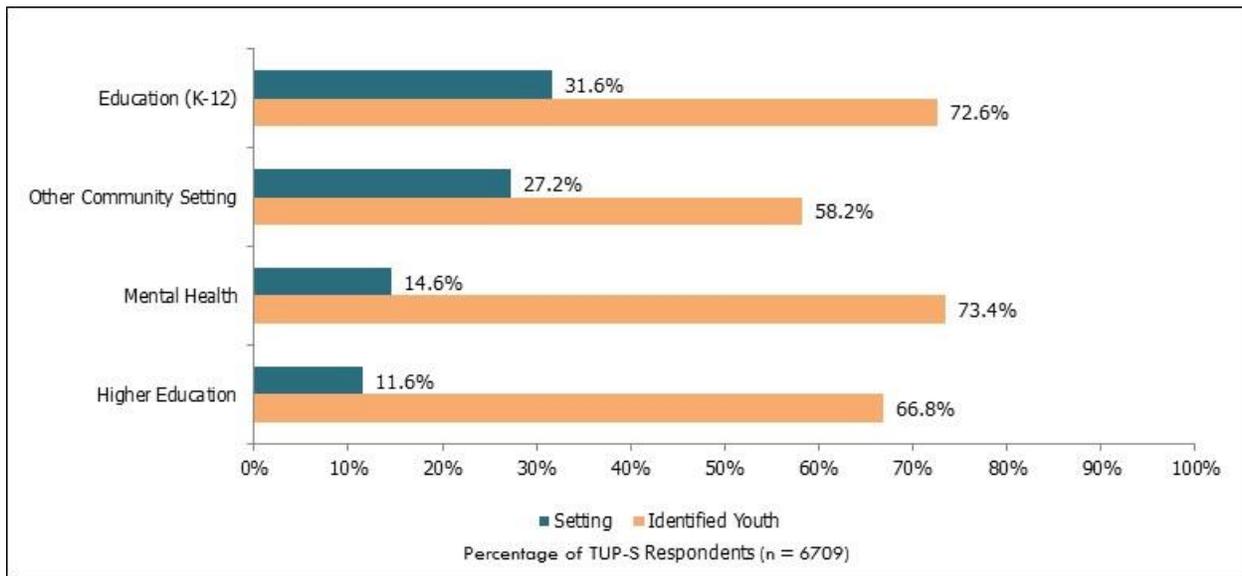
Table 7. Top 3 Areas Trainees Reported Knowledge Gained on Average

Knowledge of:	State/Tribal (n = 2,251)	Campus (n = 728)
How to get help for someone at risk for suicide*	2.98	3.36
Warning signs*	2.92	3.28
Information about resources for help with suicide*	2.90	3.25

*Average score on a 4-point Likert Scale, with scores ranging from 1=Very low knowledge to 4=Very high knowledge.
Source: Training Utilization Preservation Survey, October 2011–July 2015; State/Tribal Cohorts 4–8, Campus Cohorts 5–8.

While increasing knowledge and awareness around suicide and its warning signs is a key objective in most gatekeeper trainings, application of the knowledge and skills acquired in the training is an equally—and some may argue more—important goal. At 3-month follow-up, trainees have reported using their training in a variety of ways, including training others; identifying and referring youth; providing direct services for at-risk youth; as well as working with adult at-risk populations. Figure 7 shows the most common setting in which state/tribal trainees report interacting with youth. The trainees were also asked to report if they have identified youth in the 3 months following the training activity. As shown in Figure 7, primary and secondary school is the most common setting in which state/tribal trainees report interacting with youth (31.6 percent). Among those contacted from secondary education, 72.6 percent reported using the training to identify youth who might be at risk for suicide following the training. Trainees who reported primarily interacting with youth in a mental health setting (14.6 percent) identified youth at a slightly higher percentage (73.4 percent). This might be expected, as they may come in contact with youth with an elevated number of suicide risk factors on regular basis in their role. Nonetheless, trainees who interacted with youth primarily in the other settings only reported identifying youth slightly less commonly. Other community setting roles (27.2 percent) in which trainees may interact with youth include clergy, community organization staff and volunteers, and relatives.

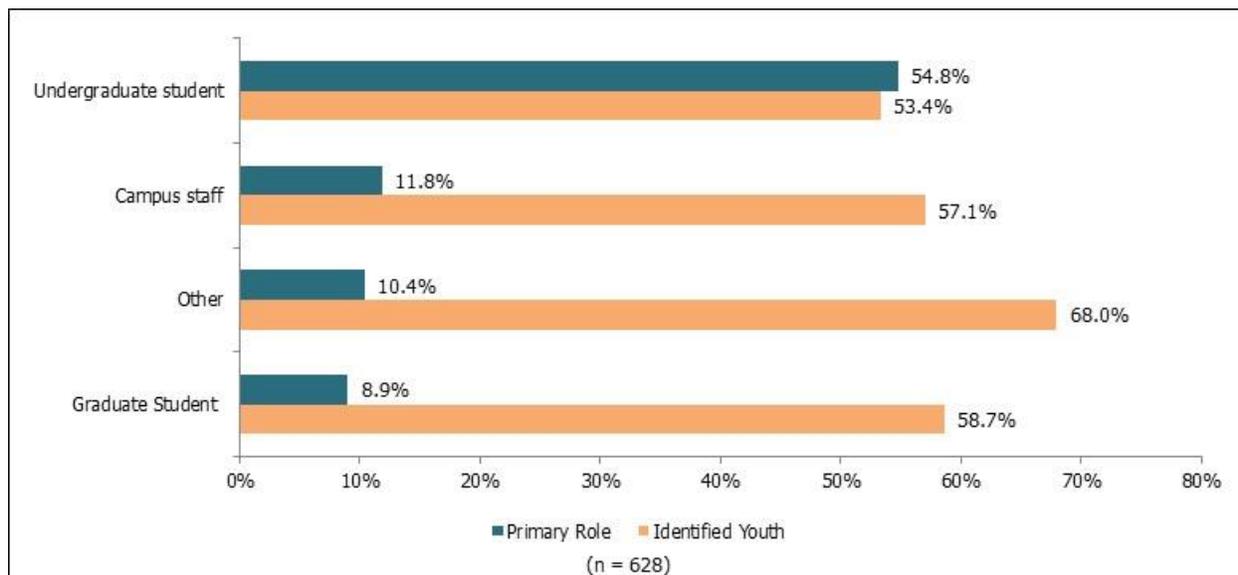
Figure 7. Top Four Settings in Which State/Tribal Trainees Interact with Youth and Percentage that Identified Youth



Source: Training Utilization and Preservation Survey, February 2011–June 2015; State/Tribal Cohorts 4–9.

In Figure 8, undergraduate students represented the largest group of trainees (54.8 percent) in the GLS campus follow-up survey, with 53.5 percent reporting identification of youth within the 3 months following the training. Although a much smaller proportion of campus trainees identified their primary role in interacting with youth as campus staff member (11.8 percent) or graduate student (8.9 percent), a larger proportion of trainees in these categories reported identifying youth at risk (57.1 percent and 58.7 percent, respectively). Trainees classified as other (10.4 percent) include guest attendees outside the campus community, out-of-state family members, and athletic coaches and volunteers.

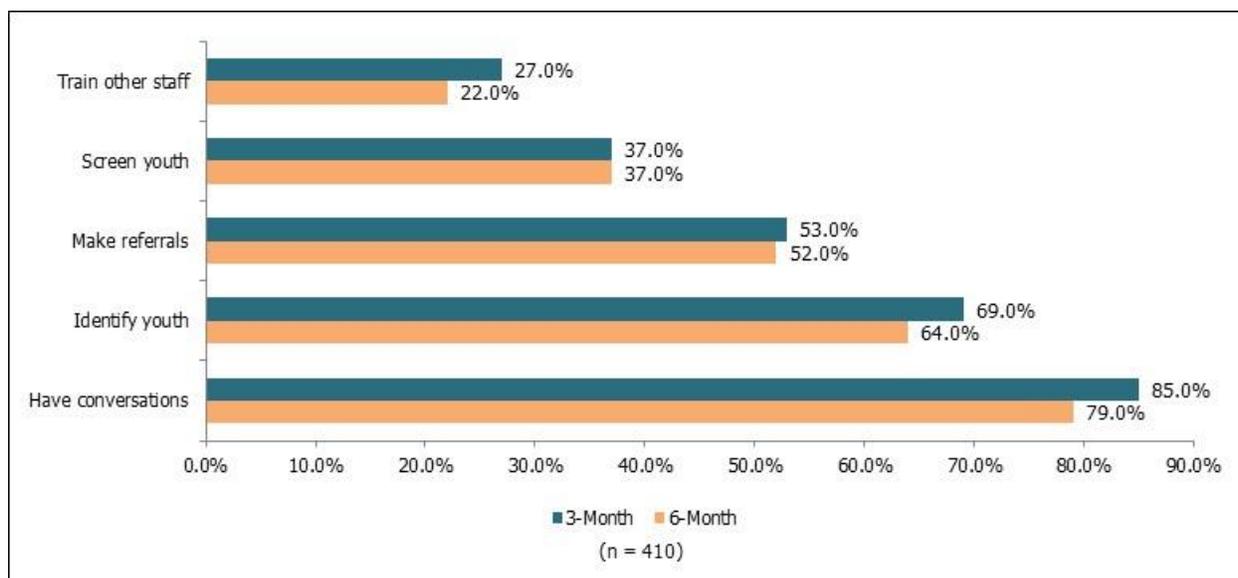
Figure 8. Top Four Roles in which Campus Trainees Interact with Youth and Percentage that Identified Youth



Source: Training Utilization and Preservation Survey, October 2013–July 2015; Campus Cohorts 5–8.

Trainees who consent to be contacted following their training may participate in a follow-up survey that examines the use of the training at 3 months and, as of January 2014, 6 months after participating in the training. Most commonly, trainees have used their training experience to have informal conversations about suicide and suicide prevention with youth and others at both time periods. Identification of youth who might be at risk for suicide was the second most frequent area in which trainees applied their training. Trainees reported a slight decline in most utilization areas between the 3 and 6 month follow-up surveys (Figure 9), but the relatively high percentages of use of training at 6 months after the training indicate sustainability of knowledge and implementation following the training.

Figure 9. Use of Training at 3- and 6-Month Follow-up*



*Sample limited to those with data at both 3 and 6 month time points.

Source: Training Utilization and Preservation Survey, October 2010–July 2015; State/Tribal Cohorts 4–9.

Implementing Youth Suicide Prevention

Facilitators

- Training/professional development opportunities
- Increased community awareness
- Community resources
- Community collaboration
- Agency prioritization of suicide prevention

Barriers

- Access to appropriate services
- Lack of awareness about the problem of suicide
- Time constraints
- Workplace characteristics
- Lack of funding

On the TUP-S over half (54.2 percent, n = 7,439) of trainees report that their community or workplaces are not supportive of implementation of information learned through the suicide prevention training. In a qualitative study about the utilization of suicide prevention training 3 months after the training, participants identified many facilitators and barriers for gatekeepers' application of the training in their workplace and community. The most commonly reported areas were listed on the TUP-S and respondents were asked to indicate the greatest facilitator and barrier that they faced in implementing suicide prevention efforts. Many trainees indicated that a lack of community awareness regarding suicide and its warning signs has been their largest barrier. In the qualitative study participants noted a great need for training to build the capacity of all members of the community including youth and a variety of professionals. If more community members are aware of suicide and its warning signs more individuals will be prepared to respond to suicide risk and take the appropriate steps. This perceived barrier to utilizing training skills may also be due to a lack of discussion and openness around the topic of mental health and suicide in their community making it more difficult to know when someone is in need of help. Not surprisingly, increased community awareness and professional development activities were reported as the greatest facilitators to implementing information learned in the training.

INCREASING AWARENESS

Trainee Identification and Referral Patterns

One mark of the effectiveness of a suicide prevention program is how often trainees use their training to identify a young person who is at risk of suicide. The two most commonly used training programs, QPR and ASIST, were compared to determine if participation in certain types of training was associated with trainees reporting that they made an identification in the 3 months after training.

Among participants who received QPR training (n = 3,211), 62.3 percent reported after 3 months that they had used their training to identify a young person at risk for suicide, while among those who received ASIST (n = 1,593), 70.7 percent reported similarly. This suggests that those who received ASIST training were more likely to identify a youth ($\chi^2 = 33.31, p < .001$). We then considered factors that might affect a person's likelihood to identify youth and also influence the type of training they receive (e.g., demographic characteristics, time spent interacting with youth, professional role in which s/he interacts with youth).

There were differences in several key demographic and occupational variables between trainees receiving QPR and ASIST. QPR trainees were more likely to identify as non-White Hispanic (74.7 vs. 65.0 percent, $\chi^2 = 217.24, p < .001$), and marginally more likely to report that they normally spent more than 2 hours per day with youth (53.6 percent of trainees vs. 49.4; $\chi^2 = 8.80, p = .06$). Participants who received QPR training were also younger on average (average age, 39.8 years vs. 41.0 years; $t = 2.53, p = .01$). In addition, there were significant differences in the roles that trainees identified that they filled. Among those who received QPR training, 45.1 percent reported that their primary role was as a teacher or school staff member, compared to 26.5 percent of those who received ASIST training. Among those who received ASIST, the most common role was that of a mental health service provider (38.1 percent, compared to 14.1 percent of those receiving QPR; $\chi^2 = 159.30, p < .001$).

Once the differences between groups receiving QPR versus ASIST are controlled, trainees who received ASIST were significantly more likely to report having used her/his training to identify a youth at risk for suicide ($B = 0.42, Wald = 8.50, p < .01$), as were trainees who spent more time interacting with youth ($Wald = 56.07, p < .001$).

These findings indicate that trainees receiving ASIST are more likely to identify youth than those receiving QPR. However, the amount of time spent interacting with youth is an important predictor of identification independent of the type of training received by the gatekeeper. This indicates that gatekeeper training continues to be an important avenue for connecting youth at risk with services. It is possible that longer trainings (ASIST) may provide more in-depth skill building about how to identify youth, but that shorter trainings (QPR) are also important for providing basic gatekeeper skills for individuals who interact regularly with youth.

Campus programs often include activities, such as social marketing/media campaigns, to raise student awareness about suicide as a preventable problem and to encourage help-seeking. In FY2014, a case study was conducted with Mississippi State University (MSU), a campus grantee, which was implementing a social marketing campaign (SMC) to encourage help-seeking among students. The 2 week SMC was intended to promote the MSU Connection Project website and the theme, "Make the connection." Campaign activities included printed napkin holder ads placed in dining halls across campus promoting the campaign message, and website and social media pictures and videos also promoting the website. The website was launched simultaneously and included information on available campus mental health resources, the National Suicide Prevention Lifeline number, and links to the social media activities promoting the project. The purpose of the case study was to gain a comprehensive understanding of SMC activities and their implementation; exposure

to campaign activities; recall and comprehension of campaign messaging; and outcomes related to student attitudes, awareness, and knowledge. The evaluation questions included:

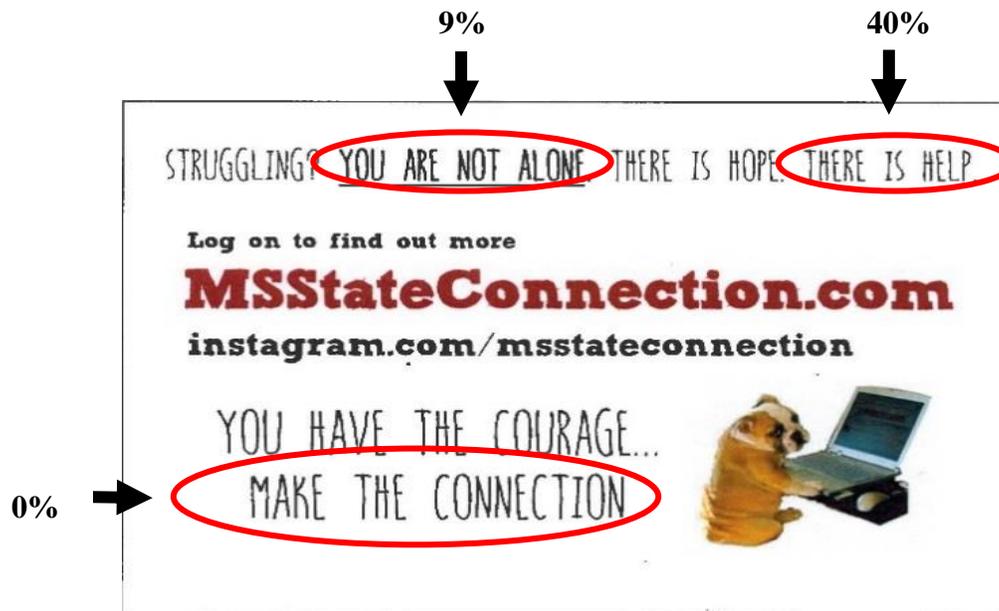
- To what extent were students exposed to SMC messaging for suicide prevention across the campaign period?
- How was exposure to the SMC associated with changes in student attitudes and knowledge related to suicide prevention and help-seeking?
- How was exposure to the SMC associated with changes in student awareness about available campus resources?

A longitudinal student survey was conducted prior to and immediately after the SMC. Students were recruited for the baseline survey using an in-person intercept method and through e-mail at follow-up. In total, 400 students participated in the baseline survey and 176 participated at follow-up. The average age of students was 21 years; most were undergraduate seniors and juniors (64.8 percent), and nearly all (98.3 percent) were enrolled full time.

To what extent were students exposed to SMC messaging for suicide prevention?

At follow-up, more than half of respondents (55.1 percent, $n = 97$) reported seeing the napkin holder advertisements, whereas fewer than 10 students reported being exposed to the social media activities. Given this disparity, analyses in the current study focused on the group exposed to the print advertisements. Respondents with greater exposure to the messaging were significantly more likely to recall it ($B = 0.111$, $p < .05$). In total, 20.6 percent of the 97 respondents exposed to the napkin holder advertisements also provided descriptions of the main point of the message. Of this group, 80.0 percent ($n = 16$) reported being able to recall the SMC messaging. Though just 20.6 percent of students provided descriptions, an exploration revealed trends in student recall and comprehension of the messaging, as well as the aspects of the advertisement that were most salient. This is depicted in Figure 10.

Figure 10. Percent of Students Recalling Aspects of the SMC Message



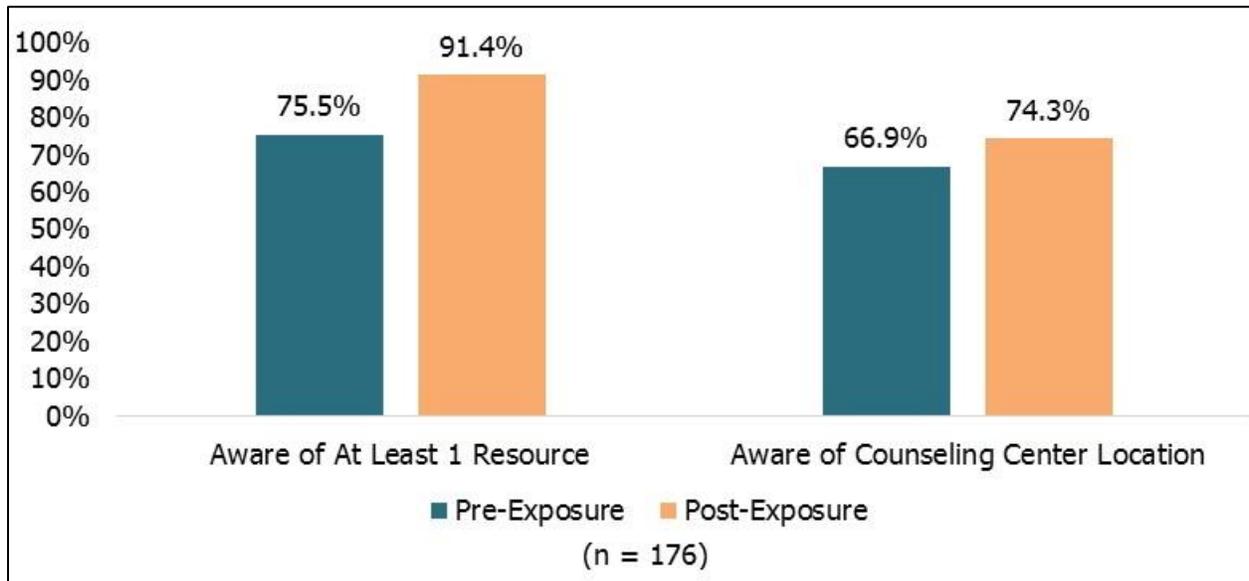
How was exposure to the SMC associated with changes in student attitudes and knowledge about suicide prevention, help-seeking, and wellbeing?

Students who reported seeing the ad agreed-to-strongly agreed ($M = 4.27$, on a 5-point Likert Scale), that their campus valued student mental health and wellbeing, as compared to non-exposed students ($M = 3.98$). While small, the difference in ratings was significant, suggesting that students who saw the campaign ad felt more positively about the value of student mental health and wellbeing to the campus than students who did not see the ad ($t = 2.14$, $p < 0.03$). When asked to rate their agreement with four negative statements about seeking help for mental health services, students generally disagreed to strongly-disagreed with each statement at both time waves; no significant differences were found.

How was exposure to the SMC associated with student awareness of available Campus resources?

At follow-up, substantially more students reported knowing of at least one mental health resource on campus when compared to baseline. In particular, 76.7 percent of respondents ($n = 33$) who answered “no” at baseline later reported that they were aware of a resource at follow-up ($\chi^2 = 20.58$, $p < .001$). In addition, when asked if they knew where to find the counseling center on campus, 66.9 percent of baseline respondents ($n = 117$) were aware of the counseling center location, while a total of 58 respondents did not know the location. However, significantly more students were aware of the counseling center location at follow up; specifically, 43.1 percent of students who originally responded “no” later responded “yes” at follow up ($\chi^2 = 4.893$, $p = .027$). Figure 11 depicts changes in student awareness. Additionally, respondents who were exposed to the napkin ad were significantly more likely than those not exposed to know where the counseling center was on campus ($\chi^2 = 4.30$, $p < .038$).

Figure 11. Student Awareness Pre- and Post-Exposure to SMC



Source: Student Awareness Intercept Survey (SAIS) for Mississippi State University.

SMC Case Study found that the campus SMC, in part, achieved its intended goal of raising awareness among students about help seeking. Although brief, the 2-week SMC was effective in increasing student positivity about how the campus valued student mental health and wellbeing, as well as increasing student awareness of campus resources and where to find the counseling center on campus.

SUICIDE PREVENTION INFRASTRUCTURE

GLS grantees have worked across youth-serving organizations in their communities to build their suicide prevention infrastructure, increasing their capacity to provide supports and services for youth at risk of suicide. Through their GLS program activities, grantees have increased interagency collaboration and built relationships among youth-serving organizations and agencies; established policies and protocols to ensure appropriate follow up care for youth at risk for suicide; and enhanced their ability to monitor and track at-risk youth.

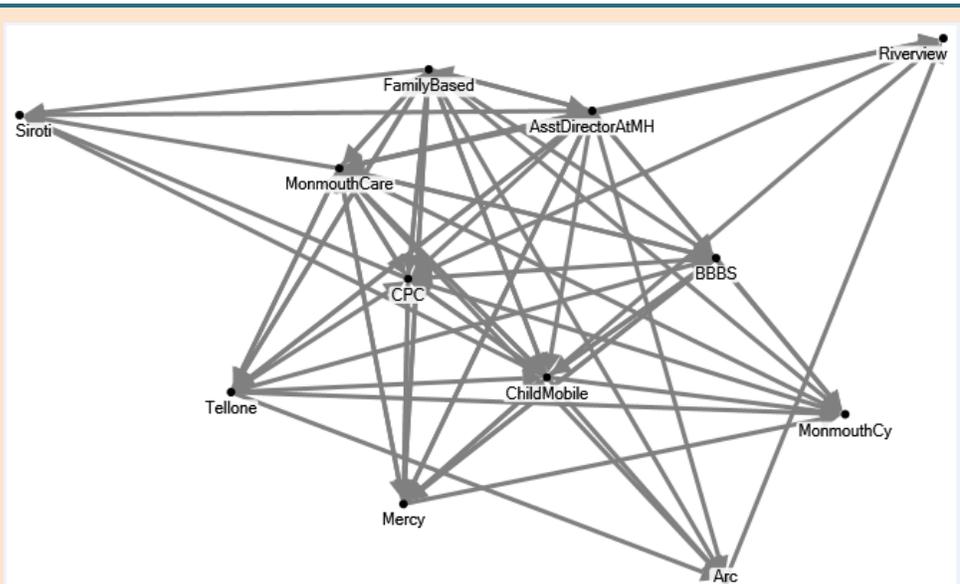
Interagency Collaboration and Coalition Building

Substantial collaboration and relationship building has developed around GLS programs. Approximately 75 percent of GLS state/tribal grantees currently lead or substantially support a suicide prevention coalition or a coalition closely related to youth suicide. Participation in suicide prevention coalitions helps to ensure that youth serving organizations are working collaboratively to establish policies and protocols aimed at building referral networks, creating protocols and policies for risk assessment and monitoring, and helping to ensure the sustainability of suicide prevention efforts beyond grant funding. Coalitions often include representation from behavioral health service providers, youth-serving agencies, colleges and universities, police departments, secondary schools, and juvenile justice agencies.

During spring 2014, five Cohort 8 grantees participated in a Coalition Survey to better understand GLS grantees' coalition efforts. In total, there were 48 identified coalition members; 30 coalition members completed the survey. One hundred percent of respondents identified establishing policies and protocols aimed at building referrals networks as one of the top three coalition priorities, and over 80 percent considered developing a sustainability plan for suicide prevention services to be one of the top three priorities for the coalition.

In addition to establishing coalitions, grantees are involved in establishing strong networks of stakeholders to identify, refer, and provide services for youth at risk. Referral networks lead to enhanced collaboration between agencies which support greater availability and better coordinated services for youth at risk; shared resources, including staff/space/trainings; and ongoing communication to ensure implementation of established policies and protocols. Approximately 60 percent (n = 194 respondents in 26 state and tribal networks) of key stakeholders in GLS communities indicated that they have direct contact with the GLS grantee; the 40 percent of those not yet in direct contact with GLS programs indicated that they consider GLS grantees potential partners for future activities. Seventy-nine percent (79 percent) of respondents (n = 82) indicated that they are aware of formal policies and protocols for following up with youth who are identified at risk of suicide; but of those who are aware of policies, 34.9 percent said the policies are not enough, perhaps indicating GLS program partners' readiness to continue to pursue opportunities to enhance youth suicide prevention infrastructure in their communities.

As noted above, community referral networks are critical to ensure that, regardless of where a youth is identified, they have access to adequate services. The state of New Jersey, a Cohort 7 grantee, worked with six communities in two counties over the course of their 3-year grant to establish a dense network of interconnected



providers, as illustrated in the sociogram. Sociograms are used to illustrate the density of referral networks. Each line that exists between organizations means that a representative from at least one of the organizations has a relationship with the other organization. Organizations located in the middle of the sociogram are considered central members of the network. This network represents mental health agencies, nonprofit community service organizations, secondary school staff, the local health department, and behavioral health providers. At the end of their grant, the grantee gathered key stakeholders from Monmouth County to discuss their network, based on their Referral Network Survey (RNS) report. Community stakeholders were able to identify central players, organizations that appear to be "missing" from the network, and linkages that may need to be nurtured moving forward.

Data source: RNS Year 3 Report for Monmouth County, New Jersey.

Enhanced Policy and Protocol Development

GLS program grantees have created or enhanced their policies and protocols to better support youth at risk for suicide. Policies and protocols establish accountability for youth suicide prevention programs and ensure that those who interact with youth know how to respond to individuals in distress. GLS programs have focused on building policy and protocol development into their prevention infrastructure to embed suicide prevention into the community. Examples of these efforts include:

- training school- and community-based mental health providers to use standardized behavioral health screening tools,
- supporting the implementation of statewide legislation requiring suicide prevention training for all secondary school teachers,
- establishing memoranda of understanding agreements to share youth suicide prevention resources,
- working with schools and youth serving agencies to developing policies and protocols to identify youth at risk for suicide, make appropriate referrals, and follow up on whether or not care was received.

The American Foundation for Suicide Prevention (AFSP) reported in July 2015 that nine states (Alaska, Delaware, Georgia, Kentucky, Louisiana, Nebraska, North Dakota, Tennessee and Texas) mandate annual suicide prevention training for school personnel. An additional 16 States (Arkansas, Connecticut, Illinois, Indiana, Maine, Maryland, Massachusetts, Mississippi, New Jersey, Ohio, Pennsylvania, South Carolina, Utah, Washington, West Virginia, and Wyoming) mandate training in suicide prevention for school personnel, but do not specify that the training must be annual. Fourteen additional States (Alabama, Arizona, California, Colorado, Florida, Michigan, Minnesota, Montana, Nevada, New York, Oklahoma, Rhode Island, Virginia, and Wisconsin) have laws that encourage suicide prevention training for school personnel, but do not require it. All of these states are either currently funded or previously funded GLS grantees.

As part of their Cohort 9 grant activities, Rhode Island is training school-based staff in 42 middle and high schools to identify youth at risk of suicide. Additionally, they are training all school-based crisis team members to screen for suicide risk using an adapted version of the Columbia Suicide Severity Rating Scale (CSSR-S), a behavioral health and suicide risk screening tool. As part of their comprehensive approach to suicide prevention, not only is the grantee training school based staff to identify youth, but they have also established a universal referral protocol to Kids' Link, a state hotline for youth in emotional crisis, so that all students identified as at risk of suicide are directly connected with mental health and case management services.

Capacity to Monitor Identification and Mental Health Service Referral

Over the course of their grants, most grantees increased their capacity to track and monitor information about the identification and referral of youth at risk for suicide. Enhanced capacity to monitor identification and referral information can lead to enhanced collaboration and coordination of care among youth serving organizations, helping to ensure that youth identified as

at risk of suicide are linked to appropriate care. Furthermore, grantees develop the capacity to consistently monitor identification and referral patterns that can be used to inform infrastructure and protocol development. Grantees often found that their systems for tracking at-risk youth and ensuring appropriate service delivery needed strengthening in order to accommodate the increase in early identification activities associated with their efforts. As a result, many grantees have significantly improved their systems for monitoring youth at risk for suicide. For example, the state of Rhode Island has been part of three GLS cohorts: Cohorts 4, 6, and 9. Over the course of their grant funding, they have trained more than 5,000 gatekeepers. As a result of their early identification activities, they have consistently increased their capacity to monitor the identification and referral patterns for youth identified as at risk of suicide. Beginning in 2009, Rhode Island collected identification, referral, and follow-up information from ten high schools. During their Cohort 6 grant, they expanded their efforts to 21 high schools, and currently, as part of their Cohort 9 activities, they have plans to collect this information from 42 middle and high schools across the state. The strengthening and expansion of their data collection systems has allowed them to consistently monitor patterns in the identification, referral, and treatment of youth at risk for suicide and implement solutions to ensure that youth identified as at risk for suicide are being appropriately connected to care.

As part of their Cohort 6 and 9 GLS Youth Suicide Prevention grants, American Indian Health and Family Services (AIHFS) has been collecting Early Identification, Referral and Follow-up (EIRF) data from gatekeepers trained in safeTALK and ASIST, and from mental health professionals conducting suicide risk and wellness screenings in their community. Over the course of their Cohort 6 grant funding, AIHFS struggled to get gatekeepers to submit data regarding the identification and referral of at-risk youth. For their current Cohort 9 funding, they have adapted their communication strategies to facilitate data collection. Currently, they contact trained gatekeepers within 2–3 weeks of their training, and have created a Healing Helpers network, which includes annual gatherings to celebrate accomplishments, and monthly communication among trainees that emphasizes the importance of monitoring and tracking at-risk youth. In just a few months, participation in data collection has increased significantly.

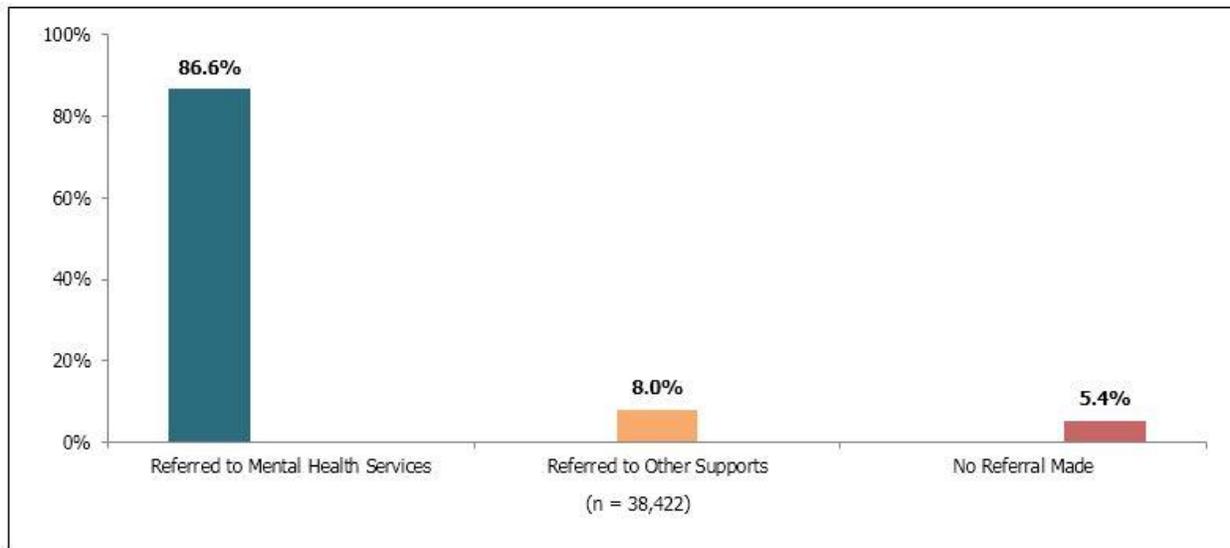
IDENTIFICATION AND REFERRAL OF AT-RISK YOUTH

Through the establishment of tracking and data collection systems, state and tribal grantees have been able to collect and monitor information about the identification and referral of youth who have been identified as at risk for suicide as a result of GLS gatekeeper trainings and suicide risk screenings. For most state and tribal grantees ($n = 124$, out of 144 total), gatekeeper trainings are an essential component of their program's approach to identifying youth at risk for suicide. In addition, a majority of state and tribal grantees, ($n = 88$) implemented suicide risk screenings to identify at-risk youth. As a result of these efforts, more than 40,600 youth have been identified as at risk for suicide through GLS sponsored screenings ($n = 15,372$) or by a GLS-trained gatekeeper ($n = 25,278$).

State and tribal GLS grantees have identified more than 40,600 youth as at risk for suicide through trained gatekeepers or screenings. Nearly all youth identified as at risk for suicide were referred for services.

Nearly all youth identified as at risk for suicide through screenings and gatekeepers (and for whom data are available) were referred for either a mental health service or other supports. Of the youth identified, 86.6 percent were referred for mental health services; an additional 8.0 percent were referred to other supports, and only 5.4 percent of identifications (n = 38,422) result in no referral being made. The primary reason reported for no referral being made was that they were already receiving mental health services.

Figure 12. Mental Health and Other Supports Referrals for Youth Identified as At Risk for Suicide



Source: Early Identification, Referral, and Follow-up Individual Form, October 2006–July 2015; 144 State/Tribal Grantees from Cohorts 1–9.

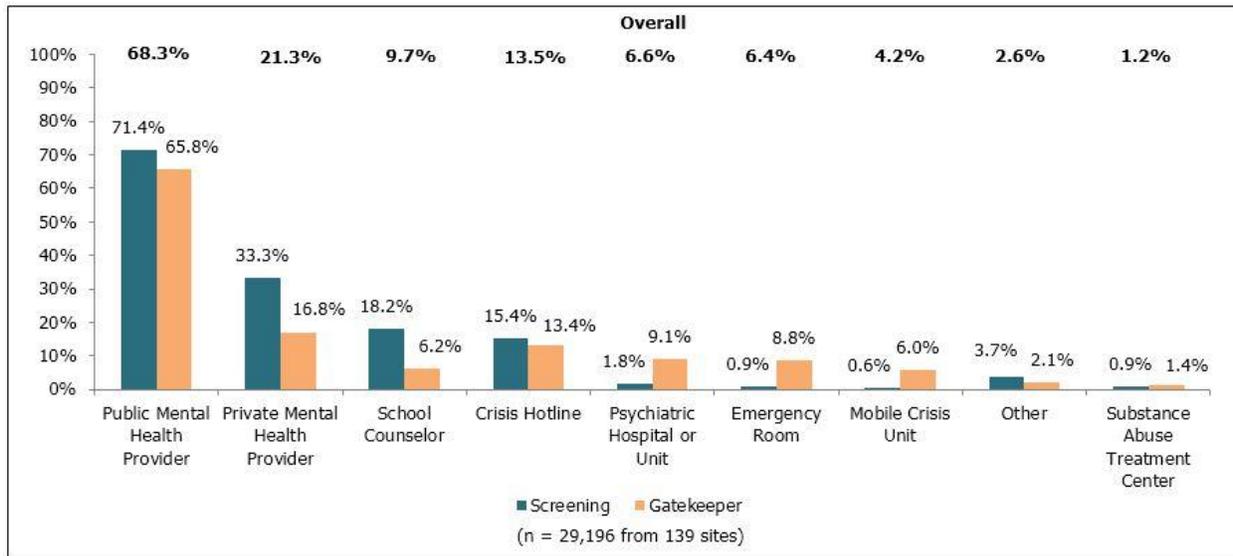
As part of Cohort 8, the Maine Suicide Prevention Program is currently collecting identification, referral, and follow-up data from 18 youth-serving agencies across the state, including 16 school-based health centers. Over the course of 2 years, they have identified nearly 150 youth as at risk of suicide. Before their grant ends in 2016, they will have collected these data from 21 agencies, including Maine Pretrial Services, Job Corps centers, and the Maine National Guard.

While the majority of identifications result in a referral to services, of those not referred to services, the most common reason for no referral was that the youth was already receiving services or supports (n = 4,677; 53.4 percent). There were no significant differences in the percentage of youth receiving referrals after being identified through screening activities (n = 13,466; 85.0 percent) compared to being identified by a gatekeeper (n = 23,279; 87.0 percent).

Findings also indicate that gatekeeper and screening identifications often result in different referral patterns. Youth identified by screenings are significantly more likely to be referred to non-crisis services, while gatekeeper identifications more often result in referrals to crisis services (p<.001). In particular, of the gatekeepers referring to crisis services (n=4,048), law enforcement staff and parents/caregivers more often refer to crisis services than other types of gatekeepers (22 percent and 11 percent). This may indicate that these types of gatekeepers were more likely to encounter youth at greater risk or need additional information on crisis and referral protocols so that youth who are not in crisis are referred to appropriate services. Furthermore, screenings (n=13,473) are more likely

to identify youth in schools (62 percent) than gatekeeper identifications (n=24,261, 22 percent). Schools often have on-site treatment providers or established protocols for referring to mental health services outside of the school, reserving referral to crisis services for youth in need of immediate intervention.

Figure 13. Types of Mental Health Referrals for Youth Identified through Screenings or Trained Gatekeepers



Source: Early Identification, Referral, and Follow-up Individual Form, October 2006–July 2015; State/Tribal Cohorts 1–9. Referrals are not mutually exclusive and columns may add up to more than 100 percent. Other referrals include school-based health clinics, case management, and grief counseling.

FOLLOW UP FOR YOUTH AT RISK FOR SUICIDE

The 2012 NSSP highlights the importance of systematically identifying and assessing suicide risk among youth while ensuring they are appropriately connected to treatment services (HHS et al., 2012). In support of this emphasis, participation in the National Outcome Evaluation requires grantees to develop systems to track the outcomes of referrals for all youth that have been identified by a trained gatekeeper or through a screening. As a result, the national evaluation has increased grantees’ focus on developing capacity to track and monitor all youth identified at risk for suicide.

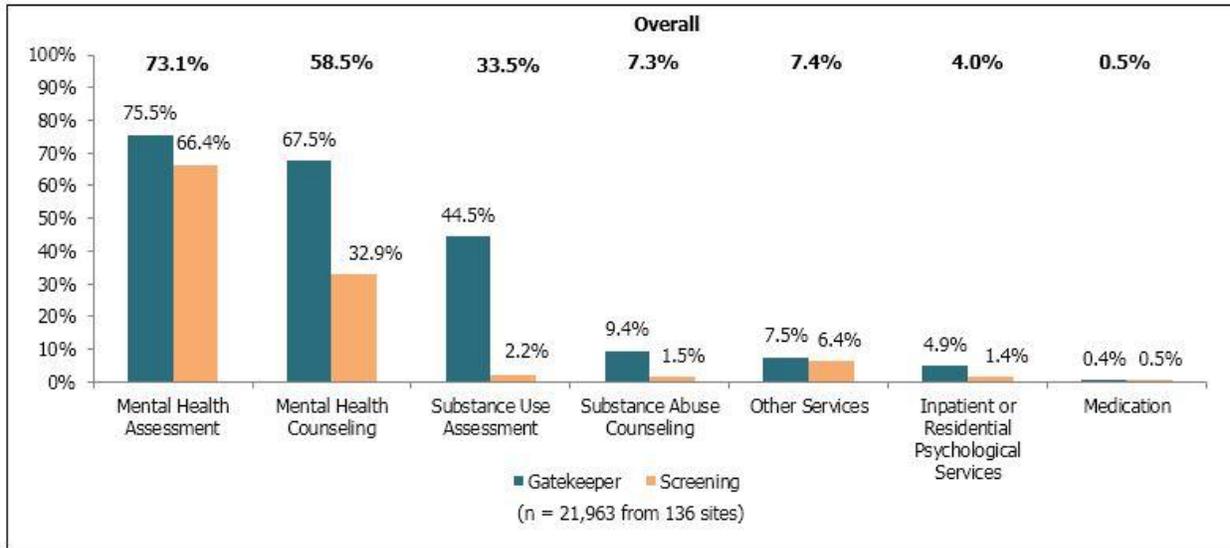
The Idaho Lives Project (ILP) has trained several populations to identify youth at risk of suicide in Idaho: school staff, mental health professionals, community gatekeepers, and juvenile justice staff. ILP follows up with all training participants 3 months after each training to collect identification, referral, and follow up information for youth trainees have identified as at risk of suicide. Over the course of their Cohort 8 grant, ILP has developed a personalized approach with trainees to emphasize the importance of collecting follow-up information.

Of the youth referred for mental health services (n = 26,637), more than 86 percent received services within 3 months of the date of referral, regardless of whether the youth was identified by a trained gatekeeper or by a screening. While follow up services are often received much more quickly, grantees are given up to 3 months to obtain the information about service receipt in order to complete the EIRF form. Grantees are expected to connect youth with services immediately following identification of the youth as at risk for suicide, and the exact data of service is collected through the evaluation. For the purposes of this report, all youth receiving a service within the first three months after identification are included to examine overall trends in service referral and receipt patterns. The primary reason youth did not receive services was that no action was taken following the referral or the parent or youth refused or could not be contacted. However, youth identified by gatekeepers more often did not receive a first mental health service because the youth did not attend the appointment (29.7 percent; n = 1,357), compared with youth identified by screenings (8.2 percent; n = 1,630). This may be because screenings are typically conducted by mental health professionals who are able to provide services immediately after identification, whereas gatekeepers frequently need to refer youth to outside services.

More than 86 percent of those referred to mental health services and for whom data are available had received the services within 3 months of the referral (n = 26,637).

Findings also indicate that for youth referred to mental health services, screening and gatekeeper identifications result in different types of first services received. While both types of identifications most often result in youth receiving a mental health assessment, there were differences in the other types of services received between gatekeeper identifications and screening identifications. For example, youth who are identified through screenings are less likely to receive substance use services or mental health counseling than those identified by gatekeepers. These differences in services received based on the source of identification may have implications for future gatekeeper training efforts. Understanding how the source of identification influences or predicts the types of services received should be explored.

Figure 14. Types of Services Received



Source: Early Identification, Referral, and Follow-up Individual Form, October 2006–July 2015; State/Tribal Cohorts 1–9 (n = 21,963 from 136 sites).

Services are not mutually exclusive and columns may add up to more than 100%.

“Other Services” include tribal healing practices, faith-based services, and case management.

IV. GLS PROGRAM IMPACT

Evaluation of the GLS Program has resulted in the largest repository of youth suicide prevention data in the United States, and has also been essential in helping communities and decision-makers at all levels of government improve suicide prevention effectiveness. Through participation in evaluation, GLS grantees are generating data regarding the nature and extent of suicide prevention activities across the United States and have provided important data regarding the impact of programs. In this section, we use data compiled from GLS grantees, along with information gathered from secondary sources, to explore the impact of the GLS Program on key program outcomes. Specifically, we present findings that address the following evaluation questions:⁷

1. Is there a reduction in youth suicide mortality and in nonfatal attempts that can be reasonably attributed to GLS Program efforts?
2. What are the costs associated with GLS Program implementation relative to the benefits achieved from healthcare system savings?

IMPACT OF GLS PROGRAMMING ON SUICIDE RATES

To understand the impact of GLS Program implementation on suicide mortality rates, we examined county-level data on GLS trainings over time in combination with vital records data on mid- and long-term outcomes at the county level. We compare the change in suicide mortality rates between 2007 and 2010 among the population aged 10 to 24 years in counties implementing GLS prevention activities with the trajectory observed in similar counties that did not implement these activities.

While GLS grantees implemented comprehensive, multifaceted suicide prevention programs, the analysis uses GLS sponsored trainings as a marker of local implementation, given its widespread use. Importantly, the methodology relies on propensity score techniques to ensure that the counties being compared (i.e., exposed and not exposed to GLS trainings) are substantially similar in every aspect (including historical values of suicide rates), except for the implementation of GLS. In addition, closely related outcomes that are not expected to be affected by the GLS implementation are also analyzed. These unaffected or “control” outcomes can help to rule out additional alternative explanations of differences in the main outcome of interest. Additional details on the methodology are provided in Appendix D.

The findings indicate that counties implementing GLS exhibited significantly lower suicide rates the year following the training implementation when compared with similar counties that did not implement GLS (1.33 fewer deaths per 100,000; $p = .02$). Simultaneously, there is no significant difference in terms of suicide mortality rates among adults ($p = .34$) or nonsuicide mortality rates among the population aged 10–18 or 19–24 years ($p = .37$ and $.72$, respectively). There was no significant effect, however, in the suicide rates among population 10–24 two or more years after GLS implementation. While the impact of more sustained program activity efforts, such as booster training, on extended effects was not directly assessed, this is planned for future analysis. In addition, the revised FOA places greater emphasis on sustainability through longer grant

⁷ Some of the findings featured in this section were previously presented in Walrath et al. (2015) and Godoy Garraza et al. (2015).

periods, increased funding, focus on surveillance-based decision making and improving care transitions for at risk youth.

Figure 15. Youth Suicide Mortality Outcomes Following GLS Implementation

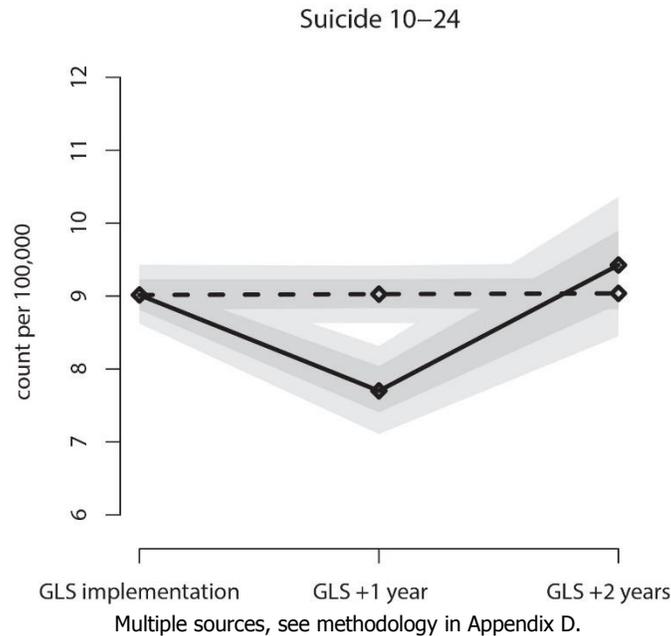


Figure 15 presents the estimated outcome trajectory following GLS training implementation (solid lines) in relation to estimated outcome trajectory during the same period had GLS not been implemented (dotted lines). Confidence intervals around the trajectory are represented by dark gray (90 percent) and light gray (50 percent).

Analysis by subgroup of counties with different characteristics suggested that the overall effect may have been driven mainly by the impact on smaller, more rural counties, which represent nearly half of the counties implementing GLS. Additional analysis focusing on the number of participants in GLS sponsored trainings showed an association between the magnitude of the reduction in youth suicide mortality and the number of gatekeepers trained in the county. This association, however, was not confirmed in the case of nonfatal suicide attempts discussed in the next section.

In summary, in counties implementing GLS programs, a reduction in rates of suicide mortality among youth was observed following the implementation when compared with counties that were not targeted by GLS programs. Similar reductions were not noted among adults older than the groups targeted with GLS programs, or in youth mortality for reasons other than suicide. These “control outcomes” are outcomes related to youth suicide mortality that should not be affected by GLS training implementation. No change in these control outcomes provides greater support to the hypothesis that it was GLS, and not some other policy or change that resulted in reduced youth mortality. Based on the point estimate of the drop in suicide rate among the 10–24 population in the year after the implementation, the number of counties and years in which GLS training were implemented, and the average population in the 10–24 range in the intervention counties, these results suggest that approximately 427 deaths were avoided between 2007 and 2010 following GLS implementation.

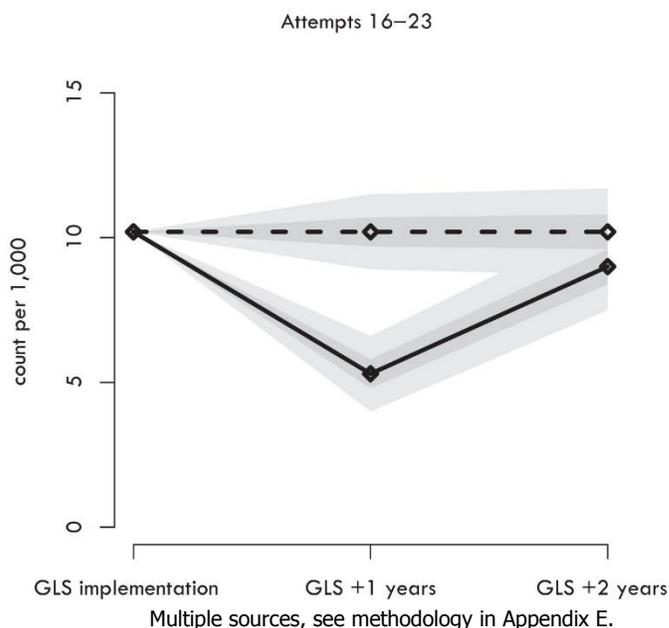
IMPACT OF GLS PROGRAMMING ON SUICIDE ATTEMPTS

Reducing suicide attempts is an important public health outcome in its own right. In addition, the county's suicide attempts rates are estimated from a completely different source than the mortality rates. Each source has distinct strengths and weaknesses. Therefore, coherent results across both provide strengthened levels of evidence of a connection between GLS training implementation and its intended outcomes. In this section, we explore whether there were differences in the rate of suicide attempts among the population aged 16 to 23 years following implementation of the GLS Program.

Due to limitation of the data source, a large national probabilistic sample, this analysis includes only part of GLS target population: youth that were between 16 and 23 at the time of GLS implementation. The sample of counties and propensity score-based procedures to increase comparability among intervention and control counties were the same as those used for the mortality analysis. As before, we look at short- and long-term effects, and mirrored the analyses of suicide attempts among adults, which is not expected to be affected by the implementation of GLS trainings. Additional details on the methodology are provided in Appendix E.

Figure 16 presents the estimated outcome trajectory following GLS training implementation (solid lines) in relation to estimated outcome trajectory during the same period had GLS not been implemented (dotted lines). Confidence intervals around the trajectory are represented by dark gray (90 percent) and light gray (50 percent).

Figure 16. Youth Suicide Attempts Following GLS Implementation



Counties implementing GLS program activities exhibited significantly lower suicide attempt rates among youths and young adults aged 16–23 in the year following implementation when compared with similar counties that did not implement GLS program activities (4.9 fewer attempts per 1,000 youths; $p = .003$). Simultaneously, there was no significant difference in the rates of suicide attempts

among adults older than 23 years ($p = .527$). There was no significant effect in the suicide attempt rates among the population of interest 2 or more years after GLS implementation.

In summary, these results indicate a decrease in the rates of suicide attempts following implementation of SAMHSA funded GLS programming among populations aged 16–23 years. This finding is consistent with the previously reported reduction in suicide mortality among populations aged 10–24 following GLS Program implementation. The absence of a concurrent change in rates of suicide attempts among adults 24 and older further supports the hypothesis that these changes are due to GLS suicide prevention activities. Although causality cannot be definitively inferred from this study due to lack of random assignment, these results suggest that more than 79,000 attempts were avoided following GLS Program implementation during 2006 to 2009 (this estimate was based on point estimation of the reduction in suicide attempt rate, number of counties, years of program implementation, and average size of intervention county population).

ECONOMIC IMPACT OF GLS PROGRAMMING

An economic evaluation of the GLS Program requires an assessment of both the costs and benefits of the suicide prevention program. In this assessment, cost benefit analyses are calculated solely from a program and healthcare system perspective. This perspective includes the costs of delivering the program and its direct benefits in terms of medical cost savings arising from averted non-fatal injuries. The section examines preliminary findings for the costs of implementing GLS relative to the benefits in terms of medical cost savings arising from averted nonfatal injuries. Final findings are pending re-analysis using additional grant funding data.

To align with the prior effectiveness studies, the analytical period will cover the initial implementation of the program from 2006 to 2009 (including set up costs during 2005) and the results obtained during the 2007 to 2010 period, and focus specifically on the 46 states and 12 tribal GLS grantees previously analyzed. Campus grantees are not included. Additional details on the methodology are provided in Appendix F.

We estimated the cost and benefit for each year between 2005 through 2010. The present value of both flows in the baseline year \$49.4 million and \$222.1 million (95 percent; confidence interval \$78.7–\$365.4), respectively. The estimated benefit-cost ratio (BCR) was, therefore, \$4.5 (95 percent; confidence interval \$1.6–\$7.4). In other words, the GLS Program returned more than 4 dollars in medical cost savings for each dollar invested in its implementation.

Table 8. Estimated Costs and Benefits

Parameter	Estimate (95% Confidence Interval)
GLS Cost (in millions of 2010 USD)	49.4
Averted attempts	79,379 (29,630–129,127)
Averted hospitalizations	19,448 (6,947–31,948)
Averted ED visits	11,424 (2,889–19,985)
Savings (in millions of 2010 USD)	222.1 (78.7–365.4)
Benefit-cost ratio (in millions of 2010 USD)	4.5 (1.6–7.4)

Multiple sources, see methodology in Appendix F.

We tested the robustness of the benefit cost ratio to different model assumptions and specifications using ranges for the numeric values of key parameters. The benefit-cost ratio was most sensitive to changes in the average inpatient hospitalization cost. The benefit-cost ratio ranged from \$3.65 to \$5.09. The benefit-cost ratio was relatively invariant to assumptions regarding the percentage of suicide attempts that required an ED visit but not hospitalization; the benefit-cost ratio varied from \$4.24 to \$4.77. In summary, even under more conservative assumptions and specifications, the sensitivity analysis indicated program benefits exceeding costs.

V. SUMMARY

The GLS Program puts into practice the comprehensive approach called for in the NSSP by supporting states, tribes, and institutions of higher learning in developing and implementing youth suicide prevention and early intervention strategies. Through their GLS program activities, grantees have increased interagency collaboration and built relationships among youth-serving organizations and agencies; established policies and protocols to ensure appropriate follow-up care for youth at risk for suicide; and enhanced their ability to monitor and track at-risk youth. Through participation in the national evaluation, GLS grantees are generating data about the nature and extent of these prevention activities across the United States and the impact of suicide prevention programs in terms of numbers of individuals affected (e.g., screened, trained) and proximal outcomes of efforts (e.g., increased knowledge or awareness, numbers of youth at risk referred for services). The evaluation has provided insights into how suicide prevention programs are implemented, whether they work as they were intended, and the degree to which they connect at-risk youth with appropriate prevention and early intervention services. Findings demonstrating the effectiveness of the GLS Program have been published and presented throughout the evolution of the evaluation. (See Appendix C for a list of dissemination products.)

This report presents data gathered from state/tribal and campus GLS Programs from October 2006 through June 2015. It summarizes GLS program activities and achievements as well as findings from special studies assessing (1) program impact on youth suicide and attempts, and (2) the cost of implementing GLS relative to the benefits due to averted hospitalizations and ED visits. Highlights from the report are presented below.

HIGHLIGHTS OF FINDINGS

Program activities and achievements

- Almost 30,000 trainings were held with approximately 879,000 trainees.
- QPR gatekeeper training was the most commonly implemented curricula.
- While Applied Suicide Intervention Skills Training (ASIST) has also been a popular training curriculum for state/tribal grantees, it has been implemented less in recent years, perhaps due to the time and financial resources required for this curriculum.
- Immediately following a training, 91.6 percent of state/tribal and 97.0 percent of campus trainees reported that they intend to use the knowledge and skills gained.
- The most commonly reported area of increased knowledge for trainees 3 months after the training was knowing how to get help for someone at risk for suicide.
- The majority of training participants have used their training experience to have informal conversations about suicide and suicide prevention with youth and others at both the 3 and 6 month follow-up. Early identification of youth who might be at risk for suicide was the next most commonly reported use of training experience.
- Training participants indicated a need for additional training to increase awareness of suicide and suicide prevention among community members to support youth at risk and complement the efforts of trained gatekeepers.

- Increased community awareness and professional development activities were reported as the greatest facilitators to implementing information learned in the training.
- Of youth identified as at risk for suicide and referred for mental health services, more than 86 percent received services within 3 months of referral, regardless of the source of identification (i.e., a trained gatekeeper or a screening).

Impact studies

- In counties implementing GLS programs, a reduction in rates of suicide mortality among youth was observed in counties following the implementation compared with counties that were not targeted by GLS programs. Similar reductions were not noted among adults older than the groups targeted with GLS programs (10–24) or in youth mortality for reasons other than suicide. Results suggest that approximately 427 deaths were avoided between 2007 and 2010 following GLS implementation.
- Results indicate a decrease in the rates of suicide attempts following implementation of GLS program activities among populations aged 16–23 years. Findings suggest that more than 79,000 attempts were avoided following GLS Program implementation during 2006 to 2009.
- Examination of the costs of implementing GLS relative to the savings of medical cost arising from averted nonfatal injuries indicate that the GLS Program returned more than 4 dollars in medical cost savings for each dollar invested in its implementation.

RECOMMENDATIONS

The 2013 GLS Report to Congress outlined both programmatic and evaluation-related recommendations based on the findings to date (SAMHSA, 2014). The recommendations stressed infrastructure development, targeted and sustained trainings, coordination of services for youth at risk for suicide and the use of data systems to inform program design and implementation. The report also recommended that grantees ensure that referral tracking protocols are in place prior to gatekeeper training; tailor training curricula to the specific needs of the audience to be trained; engage youth and families in decisions about program implementation and evaluation; improve upon or develop tracking systems to ensure that youth are connected with service; and implement targeted interventions for youth at higher risk for suicide, such as those involved with juvenile justice, in foster care, substance abuse agencies, and those seen in the emergency room as a result of self-injury.

The recent changes to the grant structure to emphasize tracking systems, use of surveillance data and collaboration with behavior healthcare providers put into practice many of these recommendations and grantees have continued to implement prevention strategies that incorporate these recommendations.

Findings from the current report suggest that the program efforts of many GLS grantees include:

- The use of surveillance data on suicide and suicide attempts within youth-serving systems such as behavioral health, juvenile justice, and foster care.
- Embedding effective suicide prevention and practices in states, tribes, and colleges for sustainable effects.

- Ensuring that referral protocols are in place and mental health services are available, prior to training gatekeepers to identify youth at risk for suicide.

The National Outcomes Evaluation has also made strides towards addressing the outlined recommendations in the 2013 Report to Congress, most notably through special analysis combining evaluation data with secondary data sources have demonstrated impact on suicide and suicidal behavior. Findings from the GLS Program evaluation have addressed gaps in understanding about the proximal and intermediate outcomes associated with the program and helped to prepare for evaluation of more long-term impacts.

Evaluation findings from the current report suggest a need for further evaluation related to:

- The obstacles grantees face in both developing tracking systems and ensuring that youth are connected with services
- Effective training approaches to building capacity to identify youth at-risk for suicide
- Cost savings associated with implementation of youth suicide prevention strategies
- Which prevention and intervention strategies work on a broad scale and for particular populations at risk

FUTURE DIRECTIONS

To further inform the field and assess program impact, the evaluation design, data collection procedures, and instruments have been reviewed and enhanced. Building on the evaluation findings to date, the updated design will provide a means of addressing current questions for the next stage of evaluation, focusing on new priority areas of inquiry important to SAMHSA, Congress, and other suicide prevention stakeholders.

Specifically, the evaluation modifications are designed determine how to improve the adoption, fidelity of implementation, and sustainability of effective suicide prevention programs with attention to efficient ways of training various types of gatekeepers and providers. To this end, impact, outcome, and implementation studies will be added to enhanced core evaluation components to (1) better understand the impact of training models; (2) evaluate the continuity of supports for at-risk youth; and (3) examine the impact of increased emphasis on suicide safer environments. The evaluation questions that will be examined through each of these efforts are summarized below.

Training Study

- What type of trainings are grantees implementing? Which populations are being trained? What are the proximal outcomes associated with training participation?
- Are there differences in effectiveness between alternative training delivery modes on identification and referral of at-risk youth (e.g., web-based, in-person)? Are trainings more impactful with certain types of trainees (e.g., people that teach in schools; males vs. females; trainees of different ages)?
- What is the effect of training delivery on identification of youth at risk for suicide and subsequent referral? Do web-based trainees feel more equipped to and identify more at-risk youth and refer than in-person trainees?

Continuity of Care Study

- What proportion of youth identified at risk by GLS grantees receives follow-up support?
- Do youth characteristics (e.g., gender, race, and ethnicity) or setting of identification predict receipt and adherence to follow-up care? Does the proportion of follow-up care increase over the duration of the GLS Program?
- How does the identification, referral, and service experience impact follow-up adherence after an early identification? What factors are associated with continuity of care/adherence from the youth perspective? What are the early identification and referral practices that are effective in ensuring follow-up care adherence?

Suicide Safer Environment Study

- What specific elements and activities of a suicide safer environment framework are being implemented by mental health providers involved in the GLS State/Tribal Program? What suicide safer care activities are being implemented by campus health services?
- Are suicide attempts and deaths by suicide reduced for youth receiving services by GLS mental health providers compared to non-GLS affiliated mental health providers? Are hospital readmissions and deaths by suicide lower for youth (at risk for suicide) who utilize service providers that have adopted NSSP Goal 8 and 9 activities? Are access to and utilization of campus mental health services higher for students on campuses that integrate clinical screenings or suicide assessments into campus primary and mental health care?

The National Outcomes Evaluation of the GLS Program has resulted in the largest repository of youth suicide prevention data in the United States and has helped communities and decision makers improve suicide prevention efforts by using data informed decision making. Building on information gathered through the evaluation on the activities, achievements, and impacts of the GLS Program summarized in this report, upcoming modifications to the evaluation will further the field of suicide prevention and mental health promotion by striving to understand what works, why, and under what conditions. Resulting data will be analyzed using methodological approaches that allow inferences to be drawn about the efficacy or effectiveness of GLS Programs in affected versus nonaffected communities. It will allow SAMHSA to continue to build the evidence base for suicide prevention, address contributing factors to suicide deaths and attempts, and establish standards for developing, implementing, and evaluating suicide prevention programs. This report summarizes the evaluation of SAMHSA's efforts to promote and implement comprehensive youth suicide prevention programs in order to reduce deaths by suicide and nonfatal suicide attempts. To achieve lasting impact in these areas, comprehensive youth suicide prevention efforts require a strong, coordinated, and sustained response from communities and healthcare systems.

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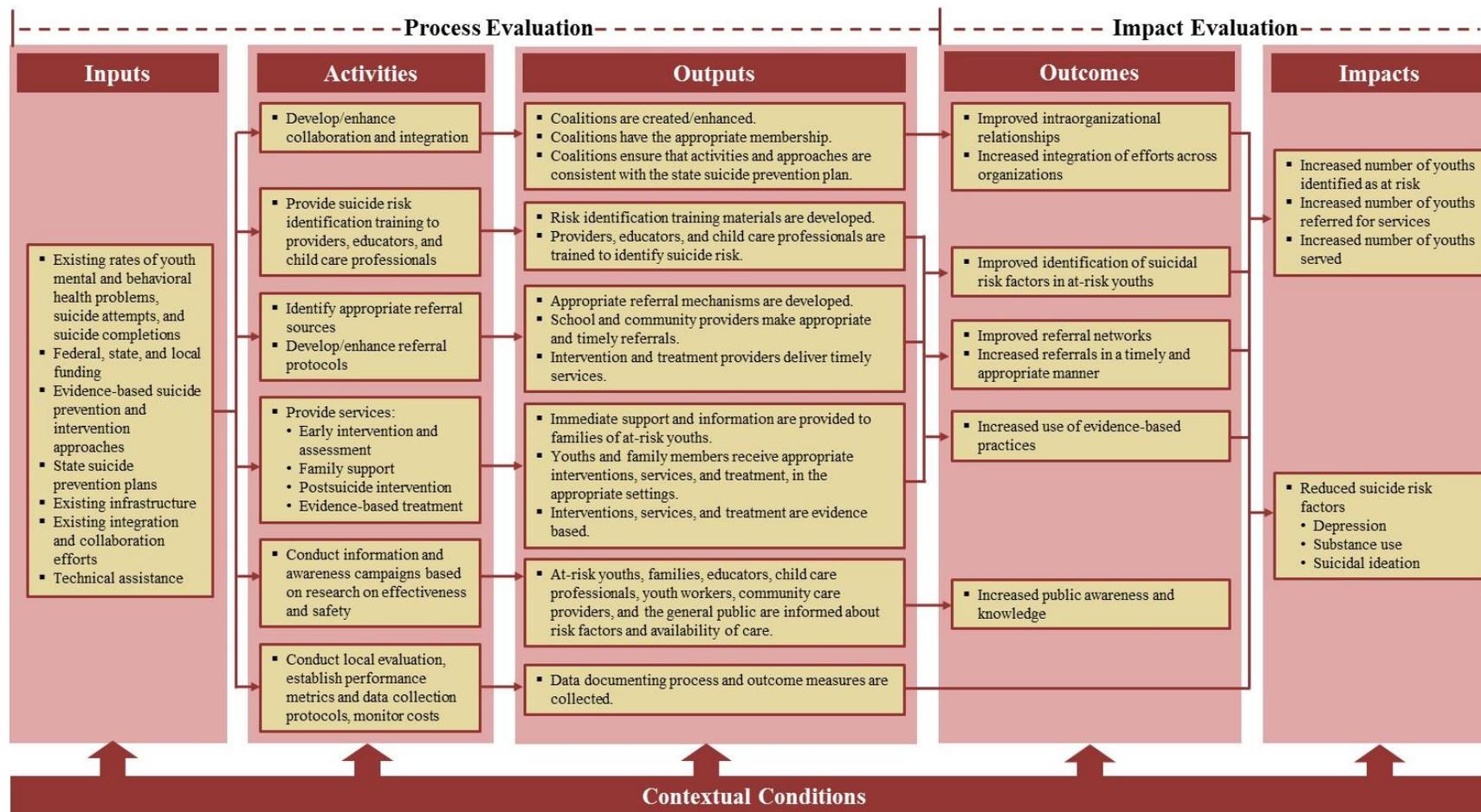
Appendix A

Evaluation Overview

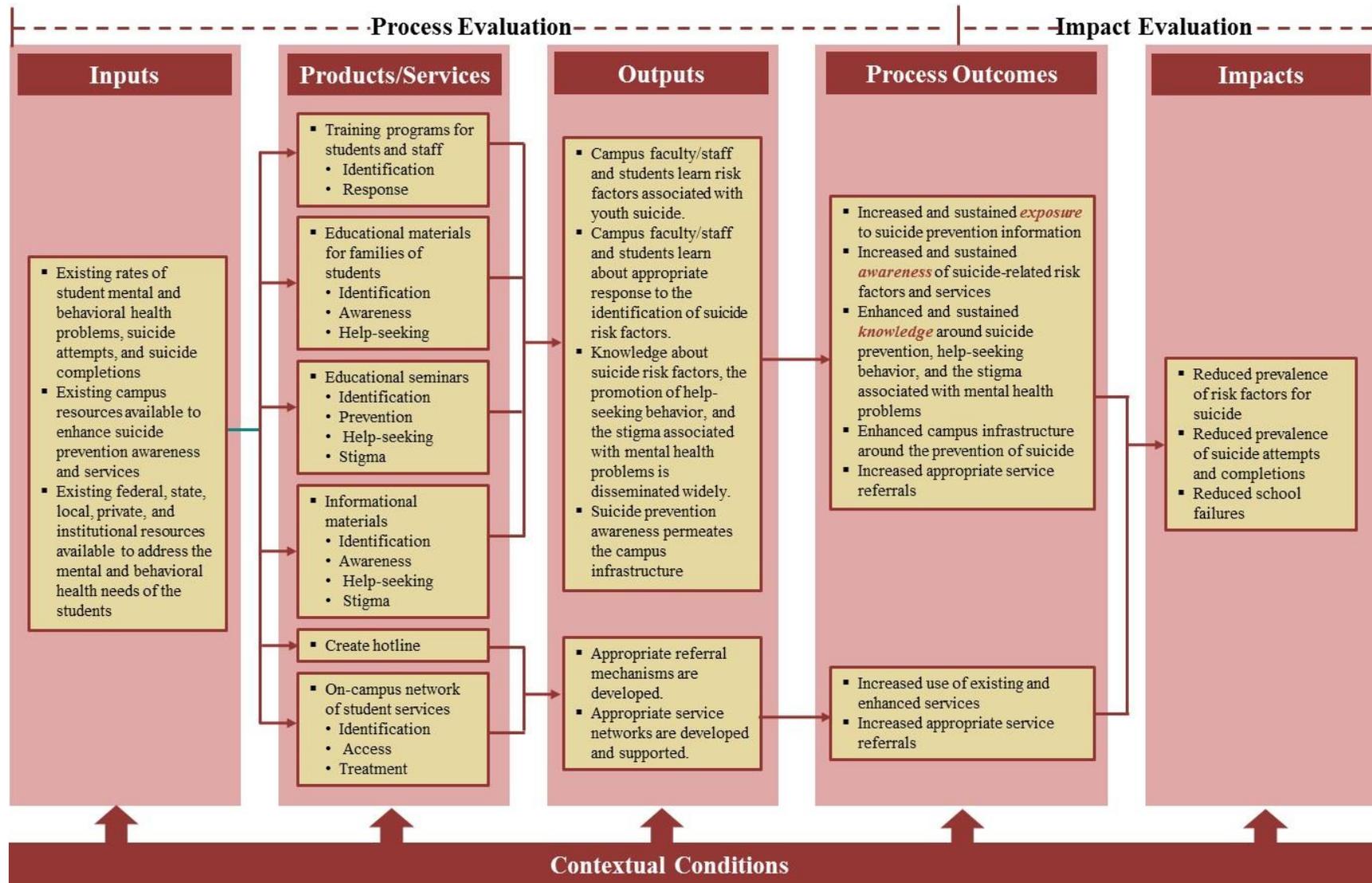


APPENDIX A. EVALUATION OVERVIEW

A.1 LOGIC MODELS: STATE/TRIBAL PROGRAM EVALUATION LOGIC MODEL



CAMPUS PROGRAM EVALUATION LOGIC MODEL



A.2 EVALUATION INSTRUMENTATION-OVERVIEW OF METHODS, RESPONDENTS, AND DATA COLLECTION, BY INSTRUMENT

The cross-site evaluation includes evaluation instruments that gather qualitative and quantitative data from state/tribal grantees and campus grantees from a variety of perspectives (project staff, trainees, gatekeepers/providers). Each instrument is designed to help understand program development and the overall effectiveness of these programs to affect change on proximal and intermediate factors related to youth suicide. Data submitted to the Suicide Prevention Data Center (SPDC) is available for immediate download to grantees. In addition, data highlights are displayed in aggregate and by site in the quarterly grantee summary reports posted on the SPDC.

The following section summarizes the methodology, administration, and data collected from each of the evaluation instruments. The instruments are presented in Table 1.

Table 1: Instrument Overview Organization

Instrument Overview Organization		Participation	
		State/Tribal	Campus
Program development and implementation	Prevention Strategies Inventory (PSI)	✓	✓
Training	Training Activity Summary Page (TASP) *formerly the TES Cover Page	✓	✓
	Training Exit Survey Individual Forms (TES) <i>Gatekeeper, Core, Clinical, & Campus Connect</i> ⁸	✓	✓
	Training Utilization and Preservation Survey (TUP-S) *formerly the TUP-S and TUP-I	✓	✓ TUP-S Campus (TUP-S C)
	Training Utilization and Preservation Survey 6-Month Follow-up (TUPS-6 Month)	✓	
Early identification, referral, and follow-up	Early Identification, Referral, and Follow-up Individual Form (EIRF) <i>*formerly the Early Identification, Referral, and Follow-Up Survey (EIRF)</i>	✓	
	Early Identification, Referral, and Follow-up Screening Form (EIRF-S)	✓	

⁸ Campus Connect is a training activity for campuses only. State and tribal grantees do not complete Campus Connect forms.

Table 1: Instrument Overview Organization (continued)

Instrument Overview Organization		Participation	
		State/Tribal	Campus
Exposure, knowledge, and self-efficacy	Short Message Service Survey (SMSS) <i>*formerly the SPEAKS</i>		✓
	Student Awareness Intercept Survey (SAIS)		✓
Collaboration and network development	Referral Network Survey (RNS)	✓	
	Management Information Systems (MIS)		✓

A.3 PROGRAM DEVELOPMENT AND IMPLEMENTATION

Prevention Strategies Inventory (PSI)—Updated

The PSI is a web-enabled survey that captures all prevention strategies implemented by state/tribal grantees and campus grantees through their suicide prevention programs. PSI data include information about types of strategies, products distributed, target populations, and percentage allocations of funding across the major categories of strategies. State/tribal grantees and campus grantees enter prevention strategies under the following major categories: outreach and awareness; gatekeeper training; assessment, clinical, and referral training; life skills and wellness development, screening programs; hotlines and helplines; means restriction; policies and protocols; coalitions and partnerships; and other prevention strategies. In addition, state/tribal grantees report on an additional category, direct services and traditional healing practices. Each major strategy includes sub-strategies that enable grantees to further specify the type of strategy. The PSI also asks grantees to specify the total amount spent, to date, and the percentage of their budget allocated to each of the major strategies. In January 2014 the PSI was updated; strategy categories and sub-categories were revised, populations of focus response options were refined, and questions about evaluating strategies were removed.

The PSI is administered on a quarterly basis over the course of the grant period, in the month following the end of the quarter. Grantees acquiring a no-cost extension continue to submit PSI either quarterly or one final time at the end of their funding.

PSI data from all 178 state/tribal grantees across Cohorts 1–9 and 190 campus grantee programs across Cohorts 1-8 have been included in this Report to Congress. Table 2 describes the PSI.

Table 2: PSI Data Collection Overview

Prevention Strategies Inventory	
Method of administration and respondents	Web-based inventory accessed through the SPDC and completed by staff person most knowledgeable about prevention strategies implemented through the grantee's suicide prevention program (project director, project evaluator, or other staff)
Data collected	<ul style="list-style-type: none"> • Prevention strategies implemented • Target populations • Percent allocations of budget by major category
Dates of Administration	
State/Tribal Grantees	
Cohort 1	<ul style="list-style-type: none"> • Baseline survey administered in July 2007; final submission completed at end of grant period in September 2008
Cohort 2	<ul style="list-style-type: none"> • Baseline survey administered in July 2007; final submission completed at end of grant period in September 2009
Cohort 3	<ul style="list-style-type: none"> • Baseline survey administered in October 2007; final submission completed at end of grant period in May 2010
Cohort 4	<ul style="list-style-type: none"> • Baseline survey administered in April 2009; updated quarterly over the course of the grant period • Final submission completed at end of grant period in September 2011
Cohort 5	<ul style="list-style-type: none"> • Baseline survey administered in April 2010; final submission completed at end of grant period in September 2012
Cohort 6	<ul style="list-style-type: none"> • Baseline survey administered in April 2012; final submission to be completed at end of grant period in September 2014
Cohort 7	<ul style="list-style-type: none"> • Baseline survey administered in April 2013; final submission to be completed at end of grant period in September 2015
Cohort 8	<ul style="list-style-type: none"> • Baseline survey administered in January 2014; final submission to be completed at the end of grant period in September 2016
Cohort 9	<ul style="list-style-type: none"> • Baseline survey administered in January 2015; final submission to be completed at the end of grant period in September 2019

Table 2: PSI Data Collection Overview (continued)

Dates of Administration	
Campus Grantees	
Cohort 1	<ul style="list-style-type: none"> • Baseline survey administered in July 2007; final submission completed at end of grant period in September 2008
Cohort 2	<ul style="list-style-type: none"> • Baseline survey administered in July 2007; final submission completed at end of grant period in September 2009
Cohort 3	<ul style="list-style-type: none"> • Baseline survey administered in April 2009; final submission completed at end of grant period in September 2010
Cohort 4	<ul style="list-style-type: none"> • Baseline survey administered in April 2010; final submission completed at end of grant period in September 2012
Cohort 5	<ul style="list-style-type: none"> • Baseline survey administered in April 2012; final submission to be completed at end of grant period in September 2014
Cohort 6	<ul style="list-style-type: none"> • Baseline survey administered in April 2013; final submission to be completed at end of grant period in September 2015
Cohort 7	<ul style="list-style-type: none"> • Baseline survey administered in January 2014; final submission to be completed at end of grant period in September 2016
Cohort 8	<ul style="list-style-type: none"> • Baseline survey administered in January 2015; final submission to be completed at end of grant period in September 2017

A.4 SUICIDE PREVENTION TRAINING

Training data reflects data from training instruments implemented both before and after the 2013 modifications to the cross-site evaluation.

Training Activity Summary Page (TASP)—Updated

Formerly the Training Exit Survey (TES) Cover Page, the TASP collects aggregate-level data about trainings implemented by both state/tribal and campus grantees, including training zip codes. The TASP must accurately reflect the number of trainees and training activities in grantee suicide prevention programs. The TASP campus and state/tribal versions added questions to the TES Cover Page, about booster and follow-up training and the intended outcome for participants of the training. The state/tribal TASP added a question to collect the number of trainees within their primary role in each setting. Both versions of the TASP removed questions about whether the activity was a training program or a educational seminar/workshop. Each TASP must have a grantee-assigned training ID and each TASP must be entered into the SPDC within 2 weeks of the training activity. Grantees acquiring a no-cost extension continue to submit TASP until the end of their funding. Table 3 describes the TASP. Table 4 describes the TES Cover Page.

Table 3: Training Activity Summary Page Overview

Training Activity Summary Page	
Method of administration and respondents	Self-administered paper form completed by grantee of all GLS Suicide Prevention Program–sponsored training activities
Data collected	<ul style="list-style-type: none"> • Types of training activities conducted • Role of training participants • Primary intended outcome for participants in the training • Duration of training
Dates of Administration	
Training Activity Summary Page—State/Tribal grantees	
Cohort 4	Started October 2010; final submission completed at end of grant period in September 2011
Cohort 5	Started October 2010; final submission completed at end of grant period in September 2012
Cohort 6	Started October 2011; final submission completed at end of grant period in September 2014
Cohort 7	Started October 2012; final submission completed at end of grant period in September 2015
Cohort 8	Started October 2013; submission ongoing
Cohort 9	Started October 2014; submission ongoing

Table 3: Training Activity Summary Page Overview (continued)

Dates of Administration	
Training Activity Summary Page—Campus Grantees	
Cohort 3	Started October 2010; final submission completed at end of grant period in September 2011
Cohort 4	Started October 2010; final submission completed at end of grant period in September 2012
Cohort 5	Started October 2011; final submission completed at end of grant period in September 2014
Cohort 6	Started October 2012; final submission to be completed at end of grant period in September 2015
Cohort 7	Started October 2013; submission ongoing
Cohort 8	Started October 2014; submission ongoing

Training Exit Survey (TES) Individual Forms—Updated

The campus evaluation uses the TES Individual Forms to understand the trainees’ experience at trainings, their intended utilization of the information they learned, and self-efficacy to perform suicide prevention–related behaviors following the training. The TES Individual Forms (1) assess the content of training activities, (2) document the number of individuals trained and their characteristics, (3) examine training participants’ intended use of the skills and knowledge learned, and (4) measure participant confidence to use the skills they learned, as well as their expected preservation of this information (Table 4). The TES Individual Form was a paper-based instrument that campus staff distribute and collect after training events on an ongoing basis throughout the grant period but not during no-cost extensions.

In October 2010, the TES individual form was refined to collect information about anticipated behavior changes based on the type of training offered. The four TES modules were administered to trainees depending on the training provided: (1) TES Core, (2) TES Gatekeeper, (3) TES Clinical, and (4) TES Campus Connect.

TES data helped to meet Government Performance and Results Act (GPRA) requirements, as well as correlate with Transformation and Accountability (TRAC) indicators. As TES data was entered into the SPDC, a TRAC table was populated which grantees could use in entering their data onto the TRAC website. Because the maximum number of Training Exit Surveys (TES) that was approved by the Office of Management and Budget (OMB) has been reached; beginning with Cohort 6, grantees are no longer required to participate in the TES. Table 4 describes the TES.

Table 4: TES Data Collection Overview 2006-2015

Training Exit Survey	
Method of administration and respondents	Self-administered paper survey completed by participants of all GLS Suicide Prevention Program–sponsored training activities
Data collected	<ul style="list-style-type: none"> • Types of training activities conducted • Role of training participants • Knowledge and self-efficacy • Use and perceived impact of training
Dates of Administration	
Training Exit Survey—State/Tribal Grantees	
Cohort 1	Started June 2007; submission completed at end of grant period in September 2008
Cohort 2	Started June 2007; submission completed at end of grant period in January 2009
Cohort 3	Started October 2008; submission completed at end of grant period in September 2010
Cohort 4	Started April 2009; submission completed at end of grant period in September 2011
Cohort 5	Started February 2010; submission completed at end of grant period in September 2012
Cohort 6	N/A—The TES was discontinued with Cohort 6.
Cohort 7	N/A—The TES was discontinued with Cohort 6.
Campus Grantees	
Cohort 1	TES not collected
Cohort 2	TES not collected
Cohort 3	Started in October 2010; submission completed at the end of grant period in September 2011
Cohort 4	Started in October 2010; submission completed at end of grant period in September 2012
Cohort 5	Started November 2011; submission completed at end of grant period in September 2014
Cohort 6	Started December 2012; submission to be completed September 2015
Cohort 7	N/A—The TES was discontinued with Cohort 6

Training Utilization and Preservation (TUP) Interviews—Retired

The TUP-I was a qualitative interview conducted with a sample of individuals following their participation in a selected training activity funded by a state/tribal grantee’s program. The TUP-I assessed whether the knowledge, skills, and techniques learned through suicide prevention training were used and had an impact on youths (Table 5). From November 2007 through 2010, 606 TUP interviews were conducted. Aggregate TUP-I reports on special topics, including ASIST, QPR, and AMSR training curricula and on the experiences of participants who attended tribal-site sponsored trainings, have been developed and shared with grantees. Because of the large amount of TUP-I data collected from ASIST and QPR trainings and mental health and education staff, beginning with Cohort 6, grantees are no longer required to participate in the TUP-I.

Table 5: TUP Interviews Data Collection Overview

Training Utilization and Preservation Interviews	
Method of administration and respondents	Telephone-based interview with participants of a selected GLS Suicide Prevention Program–sponsored training activity
Data collected	<ul style="list-style-type: none"> • Respondent background information • Training content • Respondent’s training use and perceived impact • Useful components of the training • Potential barriers to and facilitators of applying knowledge and skills
Dates of Administration	
Cohort 1	Interviews started November 2007; submission completed at end of grant period in September 2008
Cohort 2	Interviews started November 2007; submission completed at end of grant period in January 2009
Cohort 3	Interviews started April 2009; submission completed at end of grant period in September 2010
Cohort 4	Interviews started in June 2009; submission completed at end of grant period in September 2011
Cohort 5	Started identification of possible trainings in November 2009; interviews only conducted with unique training types or special populations
Cohort 6	Participation not required

Training Utilization and Preservation Survey (TUP-S)—Updated and Training Utilization and Preservation Survey—Campus (TUP-S-C)—New

The TUP-S is a quantitative telephone survey administered to individuals who participate in a training activity and is delivered for state/tribal programs; the TUP-S-C is identical to the TUP-S except that it is delivered in campus programs. The TUP-S and TUP-S-C examine the use and

retention of participants’ knowledge, skills, and/or techniques learned through the training at approximately 3 months after the training. The TUP-S/TUP-S-C systematically measures gatekeeper behaviors and includes measures of self-efficacy, awareness, and education efforts, and, most importantly, suicide identification and referral behavior. The TUP-S instrument, revised in 2014, added questions about trainee resiliency and life skills awareness. The TUP-S/TUP-S-C also collects information about the referrals provided by the trainee, trainee knowledge of the first service accessed by the at-risk individual, and demographic information. The TUP-S/TUP-S-C consent-to-contact form is distributed at the end of training events to collect contact information from prospective participants. A random sample of trainees is selected to participate in the TUP-S/TUP-S-C approximately 3 months after their training, and the cross-site evaluation team administers the survey using Computer Assisted Telephone Interviewing (CATI) technology 3 months later. Table 6 describes the TUP-S/TUP-S-C. The TUP-S/TUP-S-C consent to contact is not collected by grantees during a no-cost extension.

Table 6: TUP-S Data Collection Overview

Training Utilization and Preservation Surveys	
Method of administration and respondents	Telephone survey administered to individuals who participated in a training activity as part of the state/tribal program
Data collected	<ul style="list-style-type: none"> • Use and retention of participants’ knowledge, skills, and/or techniques learned through the training • Self-efficacy, awareness, and education efforts • Suicide identification behavior • Referrals and/or supports provided by trainee • Services accessed by the at-risk individual
Dates of Administration	
State/Tribal Grantees	
Cohort 1	TUP-S not collected
Cohort 2	TUP-S not collected
Cohort 3	TUP-S not collected
Cohort 4	TUP-S data collection begins with this cohort; interviews began January 2011 and were completed at end of the grant period in September 2011
Cohort 5	Interviews began January 2011 and were completed at end of the grant period in September 2012
Cohort 6	Interviews began in January 2012 and were completed at end of the grant period in September 2014
Cohort 7	Interviews began in January 2013 and are to be completed at end of the grant period in September 2015

Table 6: TUP-S Data Collection Overview (continued)

Dates of Administration	
State/Tribal Grantees	
Cohort 8	Interviews began in January 2014 and are ongoing
Cohort 9	Interviews began in January 2015 and are ongoing
Campus Grantees	
Cohort 1	TUP-SC not collected
Cohort 2	TUP-SC not collected
Cohort 3	TUP-SC not collected
Cohort 4	TUP-SC not collected
Cohort 5	Interviews began in February 2014 and were completed at the end of grant period in September 2014
Cohort 6	Interviews began in February 2014 and are to be completed at the end of grant period in September 2015
Cohort 7	Interviews began in February 2014; interviews ongoing
Cohort 8	Interviews began in January 2015; interviews ongoing

Training Utilization and Preservation Survey 6-Month Follow-Up (TUP-S-6 Months)—New

The TUP-S-6 Month is a follow-up instrument that is conducted with a random sample of trainees who participated in the TUP-S. The TUP-S-6 Month is identical to the TUP-S without the demographic questions, and is implemented in state/tribal programs. Like the TUP-S, the TUP-S-6 Month examines participant knowledge, skills, and techniques retained 6 months after the original training. TUP-S-6 Month participants must have participated in the TUP-S and agreed to be recontacted 3 months following the TUP-S implementation.

A.5 EARLY IDENTIFICATION, REFERRAL, AND FOLLOW-UP

EIRF data collection requires grantees to develop data collection systems to track the identification and outcomes of referrals made for youth identified as at risk of suicide through GLS Program activities. Grantees use electronic data collection systems, paper forms, or web-based survey tools to collect this information. In addition to documenting the identifications made as a result of GLS gatekeeper trainings and mental health screenings, EIRF data collection can:

- initiate a sustainable improvement in suicide prevention infrastructure, as a result of the changes needed to track identification, referral, and service delivery information, and
- increase the percentage of at-risk youths receiving services, by identifying gaps and breakdowns in the referral network.

Early Identification, Referral, and Follow-Up Individual Form (EIRF)—Updated

The purpose of the EIRF is to collect individual-level information on youth whom state and tribal GLS programs have identified as being at risk of suicide either through a GLS sponsored screening or by a GLS trained gatekeeper. Grantees are responsible for collecting and submitting EIRF data on an ongoing basis and during any no-cost extension. Data includes the (1) youth EIRF participant ID and demographics, (2) identification details (i.e. setting, source, location, and date of the identification), (3) referral details (i.e. date, whether the referral was for mental health services or other supports), (4) for mental health referrals, details of the first follow up appointment, including if the service was received and the details of the service; and (5) details of the second follow-up appointment following the first service.⁹ Information regarding the first service appointment should be obtained within 3 months of the date of referral; information regarding the second service appointment should be collected within 3 months of the date of the first service appointment.

Early Identification, Referral, and Follow-Up Screening Form (EIRF-S)—Updated

The EIRF-S collects aggregate-level information from GLS grantees on the youth they identified as at-risk of suicide through GLS sponsored screenings. GLS grantees implementing screening tools to identify at-risk youth are required to complete both the EIRF-S and the EIRF-I throughout the duration of the grant period and any no-cost extension. The EIRF-S is to be completed (1) once per each implementation of a screening tool in a group setting and (2) once a month for one-on-one screenings.¹⁰ GLS program staff must obtain adult consent in advance of the screening in order for youth to participate. In addition, grantees must complete the EIRF-I for youth identified as at-risk of suicide by the screening tool. Data from the EIRF-S includes (1) information about the type of screening tool being used, (2) the number of consent forms distributed, returned, and permitting screenings, (3) an unduplicated count of the number of youth screened, (4) an unduplicated count of youth initially screened as positive but then determined to be non-positive in a one-on-one screening debrief, (5) an unduplicated count of youth who are screened to be at risk of suicide , and (6) aggregate level demographic information about the youth being screened. Table 7 describes the EIRF.

⁹ Peer identifications from one Tribal community, submitted prior to FY 2011, have been removed due to data-quality issues. A total of 201 early identifications were excluded from this analysis.

¹⁰ For one-on-one screenings, grantees are asked to complete the EIRF-S form once per month with aggregate information about the total number of youth screened using the individual screening tool for that month.

Table 7: EIRF Data Collection Overview

Early Identification, Referral, and Follow-Up	
Method of administration and respondents	Project or evaluation staff collect EIRF data manually or by extraction from electronic medical records. They have two options for data submission: (1) upload an electronic data set containing EIRF data into the SPDC or (2) enter individual cases into the SPDC
Data collected	<ul style="list-style-type: none"> • Source and setting of early identification • At-risk youth characteristics • Mental health and non-mental health referrals • Mental health services received at the initial and second appointment
Dates of Administration	
Cohort 1	Started September 2006; submission completed at end of grant period in September 2008
Cohort 2	Started April 2007; submission completed at end of grant period in January 2009
Cohort 3	Started January 2008; submission completed at end of grant period in September 2010
Cohort 4	Started March 2009; submission completed at end of grant period in September 2011
Cohort 5	Started November 2009; submission completed at end of grant period in September 2012
Cohort 6	Started November 2011; submission completed at end of grant period in September 2014
Cohort 7	Started November 2012; submission completed at end of grant period in September 2015
Cohort 8	Started January 2014; submission ongoing
Cohort 9	Started January 2015; submission ongoing

A.6 EXPOSURE, KNOWLEDGE, AND SELF-EFFICACY

Student Awareness Intercept Survey (SAIS)

The SAIS is a self-administered, web-based student survey with baseline and follow-up versions administered as part of a case study of a campus social marketing campaign (SMC) for suicide prevention. Both versions of the SAIS examine student knowledge of suicide myths and facts, attitudes about help-seeking, perceptions of the value of student mental health and wellbeing to the campus, coping and help-seeking behaviors, recognition of suicide warning signs, awareness of campus resources, and demographic characteristics. The follow-up survey include three additional items tailored to specific SMC activities and messaging to assess exposure to the SMC, as well as comprehension and recall of messaging. Each survey takes approximately 15 minutes to complete.

The SAIS baseline and follow-up versions were administered in August 2014. For the baseline survey, campus program staff conducted observations of student activity on campus to identify a time- and location-based sampling frame for in-person recruitment. One week prior to the launch of the SMCS, the case study team conducted a site visit to the campus to recruit baseline respondents using an in-person intercept method. The team of two, with assistance from five program staff trained on the intercept procedure, recruited students in the main dining hall on campus until a convenience sample of 400 respondents was achieved (between 9:00 am and 2:00 pm). Respondents received a \$10 gift card to Starbucks upon completing the survey.

Recruitment for the follow-up survey began one day after the two-week SMC period ended. Baseline respondents who consented to be contacted at follow-up were recruited by e-mail through a four-stage process. Upon submitting the follow-up survey, respondents received an email containing a \$10 electronic gift code to Amazon.

Suicide Prevention, Exposure, Awareness, and Knowledge Survey (SPEAKS)—Retired

The Suicide Prevention Exposure, Awareness, and Knowledge Survey (SPEAKS) was a web-based survey consisting of two versions (Student and Faculty/Staff). The survey was part of the campus cross-site evaluation from FY 2007 to FY 2012 and was administered a total of eight times across campus Cohorts 1–5 (see Table 8). The survey employed stratified random sampling at each administration wave to recruit students and faculty/staff respondents on each campus. It took approximately 15 minutes to complete and included multiple-choice, Likert-type, and true/false items.

The purpose of the SPEAKS was to assess (1) exposure to and participation in suicide prevention program activities, (2) attitudes surrounding suicide, depression, and help-seeking, (3) knowledge of myths and facts about suicide, (4) availability of resources available to students in need, (5) student coping and help-seeking behaviors, and (5) respondent demographic information.

Across the eight administration waves, the cross-site team used e-mail only and mixed-mode (letter + e-mail) recruitment strategies with students, as well as four incentive conditions, to assess and potentially improve student response rates. Incentive conditions included the following: no incentive, \$5 to each respondent, a lottery drawing, and \$1 prepaid token incentive. Across waves, the cross-site team distributed up to \$1,000 in incentives to students from each campus. Ultimately, the combination of a mixed-method recruitment strategy and \$1 prepaid token of appreciation resulted in the highest student responses rates, which averaged about 21 percent. Faculty and staff did not receive incentives and were recruited via e-mail only.

Table 8: SPEAKS Data Collection Overview

Suicide Prevention Exposure, Awareness, and Knowledge Survey			
Respondents	Self-administered web-based survey completed by faculty, staff, and students from GLS-funded campuses		
Data Collected	<ul style="list-style-type: none"> • Exposure to or participation in suicide prevention activities on campus • Knowledge of suicide and awareness of referral resources • Stigma toward mental health and suicide • Respondent demographics 		
Dates of Administration	Faculty/Staff Methodology	Student Methodology	Student Incentive Structure
Fall 2007: Administration 1 (Cohorts 1 and 2; n=51)	Four-stage e-mail approach	Four-stage e-mail approach	Lottery or \$5 to each student
Spring 2008: Administration 2 (Cohort 2; n=33)			
Fall 2008: Administration 3 (Cohort 1; n=18)			
Spring 2009: Administration 4 (Cohort 2; n=31)			
Spring 2010: Administration 5 (Cohorts 3 and 4; n=35)		Mixed mode; four-stage e-mail approach and standard introductory letter	\$1 token incentive to each invited respondent mailed with standard letter
Spring 2011: Administration 6 (Cohorts 3 and 4; n=35)		Mixed mode; four-stage e-mail approach and standard introductory letter	\$1 token incentive to each invited respondent mailed with standard letter
Spring 2012: Administration 7 (Cohorts 4; n=6)		Mixed mode; four-stage e-mail approach and standard introductory letter	\$1 token incentive to each invited respondent mailed with standard letter
Fall 2012: Administration 8 (Cohort 5; n=19)		Mixed mode; four-stage e-mail approach and standard introductory letter	\$1 token incentive to each invited respondent mailed with standard letter

In all, 108 campuses participated in the Student Version and 105 participated in the Faculty/Staff Version¹¹.

Table 9 describes provides the number of surveys administrations and completions, by cohort.

Table 9: SPEAKS Administrations and Survey Completions

	Number of SPEAKS Administrations	Number of Participating Campuses	Student Completions	Faculty/Staff Completions
Cohort 1	2	20	5,776	1,776
Cohort 2	2	33	14,561	5,218
Cohort 3	2	16	6,803	2,314
Cohort 4	3	21	8,804	3,588
Cohort 5	1	18	3,537	1,560
Totals			39,481	14,456

A.7 COLLABORATION AND NETWORK DEVELOPMENT

Referral Network Survey (RNS)—Updated

The RNS has been administered to state/tribal grantees since Cohort 1. Historically, grantees were asked to provide the contact information for the organizations they consider part of their referral network—an administrator and a supervisor from each organization were invited to participate in a phone-based survey. Beginning in 2014, the sampling methodology and scope of the RNS were revised to focus on the region where the grantee had the greatest intended impact based on the training data. Cohort 7 and Cohort 8 state/tribal grantees were asked to provide contact information for three to five key members of the referral network within the identified region. Respondents were contacted by phone and asked 1) to participate in the survey and 2) to provide contact information for people they make referrals to or receive referrals from. This snowball sampling continued until saturation or 27 total contacts. When the network was successfully compiled, respondents were sent an e-mail invitation to participate in the survey. After the first administration of the RNS, Cohort 7 grantees was asked to provide additional recommendations for network members—during Spring 2015, the respondents, including the newly identified members, were contacted. Respondents who previously completed the survey were asked to update any information and newly identified respondents, or individuals who had not completed the survey during the first administration were asked to complete the survey. Data gathered from the two administrations were compiled and shared with the grantees during Summer 2015. The same methodology will be implemented for Cohort 8 network members during Spring 2016.

Table 10 describes the RNS.

¹¹ A total of 14 campuses received two GLS grants and are therefore represented twice in the total count.

Table 10: RNS Data Collection Overview

Referral Network Survey	
Method of administration and respondents	Prior to the 2011 administration the survey was web-based accessed through a website link sent via e-mail to an administrator and a supervisor from each referral network agency identified by project staff. Between 2011 and 2013, the survey was conducted via telephone with an administrator and a supervisor. Beginning in 2014, one respondent from each organization identified via snowball sampling was invited to participate in a web-based survey.
Data collected	<ul style="list-style-type: none"> • Respondent and agency background information • Agency linkages and collaboration • Quality of collaborations between agencies
Dates of Administration	
Cohort 1	First administration June 2007; second administration March 2008
Cohort 2	First administration September 2007; second administration September 2008; final administration May 2009
Cohort 3	First administration March 2008; second administration May 2009; final administration March 2010
Cohort 4	First administration May 2009; second administration May 2010; final administration May 2011
Cohort 5	First administration May 2010; second administration May 2011; final administration May 2012
Cohort 6	First administration May 2012; second administration May 2013
Cohort 7	First administration February 2014; second administration May 2015
Cohort 8	First administration May 2015; second administration May 2016
Cohort 9	Discontinued

Management Information Systems (MIS) Data Abstraction and Submission— Updated

The original MIS activity required campus grantees to submit existing data elements a total of three times across the grant period. The requested elements included (1) total student body enrollment, (2) first- to second-year student/freshman retention rates, (3) availability of campus mental health services, and (4) student use of campus mental health services (unduplicated). In an effort to identify patterns over time, the MIS activity was updated for FY 2014 to request data for the four academic years (AYs) prior to grant receipt. In addition, two new variables related to suicide were added to the activity: the number of suicide attempts among enrolled students and the number of student suicide completions. Campuses reported each data element for the AYs requested.

Campuses complete the MIS activity once per year of grant funding at the end of the AY in July over a period of 2 weeks. The breadth of information collected depends on the existing data sources available on campus and the types of information tracked. In year 1 of grant funding, campuses complete the MIS-baseline activity, which requests data for the current AY (when funding was

received) and the four AYs prior to grant funding. Follow-up administrations occur in years 2 and 3 of grant funding and request data elements for only the current AY. Beginning with the 2015 administration of the MIS, enrollment and retention information was gathered from Integrated Postsecondary Education Data System (IPEDS) (NCES, 2015), rather than directly reported into the MIS from the grantee in an effort to increase consistency across grantees and reduce burden. In addition, responses that were previous open ended were shifted to check boxes to reduce the recoding required to analyze the data.

Learning more about campus data infrastructure can help identify gaps in existing data systems that might support suicide prevention efforts, as well as highlight the need for enhanced development and infrastructure of youth suicide prevention data. Table 11 provides an overview of the MIS administration.

Table 11: MIS Data Collection Overview

Management Information Systems (MIS) Data Extraction and Submission Process	
Method of administration and respondents	Beginning in Spring 2011, campuses began completing the MIS short form on the SPDC; in Spring 2014, campuses began submitting data for an expanded baseline period, along with two new suicide related variables
Data collected by AY	<ul style="list-style-type: none"> • Total student body enrollment • First- to second-year student/freshman retention rates • Unduplicated number of students who receive mental health services • Number of suicide attempts among enrolled students • Number of student suicide completions
Dates of administration	Number of Grantees
AY 2005-2006: Administration 1	n=21
AY 2006-2007: Administration 2	n=49
AY 2007-2008: Administration 3	n=55
AY 2008-2009: Administration 4	n=29
AY 2009-2010: Administration 5	n=38
AY 2010-2011: Administration 6	n=35
AY 2011-2012: Administration 7	n=42
AY 2012-2013: Administration 8	n=60
AY 2013-2014: Administration 9	n=80
AY 2014-2015: Administration 10	n=74

A.8 REGULATORY COMPLIANCE

Several levels of federal regulatory compliance were required prior to implementing the cross-site evaluation of the state/tribal program. The clearances, which include review and approval by OMB and ICF’s federally registered IRB, ensure that the cross-site evaluation design and resulting information meet the reporting needs of the federal government and protect the rights, privacy, and resources of the grantees and their affiliated evaluation respondents. ICF also worked with the SAMHSA Government Project Officer (GPO) to align program indicators with GPRA indicators. The cross-site evaluation team has worked carefully to ensure continued compliance with all appropriate regulatory requirements.

Institutional Review Board (IRB)

ICF and grantee-level IRB review and approval have been obtained in an effort to fully protect the rights, privacy, and confidentiality of all individuals serving as respondents in cross-site data collection efforts. Data collection activities administered by the cross-site evaluation team fall within the purview of the ICF IRB, and data collected by grant-funded staff members and provided to the cross-site evaluation team are the responsibility of each grantee’s IRB entity. Because of this bifurcation in oversight, review and approval from multiple IRB entities are required. The ICF IRB complies with federal regulations and with international guidelines on human subjects research. The ICF IRB is registered with the Office for Human Research Protections within the U.S. Department of Health and Human Services and has been granted a Federal wide Assurance (FWA):

ICF IRB registration number: IRB00000954 (expires December 4, 2018)

ICF FWA number: FWA00000845 (expires April 13, 2019)

Table 12 details the history of IRB review and amendment for the cross-site evaluation protocol.

Table 12: IRB Review and Amendment History

IRB Activity	Date of Approval
Initial IRB application	July 13, 2006
New cohort IRB amendment	March 17, 2007
First annual IRB renewal	July 3, 2007
New cohort IRB amendment	September 10, 2007
Second annual IRB renewal	June 15, 2008
New cohort IRB amendment	December 4, 2008
Third annual IRB renewal	July 21, 2009
New cohort IRB amendment	October 29, 2009
Fourth annual IRB renewal	May 5, 2010
Fifth annual IRB renewal	July 11, 2011
Sixth annual IRB renewal	July 10, 2012

Table 12: IRB Review and Amendment History (continued)

IRB Activity	Date of Approval
Seventh annual IRB renewal	May 23, 2013
New cohort IRB amendment	September 27, 2013
Eighth annual IRB renewal	September 29, 2014

All grantees are provided the ICF IRB application and approval letters to facilitate the clearance of their local IRB. In addition, assigned technical assistance liaisons (TALs) provide technical assistance and guidance to all funded sites as they worked with their local IRB entities to maintain or update approval of cross-site evaluation data collection activities.

Office of Management and Budget (OMB)

OMB clearance was received on May 30, 2007, for 3 years. An extension of that clearance was approved by the OMB without changes, effective August 1, 2010 through August 29, 2013. New protocols were granted OMB approval through January 31, 2017.

Government Performance and Results Act (GPRA)

SAMHSA suicide prevention leaders and the evaluation team defined the GPRA indicators appropriate for the GLS Suicide Prevention Program during FY 2009. Since then, data are used to update these indicators quarterly and are published for the grantees and SAMHSA personnel through grantee summary reports (GSRs). GPRA indicator data will be available after the close of the fiscal year and will be included in the final draft of the annual report.

GPRA Indicators

- Percent of students, faculty, and staff indicating high knowledge about campus suicide prevention
- Increase the number of individuals trained in youth suicide early identification and prevention
- Increase the number of youths for suicide risk

A.9 DATA SECURITY, QUALITY, AND COLLECTION

Many levels of security and privacy have been built into the systems utilized for data collection, storage, and management. Additionally, a specific set of procedures have been implemented to monitor data quality. It is of critical importance to the cross-site evaluation team that data remains either anonymous or confidential and that data quality is not compromised.

Data Security

Cross-site evaluation information is collected and stored through a web-based data collection and management system called the Suicide Prevention Data Center (SPDC). There are four levels of security that are maintained for the SPDC to help safeguard against unauthorized access to information, and protect the anonymity of respondents.

- *Anonymity.* Participant ID numbers are generally collected as a substitute for identifying information. If a data collection activity requires obtaining personally identifiable information, this information is stored separately from the participants' responses. The personal information is destroyed as soon as possible following procedures approved by ICF International's IRB. Additionally, summary information based on fewer than 10 cases is not made available to users.
- *Controlled Access.* Access and utilization of the SPDC is controlled at several levels so that access is limited to authorized users. To access any part of the SPDC, a unique registered username and password is required. There are various levels of access to the SPDC; this makes it possible to restrict the ability to download data to certain users as appropriate. For each grantee, an individual is assigned administrative responsibility and works with the cross-site evaluation team to monitor his/her site's activities on the SPDC. Grantees are only able to access their own site's data; they are not able to view other grantee's information or reports.
- *Database Security.* The SPDC and all data stored in the central repository is hosted by a secure website. The data are secured at the database level, and data are stored in a database server and protected using the server's security systems. ICF International utilizes a file security system that requires permissions, database login control, and LAN login security. Workstations with access to data systems are password protected.
- *Interview Data.* Recordings and transcripts from key informant interviews are stored on ICF International's secure server. The same security precautions as those described, above, for databases are employed. Additionally, any identifying information collected for the sole purpose of administering incentives is stored separate from the database that contains the interview transcripts and summary reports. All consent-to-contact forms are stored in a locked cabinet.

Data Quality Monitoring

The following data quality monitoring procedures have been created and implemented by the cross-site evaluation team: (1) automatic, built-in checks during data entry, (2) ongoing examination following data submission, and (3) customary checks during data processing and reporting processes.

- The SPDC's web-enhanced data entry mechanism has internal procedures to check the integrity, consistency, and quality of the data. These include the following quality assurance features: automated skip patterns, fields with validation restrictions, and popup notifications that indicate missing or potentially erroneous data. Sites receive immediate feedback from the system during the data entry process and grantees are able to make on-the-spot corrections.
- Once data have been uploaded to the SPDC server, data reports are automatically generated and made available on the data repository. The reports confirm that data were received and provide up-to-date response rates. As part of their technical assistance responsibilities, TALs review submitted data on a monthly basis and contact sites if there are any problems with their data or if data are missing. Uploaded data that do not meet consistency checks are returned to the local site for correction; these data issues are tracked until data are reentered correctly.

- The cross-site evaluation team downloads and processes data to generate several reports on a semi-quarterly basis. Additional quality checking procedures are implemented to generate a Data Issue Report (DIR). The DIR is based on a list of issues developed for each instrument that are particularly important for the analysis, prone to present quality problems, and feasible to be corrected by the grantee. TALs review the problems with the sites, providing additional technical assistance around data collection and maintenance, and coordinate the appropriate corrective action with them, including resubmission of the data if necessary.

Suicide Prevention Data Center (SPDC)

Cross-site evaluation data is collected through a web-based data collection and management system called the Suicide Prevention Data Center (SPDC). The primary functions of the SPDC are to:

- enable data entry through web-based surveys and uploadable spreadsheets;
- store data collected from cross-site evaluation instruments;
- provide real-time access to data sets;
- enable monitoring of cross-site evaluation participation with tools, such as response monitoring tables and data collection timelines;
- provide information and training on implementation of the evaluation, including instrument manuals, data collection timelines, and recordings of evaluation training webinars; and
- provide reports for local data dissemination.

The levels of security associated with the SPDC assist in protecting unauthorized access to data, and the anonymity of survey respondents.

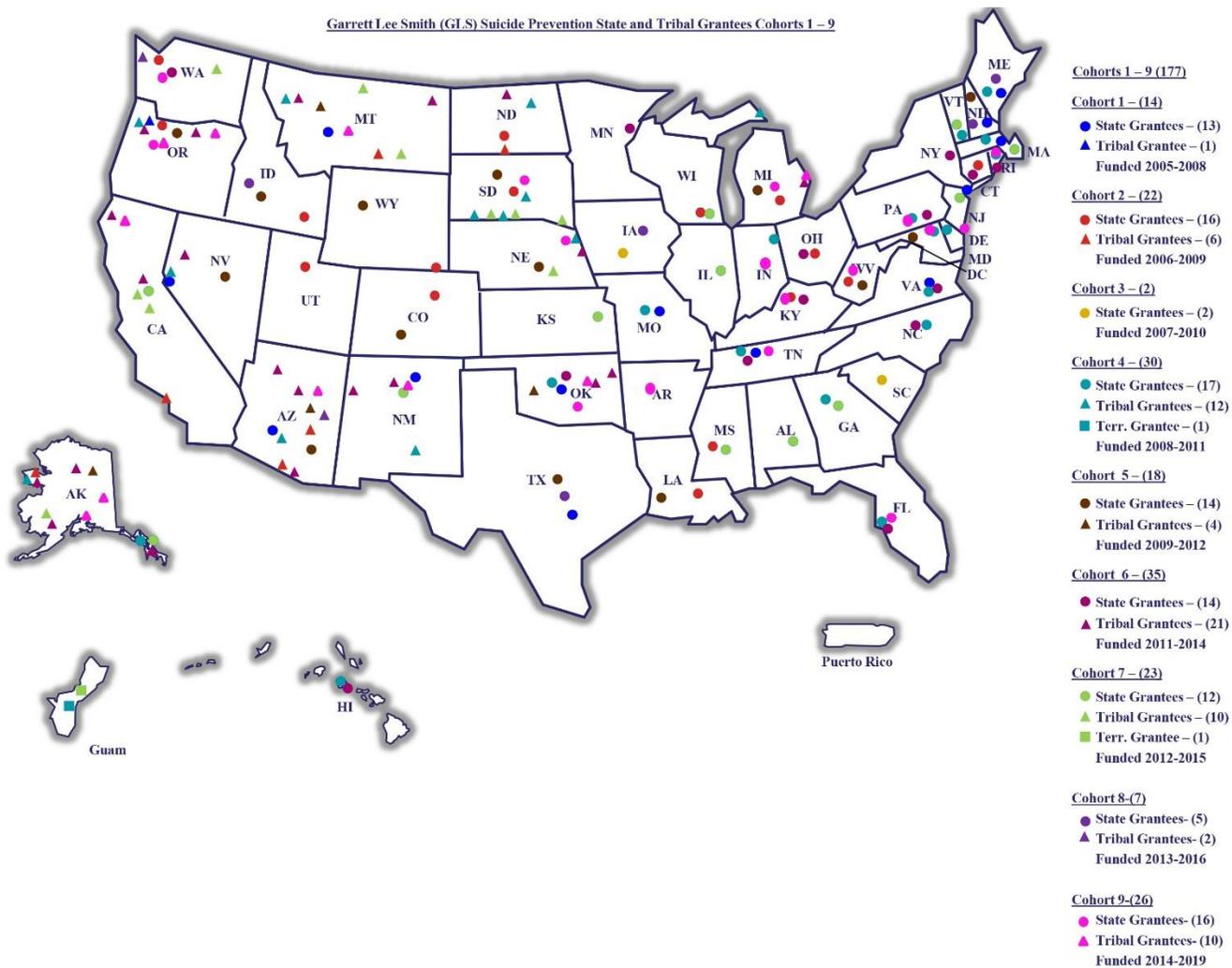


Appendix B

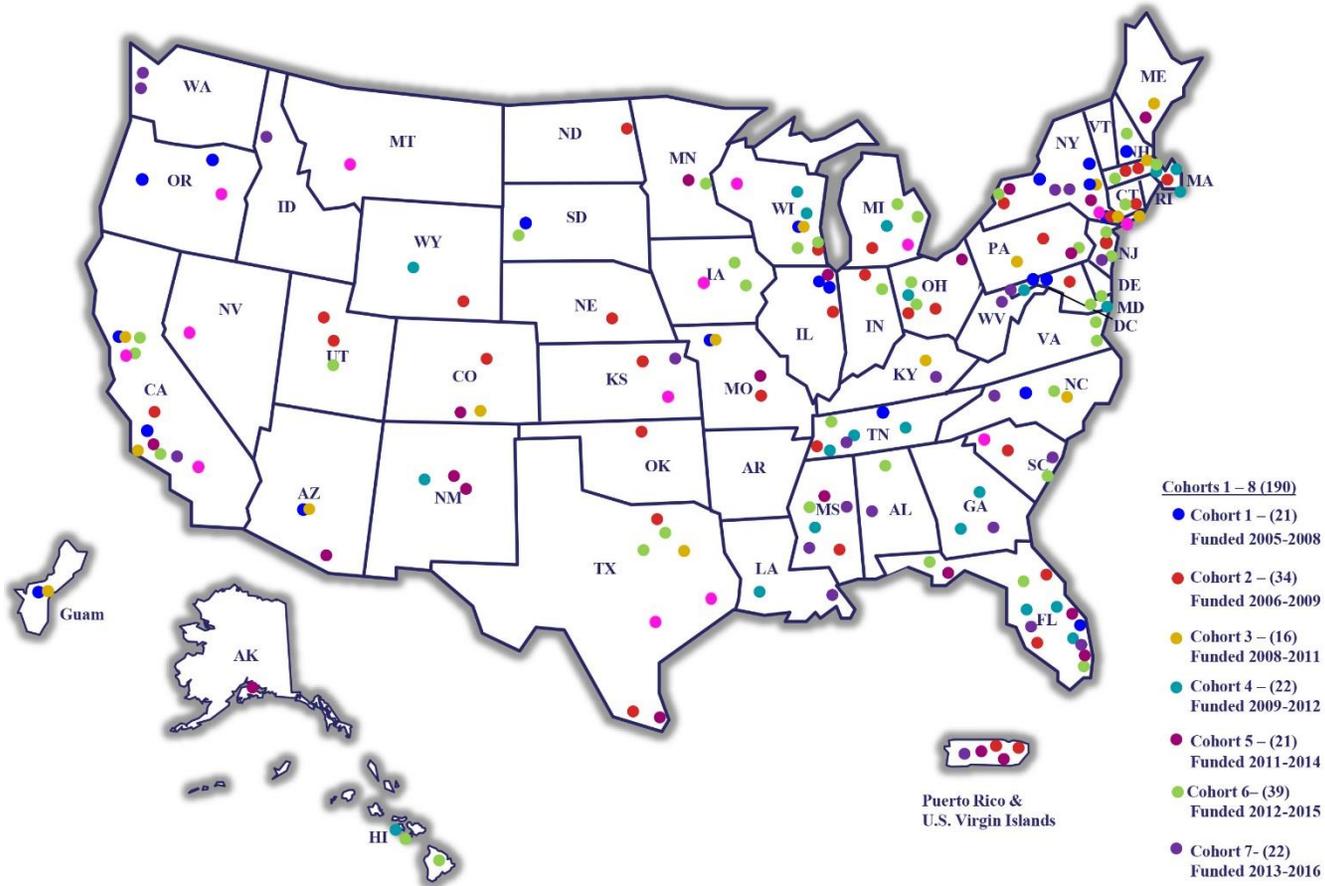
Grantee Participation Maps and Tables



APPENDIX B. GRANTEE PARTICIPATION MAPS AND TABLES



Garrett Lee Smith (GLS) Suicide Prevention Campus Grantees Cohorts 1-8



PSI DATA

Table 1. Number of Grantees Submitting PSI Data, by Cohort and Type of Grantee

PSI Data Submitted			
Cohort	State	Tribal	Campus
1	13 of 13	1 of 1	21 of 21
2	16 of 16	6 of 6	34 of 34
3	2 of 2	0 of 0	16 of 16
4	18 of 18	12 of 12	22 of 22
5	14 of 14	4 of 4	21 of 21
6	16 of 16	21 of 21	38 of 40
7	13 of 13	9 of 10	22 of 22
8	5 of 5	2 of 2	16 of 16
9	16 of 16	9 of 10	N/A

Source: Prevention Strategies Inventory, October 2006–July 2015; State/Tribal Cohorts 1–9 and Campus Cohorts 1–8.

TASP DATA

Table 2. Number of Grantees Submitting TASP* Data, by Cohort and Type of Grantee

TASP Data Submitted			
Cohort	State	Tribal	Campus
1	13 of 13	1 of 1	21 of 21
2	14 of 16	6 of 6	34 of 34
3	2 of 2	0 of 0	16 of 16
4	18 of 18	11 of 12	22 of 22
5	14 of 14	4 of 4	21 of 21
6	16 of 16	21 of 21	26 of 40
7	13 of 13	3 of 10	15 of 22
8	5 of 5	0 of 2	10 of 15
9	11 of 16	6 of 10	N/A

*formerly the TES Cover Page.

Source: TES cover page data, October 2006–July 2015; State/Tribal Cohorts 1–9 and Campus Cohorts 1–8.

Campus Cohorts 1 and 2 implemented the Training Activity Report (TAR) which was modified to go along with the TES individual forms and the TES cover page that state/tribal grantees were already using.

TES DATA

Table 3. Number of Grantees Submitting TES Individual Form Data, by Cohort and Type of Grantee

TES Individual Form Data Submitted			
Cohort	State	Tribal	Campus
1	13 of 13	1 of 1	N/A
2	15 of 16	6 of 6	N/A
3	2 of 2	0 of 0	13 of 16
4	18 of 18	10 of 12	17 of 22
5	14 of 14	4 of 4	21 of 21
6	N/A	N/A	33 of 39
7	N/A	N/A	N/A
8	N/A	N/A	N/A

Source: TES individual form data, October 2006–July 2014; State/Tribal Cohorts 1–5 and Campus Cohorts 3–6. Campus grantees started implementing the TES individual forms in the middle of Campus Cohort 3 grantees’ funding cycle. The TES individual forms were discontinued for state and tribal grantees after Cohort 5.

TUP-S DATA

Table 4. State and Tribal Grantees Participating in TUP-S, by Cohort

Cohort	TUP-S Data Submitted		TUP-S Consent-to-Contact Forms Submitted	
	State	Tribal	State	Tribal
1	N/A	N/A	N/A	N/A
2	N/A	N/A	N/A	N/A
3	N/A	N/A	N/A	N/A
4	15 of 18	4 of 12	16 of 18	6 of 12
5	13 of 14	3 of 4	14 of 14	3 of 4
6	14 of 16	15 of 22	15 of 16	13 of 22
7	11 of 13	5 of 10	7 of 13	3 of 10
8	4 of 5	1 of 2	4 of 5	1 of 2
9	2 of 16	1 of 10	6 of 16	6 of 10

Source: Training Utilization and Preservation Survey, October 2010 through July 2015; Cohorts 4–9. Administration of the Training Utilization and Preservation Survey began during FY 2011; therefore, sites from Cohorts 1–3 did not participate in this particular data collection. The TUP-S requires about 5 months from the date of the training to when data for the TUP-S are available. TUP-S respondents are contacted approximately 3 months after the training and data are available one to two months after. Some grantees have to secure IRB approval before conducting training and distributing the TUP-S consent to contact forms, which may cause a delay in grantee participation in this data collection activity. Additionally, grantees may submit consent to contact forms past the window for making follow-up calls and may not have data for those trainings.

Table 5. Campus Grantees Participating in TUP-S, by Cohort

	TUP-S Data Submitted	TUP-S Consent-to-Contact Forms Submitted
Cohort		
1	N/A	N/A
2	N/A	N/A
3	N/A	N/A
4	N/A	N/A
5	7 of 21	7 of 21
6	22 of 39	24 of 39
7	12 of 22	7 of 22
8	4 of 15	12 of 15

Source: Training Utilization and Preservation Survey, January 2014 through July 2015; Cohorts 5–7. Campus administration of Training Utilization and Preservation Survey began during FY 2014; therefore, sites from Cohorts 1 to 4 did not participate in this particular data collection. The TUP-S requires about 5 months from the date of the training to when data for the TUP-S are available. TUP-S respondents are contacted approximately 3 months after the training and data are available one to two months after. Additionally, grantees may submit consent to contact forms past the window for making follow-up calls and may not have data for those trainings.

EIRF DATA

Table 6. Number of Grantees of Submitting EIRF Individual Form, by Cohort

Cohort	EIRF Individual Forms Submitted	
	State	Tribal
1	13 of 13	1 of 1
2	15 of 16	3 of 6
3	2 of 2	0 of 0
4	18 of 18	10 of 12
5	14 of 14	3 of 4
6	16 of 16	19 of 22
7	10 of 13	5 of 10
8	3 of 5	0 of 2
9	2 of 16	3 of 10

Source: Early Identification, Referral and Follow-Up form for states and tribes, October 2006 through July 2015; Cohorts 1–9. Grantees in Cohort 7 were slightly delayed in their participation compared to the level of participation of other cohorts at the end of the second year of funding. This may be a reflection of limited existing infrastructure for suicide prevention and tracking at-risk youth, as well as community-specific challenges obtaining buy-in for data collection among different departments or agencies.

SMSS DATA

Table 7. Number of Grantees Submitting SMSS Data by Cohort

SMSS Data Submitted	
Cohort	Campus
1	N/A
2	N/A
3	N/A
4	N/A
5	N/A
6	10 of 40
7	7 of 22

Source: Short Messaging Service Survey April 2014–July 2014; Campus Cohorts 6 and 7.

MIS DATA

Table 8. Number of Grantees of Submitting MIS Data by Cohort

MIS Data Submitted	
Cohort	Campus
1	21 of 21
2	34 of 34
3	16 of 16
4	22 of 22
5	21 of 21
6	39 of 40
7	21 of 22
8	16 of 16

Source: Management Information Data Submission and Abstraction Activity, Cohorts 1–8.

RNS DATA

Beginning in 2014, the RNS network respondents for Cohort 7 and 8 were determined via snowball sampling—the findings reflect respondents from all Cohort 7 and 8 networks, regardless of the survey response rate. Data from Cohorts 7 and 8 only were included in the current analysis.

Table 9. Number of Grantees Submitting RNS Data by Cohort

RNS Data Submitted		
Cohort	State	Tribal
1	9 networks	N/A
2	8 networks	N/A
3	1 network	N/A
4	15 networks	8 networks
5	10 networks	2 networks
6	16 networks	14 networks
7	11 networks	7 networks
8	5 networks	2 networks

Source: Referral Network Survey, Cohorts 1–8. Data are from the most recent administration of the RNS for each cohort.
Note: RNS data for Cohorts 1–6 include number of networks with an agency response rate of at least 60% in each cohort.



Appendix C

Cumulative GLS Dissemination Activities



APPENDIX C. CUMULATIVE GLS DISSEMINATION ACTIVITIES

PAPERS AND PRESENTATIONS

Broner, N., Walrath, C., Godoy Garraza, L., Davis, R., Pica, G., Brooks, M., & McKeon, R. (2015, April). *Addressing the field and the science: Future directions for the SAMHSA GLS National Outcome Study*. Presented at the 48th American Suicidology Conference, Atlanta, GA.

Brewer [Hicks], B., Pica, A., Walrath, C., & McKeon, R. (2011, November). *Assessing post-training behaviors of suicide prevention training attendees using mixed methods over time*. Presented at the American Evaluation Association Conference, Anaheim, CA.

Clarke, G., Davis, R., Walrath, C., Petrucci, C., & Carnes, M. (2013, November). *Community participatory evaluation of the Native Aspirations project: Concept mapping and community knowledge, attitudes and behavior survey*. Paper presented at the annual meeting of the American Public Health Association, Boston, MA.

Douglas, E., Davis, R., Clarke, G., Walrath, C., Carnes, M., & McKeon, R. (2015, April). *Suicide prevention with tribal youth: Findings and next steps from SAMHSA programs*. Presented at the 48th American Suicidology Conference, Atlanta, GA.

Fabian, A., Godoy Garraza, L., Johnson, S., Wallach, J., Light, E., Montgomery, E., & Rodi, M. S. (2008, April). *Evaluation of the Garrett Lee Smith Youth Suicide Prevention and Early Intervention Program*. Poster presentation at the Annual Conference of the Research and Training Center for Children's Mental Health, Tampa, FL.

Fabian, A., Light, E., Walrath, C., Rodi, M.S., & McKeon, R. (2010, November). *Using social network analysis to evaluation collaboration within youth suicide prevention networks*. Paper presented at the annual meeting of the American Evaluation Association, San Antonio, TX.

Godoy Garraza, L., Condron, D. S., Rodi, M. S., Reid, H., Sommerfeldt, H., Walrath, C., & McKeon, R. M. (2012, April). *Referral and service receipt for youth identified at risk for suicide: Relationships between training type, trainee work setting, and referral behavior*. Presented at the 45th American Suicidology Conference, Baltimore, MD.

Godoy Garraza, L., Walrath, C., Goldstein, D., & McKeon, R. M. (2015, April). *The impact of Garret Lee Smith suicide prevention program on youth suicide attempts*. Presented at the 48th American Suicidology Conference, Atlanta, GA.

Gould, M. S., Lake, A., Aspden, R., & Niederkrotenthaler, T. (2015, June). *Developing a methodology for the evaluation of crisis chat interventions*. Presented at the 28th World Congress of the International Association for Suicide Prevention, Montreal, Canada.

Gould, M. S., Munfakh, J. L. H. M., Lake, A., Kleinman, M., & Kalafat, J. (2010, October). *Hotline evaluation studies: Linking research findings to best practices in the community FY2014 Quarter 3 GLS Evaluation Summary Report 20*. Paper presented at the 57th Annual Meeting of the American Academy of Child and Adolescent Psychiatry, New York, NY.

Gould, M. S. (2011, October). *Results from the Hotline evaluation*. Presented at the National Association of Crisis Organization Directors/Contact USA Annual Conference, St. Louis, MO.

Gould, M. S. (2012, April). *Preliminary findings from the Cohort I evaluation interview*. Presented at the 45th American Suicidology Conference, Baltimore, MD.

Gould, M. S. (2012, May). *Preliminary findings from the Cohort I evaluation interview*. Presented at the National Suicide Prevention Lifeline Standards, Training and Practices Subcommittee meeting, Rockville, MD.

Gould, M. S. (2015, May). *How do suicide prevention crisis hotlines fit into mental health systems of care?* Presented at the Division of Mental Health Services and Policy Research meeting, New York City, NY.

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Appendix D

Impact of GLS Suicide Prevention
Programming on Suicide Rates



APPENDIX D. IMPACT OF GLS SUICIDE PREVENTION PROGRAMMING ON SUICIDE RATES

METHODS

Study Sample

The analysis focused on the initial years of the GLS program implementation, 2006 to 2009,[†] in counties across the U.S. All counties with a population of at least 3,000 youths between the ages of 10 and 24 were considered for inclusion in the sample.[‡] Of these, 479 counties were exposed to GLS suicide prevention efforts during that period, as signaled by the implementation of at least one GLS gatekeeper training (intervention counties). On average, nearly nine trainings were implemented in each county, and approximately 28 participants were trained each time. In the remaining 1,616 counties, there were no GLS trainings (i.e., no GLS program) implemented during that period. This group of counties constituted a pool of potential control counties from which a sample of 1,161 counties that shared key pre-intervention characteristics with the intervention counties were selected (control counties) using propensity score matching techniques (described below). It was not possible to find adequate matches for 13 of the 479 intervention counties, and these were therefore excluded from the analysis. In some of the 466 intervention counties, training implementation occurred in more than one year; as a result, the sample contained a total of 776 county-years in which at least one GLS training was implemented. The intervention counties reflected the efforts of 46 state and 12 tribal GLS grantees supporting the implementation of over 4,000 trainings in which more than 100,000 gatekeepers participated.

Measures and Sources

The main outcome of interest was the county's suicide mortality rate the year following the implementation of GLS trainings among the population 10 to 24 years of age between 2007 and 2010. Secondary analyses focused on suicide rate by age-subgroups 10–18 and 19–24. Control outcomes were other mortality outcomes not expected to be affected by GLS activities. These included suicide mortality among individuals aged 25 and older, and mortality rates among youths aged 10–18 and 19–24 for causes other than suicide. Mortality information was sourced from the Compressed Mortality File (NCHS, 2013). Mortality information is collected by state registries and provided to the National Vital Statistics System, and includes cause of death and demographic descriptors indicated on the death certificates.

The main independent variable was the occurrence of at least one GLS-funded gatekeeper training in the county each year between 2006 and 2009. Subsequent analysis focused on the number of gatekeepers trained in the same period. To assess longer term effects, the analyses also included indicators of any previous implementation through each year, i.e., a cumulative total of the number of gatekeepers trained through the end of each year. Information on each training event supported

[†] 2010 was the latest year for which mortality information was available during the analysis. Therefore, the analysis was restricted to the GLS training implementation that occurred prior to 2010.

[‡] Smaller counties were not considered for inclusion since the large variability of youth suicide mortality among them makes it extremely difficult to detect any systematic difference. A total of 1,047 out of 3,142 counties did not reach the 3,000-youth threshold.

by GLS, such as location of the training and number of participants, has been collected regularly since program inception using standardized forms as part of the national outcomes evaluation. Covariates included the county's total population, age-group composition, racial and ethnic composition (percentage Hispanic and non-Hispanic Whites, African American, American Indian or Alaska Native, Asian, and other race), percentage female, median household income, poverty rate, unemployment rate, and percent of rural population. In addition, pre-intervention levels of suicide rates were also included as covariates. Relatively permanent characteristics of the counties were assessed through the average of each covariate between 2000 and 2006 (time-fixed covariates). Recent change in these characteristics was assessed through the value in each of the previous four years as well as the moving average through that four-year period (time-varying covariates). The source of demographic information was the U.S. Census Bureau of Statistics' Intercensal Estimates (U.S. Census Bureau, 2011). Income, poverty, and unemployment rates were based on small area estimations by the U.S. Census Bureau of Statistics (National Center for Health Statistics, 2012) and the Bureau of Labor Statistics (Bureau of Labor Statistics, 2013).

Analysis

To examine the effect of the main independent variable on the outcome of interest in the context of a non-randomized study, it was necessary to address the issue of the comparability between the intervention and control samples. A frequently used approach is to attempt to parcel out the effect of the main independent variable and that of the covariates using a single regression model. The approach has serious and known drawbacks (Rubin, 1997). In contrast to this approach and in the present analysis, the issue of the comparability between the intervention and control samples was addressed before the main analysis was performed.

This strategy relies on the estimation of the *propensity score*, the probability of being in the intervention sample as opposed to the control sample as a function of the observed covariates (Rubin, 1997; Rosenbaum & Rubin, 1984). Specifically in this study, propensity score models were used sequentially to (a) select the sample of control counties (trimming step), (b) create five homogeneous subgroups across the intervention and control samples (subclassification step), and, finally, (c) develop inverse probability of exposure weights within each subgroup (weighting step). In the first two steps, the propensity models predicted the implementation of at least one GLS training at any time during 2006 to 2009 as a function of relatively permanent characteristics of the county, i.e., average values of the covariates between 2000 and 2006. The third step incorporated time-varying covariates in addition to time-fixed covariates in order to predict training implementation in each year.

The trimming and subclassification steps had the common goal of making intervention and control counties as similar as possible regarding relatively permanent historical characteristics. An additional benefit of subclassification was that variation in the effect of training implementation by subclass could be explored. Furthermore, the propensity model for the weighting step was fitted separately within each subclass, making it more likely that the overall model for the weights was correctly specified. The goal of the weighting step was to account for time-varying covariates, in particular, recent changes in suicide rates before the implementation and the history of exposure to GLS program in previous years (Cole & Hernán, 2008; Hernán et al., 2002; Robins et al., 2000).

A separate version of the weighting step was required in order to analyze the effect of the number of trainees, i.e., a continuous instead of a binary conceptualization of the intervention. In order to accomplish this, a new set of inverse probability of exposure weights was estimated. The propensity score for the continuous exposure was estimated using a linear rather than a logistic model (Robins et al., 2000). A transformation of the number of trainees, the square root, was used in the analysis to more closely satisfy model assumptions (Fox, 2008).

Because of the steps to increase comparability, it was possible to use a relatively simple regression model for the main analysis. The outcome measure (i.e., the suicide rate in each county and year) was regressed on the independent variables (the measures of training implementation) using the weighted sample. Sensitivity of the results to extreme weights was assessed by refitting the regression after truncating 1% and 5% of the weights at each extreme of the distribution. All of the regression models were estimated using weighted generalized estimating equation (GEE) with the errors assumed to be clustered at the state level.

Limitations

Findings need to be interpreted in the context of the limitations of the study. First, this study does not address important related questions regarding the nature of the intervention, such as specific types of trainings or gatekeepers that may be more effective, and the specific components of the GLS program beyond the trainings that contributed to results. Moreover, the presumed main “mechanism of action,” i.e., an increase in early identifications and referrals of youth at risk, is not directly examined or distinguish from alternative mechanisms (e.g., change in awareness and sensitivity to the issue in the communities) through which other program components may have contributed to the results. With that said, however, the relationship between identification and referral and the type of training and trainee in the context of GLS was the focus of a recent study (Condrón et al., 2015), albeit using information not available at the county level. A related limitation arises from the use of information on training activities as a marker of GLS implementation. The relative consistency across results from the binary and continuous approaches offered some support to this assumption, but the study would benefit from the availability of information about additional program activities with the same level of spatial detail. Finally, the analysis has limitations that apply more generally to causal claims outside the context of the ideal randomized experiment. In particular, despite the use of a rich set of covariates as well as the analysis of control outcomes, there remains the possibility of unaccounted-for differences between exposed and control counties influencing results. In addition, using propensity scores to construct weights relies on the correct specification of the statistical model predicting exposure, an issue that is only partially addressed by the use of separate models for each subclass and the sensitivity analysis. Due to these limitations, it becomes essential to replicate the findings. Replication studies could take advantage of larger samples of counties as information on suicide mortality becomes available for additional years. Complementarily, they could focus on other outcomes such as non-fatal suicide attempts that should have a consistent behavior with those analyzed here. Finally, they could explore alternative analytical strategies, particularly to understand the effects of the different variations of the intervention.

Table 1: Sample characteristics before and after matching

Covariates (Average 2000–2006)	All Counties			Matched Sample		
	Mean Intervention (n = 479)	Mean Control (n = 1,616)	Absolute standardized difference ¹	Mean Intervention (n = 466)	Mean Control ² (n = 1,161)	Absolute standardized difference ¹
Suicide rate 10–18 (per 100,000)	4.9	4.3	13.6	4.8	4.8	1.4
Suicide rate 19–24 (per 100,000)	15.7	15.6	0.8	15.5	15.4	0.4
Suicide rate 25 plus (per 100,000)	17.4	16.5	16.8	17.4	17.4	0.5
Non-suicide mortality 10–18 (per 100,000)	39.2	39.7	3.2	39.2	39.1	0.4
Non-suicide mortality 19–24 (per 100,000)	97.7	102.9	11.4	98.4	98.1	0.8
Poverty	13.6	13.6	0.0	13.5	13.7	3.0
Unemployment	5.3	5.4	9.1	5.3	5.3	4.6
Total population (in thousands)	208.7	111.8	22.1	190.3	187.7	0.6
Percent population aged 10–18	13.1	13.3	16.0	13.1	13.2	3.2
Percent population aged 10–19	8.8	8.3	14.9	8.7	8.8	2.6
Percent population aged 25 plus	64.9	65.2	6.6	65.1	64.9	3.5
Percent Female	50.8	50.4	22.3	50.8	50.8	1.3
Percent Hispanic	5.7	7.5	16.2	5.5	5.5	0.7
Percent African American (non-Hispanic)	9.3	10.2	6.0	9.4	10.1	4.7
Percent American Indian/Alaska Native (non-Hispanic)	2.1	1.3	13.8	1.9	2.0	2.0
Percent Asian (non-Hispanic)	1.6	1.2	15.6	1.5	1.4	2.3
Percent other races (non-Hispanic)	1.6	1.2	28.2	1.5	1.4	4.1
Median Household Income (in thousands)	39.9	39.5	4.0	39.9	39.7	1.9
Percent Rural	39.8	48.4	32.1	40.2	40.1	0.5
Propensity score (logit scale)	-0.6	-1.8	94.2	-0.6	-0.7	3.3
Mean			13.3			2.0
Median			13.8			1.9
Maximum			32.1			4.7

¹ Absolute difference divided by the standard deviation before matching.

² Weighted average across the five subclasses, where the weights are given by the proportion of counties in each subclass among the intervention counties.

Table 2: Estimated average effect of GLS training implementation on main and 'control' outcomes

	Estimate	Std. Error	Pr(> t)
Suicide rate 10-24			
GLS trainings last year	-1.33	0.49	0.0160
GLS trainings two years ago or more	0.39	0.71	0.5911
Suicide rate 10-18			
GLS trainings last year	-0.73	0.44	0.1188
GLS trainings two years ago or more	0.01	0.53	0.9865
Suicide rate 19-24			
GLS trainings last year	-2.16	1.27	0.1090
GLS trainings two years ago or more	1.17	1.76	0.5162
Suicide rate 25 plus			
GLS trainings last year	0.62	0.58	0.3010
GLS trainings two years ago or more	0.02	0.52	0.9684
Non-suicide mortality 10-18			
GLS trainings last year	1.67	1.82	0.3701
GLS trainings two years ago or more	-2.57	1.79	0.1692
Non-suicide mortality 19-24			
GLS trainings last year	-1.12	3.13	0.7254
GLS trainings two years ago or more	0.07	4.00	0.9863

Table 3: Estimated average effect of number of GLS trainees on main and 'control' outcomes

	Estimate	Std. Error	Pr(> t)
Suicide rate 10-24			
Number of trainees last year (sqrt)	-0.11	0.04	0.0126
Cumulative number of trainees up to two years ago (sqrt)	0.01	0.05	0.8231
Suicide rate 10-18			
Number of trainees last year (sqrt)	-0.11	0.02	0.0002
Cumulative number of trainees up to two years ago (sqrt)	0.07	0.04	0.0850
Suicide rate 19-24			
Number of trainees last year (sqrt)	-0.10	0.09	0.3051
Cumulative number of trainees up to two years ago (sqrt)	-0.07	0.10	0.4722
Suicide rate 25 plus			
Number of trainees last year (sqrt)	0.06	0.04	0.1756
Cumulative number of trainees up to two years ago (sqrt)	-0.05	0.05	0.3426
Non-suicide mortality 10-18			
Number of trainees last year (sqrt)	0.04	0.22	0.8712
Cumulative number of trainees up to two years ago (sqrt)	-0.09	0.12	0.4544
Non-suicide mortality 19-24			
Number of trainees last year (sqrt)	-0.25	0.16	0.1335
Cumulative number of trainees up to two years ago (sqrt)	0.20	0.25	0.4206

Note: 1% of the inverse probability weights at each extreme of the distribution were truncated



Appendix E

Impact of GLS Suicide Prevention
Programming on Suicide Attempts



APPENDIX E. IMPACT OF GLS SUICIDE PREVENTION PROGRAMMING ON SUICIDE ATTEMPTS

METHOD

Study Sample

The analysis focused on the initial years of the GLS program implementation and reflected the efforts of 46 state and 12 tribal GLS grantees. A sample of 466 counties exposed to GLS suicide prevention efforts at some point between 2006 and 2009 (intervention counties) and 1,161 counties that shared key pre-intervention characteristics but were not exposed to GLS suicide prevention efforts (control counties) were selected using propensity score-based procedures originally implemented in Walrath et al. (2015). The present analysis is based on information from all the counties in this sample participating in the National Survey on Drug Use and Health (NSDUH) any time between 2008 and 2011. Approximately 80% of the intervention counties and 96% of the control counties were represented in the NSDUH at least one year during that period. Approximately 73% of the total number of county-years were represented, with more than 140,000 respondents overall.

Measures and Sources

Outcome variables

The primary outcome was the suicide attempt rate for each county following the implementation of GLS for the population that was 16 to 23 years old during GLS implementation. Suicide attempt rates among adults aged 24 and older were analyzed as a control outcome, and were not expected to be affected by GLS activities. These rates were derived from the NSUDH data collected between 2008 and 2011 (Center for Behavioral Health Statistics and Quality, 2012). For each year in which a county may have been exposed to GLS program activities during the period considered, the outcome is based on NSDUH data collected two years later. The suicidal behavior captured in the survey corresponds to the 12 months prior to the interview. For simplicity, we refer hereafter to the outcome as the attempt rate the year following the GLS implementation.

Beginning in 2008, NSDUH respondents aged 18 or older were asked whether they had thought seriously about trying to kill themselves at any time during the past 12 months. Those respondents who reported having had serious suicidal thoughts were then asked whether, in the past 12 months, they had tried to kill themselves. While similar survey questions that were administered among high school students demonstrated good test-retest reliability (Brener et al., 2002), no reliability or validity information is available in relation to these questions as implemented in the NSDUH. The NSDUH was based on a large probabilistic sample design to support national and state-level estimations. While a large number of counties are included in the sample each year, county identifiers are not publicly released, but are accessible through the “restricted-use” dataset for research purposes.

Exposure indicator

While GLS grants are received at the state and tribe levels, the grantee determines the communities and geographic regions for suicide prevention programming priority focus as well as the pace in which the program is rolled out across these areas; as such, not all communities and geographic areas within a funded state or tribal territory implement suicide prevention programming, and the implementation does not necessarily occur simultaneously in all areas. For the primary analyses, the implementation of at least one GLS-funded gatekeeper training was used as an indicator of GLS program implementation in the county during that year. Subsequent analysis focused on the number of gatekeepers trained as an indication of intensity. To examine the effect beyond the first year after the implementation, indicators of any training implementation in prior years were also included in the analysis. Information on each GLS training, such as location of the training and number of participants, has been systematically collected since program inception.

Covariates

A rich set of county-level covariates was used for sample selection and weighting prior to the main analysis. Covariates included the county's total population, age-group composition, racial and ethnic composition (percentage Hispanic and non-Hispanic whites, African American, American Indian or Alaska Native, Asian and other race), percentage female, median household income, poverty rate, unemployment rate, and percent of rural population. In addition, pre-intervention levels of suicide rates were also included as covariates. Both the average value of each of these covariates between 2000 and 2006 (time-fixed covariates) and the value in each of the 4 years preceding GLS implementation (time-varying covariates) were considered. The source of demographic information was the U.S. Census Bureau of Statistics' Intercensal Estimates (U.S. Census Bureau, 2011). Income, poverty, and unemployment rates were based on small area estimations by the U.S. Census Bureau of Statistics (2012) and the Bureau of Labor Statistics (2013). The analysis further included respondent-level basic demographic characteristics from the NSDUH, such as gender, age, and race-ethnicity to adjust each county's suicide attempt rates. Additional county-level characteristics during 2004 and 2006 obtained by aggregating NSDUH data were used to assess the results of the propensity score matching techniques.

Analysis

The main goal of the analysis was to examine the effects of the GLS implementation on rates of youth suicide attempts, providing a partial replication and extension of earlier findings regarding the effects of the GLS Suicide Prevention Program on youth suicide deaths. Therefore, the analytic strategy closely reproduced the one used in Walrath et al. (2015). Importantly, we did not alter the procedures undertaken to increase the comparability between the intervention and control samples. These propensity score-based procedures included trimming and subclassification (Rosenbaum & Rubin, 1983; Rosenbaum & Rubin, 1984) to account for differences between intervention and control counties regarding relatively permanent characteristics (e.g., the average youth suicide rate between 2000 and 2006, before GLS program inception), as well as the inverse probability of exposure weighting (Cole & Hernán, 2008; Hernán et al., 2002; Robins et al., 2000) of each county and year to address differences in time-varying covariates (e.g., youth suicide rates the year immediately before the implementation) and the influence of history of exposure to GLS programming in previous years (i.e., the fact that previous implementations may influence current implementation and suicide rates).

Because of the steps to increase comparability, it was possible to use the relatively simple approach of regressing yearly suicide attempt rates on GLS exposure as in Walrath et al. (2015). While our unit of analysis remains the county, data on individual respondents were available. We used these “microdata” in the regression (as opposed to computing the county rates first, in a two-step procedure), incorporating the NSDUH’s sample design weights. We also included linear terms for individual demographic characteristics, both to gain precision and to obtain “adjusted” rates. The longitudinal aspect of the analysis and the fact that the NSDUH uses a complex sample design are two possible sources of lack of independence (i.e., clustering) across observations. As in the previous study, we relied on generalized estimating equation (GEE) with robust inference, assuming only independence between states but allowing for any pattern of lack of independence within a state. Sensitivity of the results to extreme inverse probability of exposure weights was assessed by refitting the regression after truncating 1% and 5% of the weights at each extreme of the distribution.

Limitations

Similar to the suicide mortality study, findings of the current analysis need to be interpreted in the context of the limitations of the study. Firstly, causal claims outside the context of the ideal randomized experiment are intrinsically more tentative. In particular, despite the use of a rich set of covariates as well as the analysis of control outcomes, there could always be unaccounted differences between exposed and control counties influencing the results. Secondly, and in contrast with the mortality analysis, information on attempts was only available for a segment of GLS target population, and, therefore, we did not examine the effect on the younger age groups in this paper. Next, the NSDUH data are based on self-reports, not on observations of actual incidents, and the extent of underreporting or overreporting of behaviors has not been determined. Furthermore, the data on lifetime history and number of suicide attempts were not available, and as such it was possible to determine whether the GLS programming differentially affected individuals with different histories of suicidal behavior. Finally, the findings from the present analysis do not shed light on which aspects of the GLS programs may be the most effective. Strategies to further disentangle the effect of these important variations are currently being explored and will be the focus of future research.

Table 1. Average Value Across Intervention and Control Counties of Selected Covariates Before and After Matching, 2004–2006

Covariates	All Counties			Matched Sample		
	Control ^a (n = 109,000) ^b	Intervention (n = 64,000) ^b	Pr(> F) ^c	Control ^a (n = 84,000) ^b	Intervention (n = 57,000) ^b	Pr(> F) ^c
Female	52.3%	51.5%	0.329	53.0%	51.4%	0.099
Age group			0.329			0.099
12–17	12.8%	11.4%		11.5%	11.5%	
18–25	14.5%	15.6%		15.2%	15.3%	
26+	72.8%	73.0%		73.4%	73.2%	
Race/Ethnicity			0.023			0.976
White, non-H.	80.1%	80.4%		80.9%	81.3%	
African American, non-H.	9.4%	9.2%		9.3%	9.1%	
American Indian/AN, non-H.	0.9%	1.9%		1.6%	1.7%	
Nat. Haw. and Oth. Pac. Isl., non-H.	0.1%	0.3%		0.1%	0.2%	
Asian, non-H.	1.2%	1.7%		1.4%	1.4%	
Multiple races, non-H.	1.0%	1.2%		1.2%	1.1%	
Hispanic	7.3%	5.5%		5.4%	5.2%	
Education (age ≥ 18)			0.022			0.976
Less than high school	18.8%	18.7%		18.1%	18.9%	
High school graduate	38.3%	36.3%		36.2%	36.7%	
Some college	24.3%	24.1%		25.5%	23.7%	
College graduate	18.7%	21.0%		20.3%	20.7%	
In school (age ≤ 23)	74.7%	73.4%	0.000	74.8%	73.3%	0.835
Married (age > 14)	54.7%	53.3%	0.000	53.7%	53.6%	0.836
Total family income			0.046			0.345
Less than \$20,000	22.8%	22.2%		23.6%	22.0%	
\$20,000–\$49,999	38.4%	39.3%		37.1%	39.3%	
\$50,000–\$74,999	18.5%	17.7%		17.7%	17.9%	
\$75,000 or more	20.2%	20.8%		21.5%	20.7%	

Table 1. Average Value Across Intervention and Control Counties of Selected Covariates Before and After Matching, 2004–2006 (continued)

Covariates	All Counties			Matched Sample		
	Control ^a (n = 109,000) ^b	Intervention (n = 64,000) ^b	Pr(> F) ^c	Control ^a (n = 84,000) ^b	Intervention (n = 57,000) ^b	Pr(> F) ^c
Employment status			0.048			0.345
Employed full-time	49.6%	51.4%		49.5%	51.5%	
Employed part-time	14.3%	14.1%		14.5%	14.1%	
Unemployed	3.8%	4.0%		3.8%	3.9%	
Other (incl. not in labor force)	32.2%	30.5%		32.2%	30.5%	
Has health insurance	85.3%	84.9%	0.182	85.7%	85.0%	0.925
In rural segment	42.6%	35.1%	0.182	36.0%	36.3%	0.925
Had lifetime major depressive episode (MDE)	14.8%	15.7%	0.387	15.0%	15.8%	0.346
Had past year major depressive episode (MDE)	8.4%	8.6%	0.388	8.3%	8.6%	0.346

^a The *p*-value corresponding to an adjusted *F* test for the null of no association between the covariate and sample membership.

^b Weighted average across the 5 subclasses of counties, where the weights are given by the proportion of counties in each subclass among the intervention counties.

^c Unweighted number of respondents in intervention and control counties rounded to the nearest thousand due to NSDUH disclosure restrictions.

Table 2. Estimated Average Effect of GLS Implementation

	Estimate	Std. Error	Pr(> t)
Suicide attempts rate 16–23 (per thousand)			
GLS implementation previous year	-4.91	1.57	.003
GLS implementation 2 years ago or more	-1.19	1.87	.527
Suicide attempts rate 24 plus (per thousand)			
GLS implementation previous year	1.96	2.66	.464
GLS implementation 2 years ago or more	-1.96	2.61	.456

Table 3. Estimated Average Effect of Number of GLS Trainees

	Estimate	Std. Error	<i>Pr(> t)</i>
1% extreme weights truncated			
Suicide attempts rate 16–23 (per thousand)			
Number of trainees last year (sqrt)	-0.25	-0.25	.028
Cumulative number of trainees up to 2 years ago (sqrt)	-0.26	0.19	.175
Suicide attempts rate 24 plus (per thousand)			
Number of trainees last year (sqrt)	0.52	0.25	.048
Cumulative number of trainees up to 2 years ago (sqrt)	-0.40	0.32	.218

Table 3. Estimated Average Effect of Number of GLS Trainees (continued)

	Estimate	Std. Error	<i>Pr(> t)</i>
5% extreme weights truncated			
Suicide attempts rate 16–23 (per thousand)			
Number of trainees last year (sqrt)	-0.19	0.10	.054
Cumulative number of trainees up to 2 years ago (sqrt)	-0.07	0.18	.711
Suicide attempts rate 24 plus (per thousand)			
Number of trainees last year (sqrt)	0.28	0.21	.188
Cumulative number of trainees up to 2 years ago (sqrt)	-0.14	0.21	.500



Appendix F

Economic Impact of GLS Suicide Prevention Programming



APPENDIX F. ECONOMIC IMPACT OF GLS SUICIDE PREVENTION PROGRAMMING

METHODS

Estimated Costs

Program costs include the amount of federal funds directly spent by the 58 grantees during 2005 to 2009 as well as the expenditures on technical assistance by the GLS program. Information on the amount spent by grantees was provided by SAMHSA and is based on the Annual Federal Financial Report submitted by each grantee. The expenditures are reported by fiscal year (from October 1 to September 30).¹² We allocated amounts to the respective calendar years assuming that quarterly expenditures were approximately constant. The period of performance for the grant was 3 years, but ‘no cost extensions’ covering some part of the fourth year were typical. The amounts spent during the no cost extension period are lumped together with the third year expenditure, which represents a ‘conservative’ approach, in the sense of overestimating the cost. From a total of 144 records corresponding to yearly expenditures by grantees, only four were missing. These values were imputed using the average expenditures of other grantees from the same cohort that year. Alternative procedures, such as using the maximum instead of the average, were evaluated, but generate virtually no difference on the final results. Additional resources were devoted to support grantees in the implementation of the program in the way of training and technical assistance. This technical support was provided by the SAMHSA-funded Suicide Prevention Resource Center (SPRC). An estimated budget allocated to these activities during the period (including salaries and fringe for the SPRC staff providing services to grantees, travel for site visits, rent, phone, and other overhead expenses associated with providing training and technical assistance) was obtained from SPRC representatives.

Estimated Benefits

The effectiveness study provides estimates of the decrease in the county’s suicide attempt rates following the implementation of the GLS program among youth who were 18–25 when interviewed (16–23 at the moment of program implementation). Estimates of the number of attempts avoided each year between 2007 and 2010 were obtained based on the estimated decrease in the rate, the number of counties exposed to GLS each year, and the size of those counties (in terms of number of youth).¹³ Only a portion of the averted suicide attempts would have required medical attention, and among them only a subset would have led to hospitalization. We used National Survey on Drug Use and Health (NSDUH) 2008–2011 to obtain an estimate of these proportions among youth 18 to 25 (SAMHSA, 2015). The NSDUH does not provide estimates for the proportion of attempts requiring medical attention that result in an Emergency Department (ED) visit but not in hospitalization. We used the ratio of ED visits to hospitalization due to onfatal

¹² Information on a small subsample of state grantees (8) collected through the Prevention Strategies Inventory (PSI) suggests that expenditures on the first quarter of the fiscal year may be somewhat lower than the subsequent quarters. In any event, by increasing the amount spent earlier in the project the assumptions should be conservative, i.e., in the sense of overestimating the cost.

¹³ Strictly speaking, it is the number of youth attempting at least once during a 12 month period. It is therefore a conservative estimate of the number of attempts, since some youth may have attempted more than once in that period.

injury from the National Electronic Injury Surveillance-All Injury Program (NEISS-AIP [CDC, 2003]).

To determine the financial cost of intentional injury, we used the Web-based Injury Statistics Query and Reporting System (WISQARS) Cost of Injury Reports to provide unit cost estimates for medical costs (CDC, 2003). WISQARS Cost of Injury Reports provide estimates of the lifetime medical cost arising from non-fatal injuries resulting in hospitalization, and non-fatal injuries requiring an ED visit but not resulting in hospitalization. Medical costs are estimated from the Healthcare Cost and Utilization Project using incidence data from NEISS-AIP data to produce costs by cause of the injury (self-harm and suicide included), the part of the body injured, nature of the injury, and patient sex and age. Costs include facility and non-facility elements of inpatient stays and costs associated with readmission, follow-up treatment, transportation, physician fees, and rehabilitation. Medical costs do not include the mental health treatment (AHRQ, 2010).

Year of Dollars, Inflator Series, and Discount Rate

A series of costs incurred during 2005 to 2009 and benefit accrued during 2007 to 2010 was obtained by the methods described above. The present value of both flows is obtained by applying a discount rate of 3%. This is a relatively common rate choice for health economics evaluations, and is the one used in the WISQARS Cost of Injury Reports (Lawrence and Miller, 2014).

All dollar amounts are expressed in terms of U.S. 2010 dollars (millions of dollars are notated with MM). The general Consumer Price Index (CPI) from the Bureau of Labor Statistics was used to inflate GLS expenditure dollars, while the WISQARS Cost of Injury Reports used health-specific inflation from the Price Indexes for Personal Consumption Expenditures by Function (PCE) by the U.S. Bureau of Economic Analysis to inflate medical costs.

Uncertainty

Stochastic simulations were used to incorporate the sampling variance associated with the estimated number of attempts averted, the proportion that would have required hospitalization, and the number of ED visits not requiring hospitalization. The WISQARS Cost of Injury Reports are based on multiple sources and do not provide estimation of sampling variance for the estimated medical cost of the injury. We made use of sensitivity analysis in this case. In order to obtain a lower bound for the medical cost, we used the lower limit of a 95% confidence interval for estimates of average cost of one night stay hospitalization and an ED visit for any cause in 2010 from the Medical Expenditure Panel Survey (MEPS; AHRQ, 2010). These figures should clearly represent an underestimation of the medical cost given the exclusion of readmission and follow-up care cost, and the use of very conservative assumptions, such as a one night stay. Sensitivity analyses of the results to variations in other parameters such as discount rate or inflation were also performed.

Table 1: Input parameters and source

Input parameter	Estimate (Standard Error)	Source
Youth 16–23 in counties exposed to GLS (counties included in NSDUH sample)	2006: 610,411; 2007: 3,924,312; 2008: 4,947,603; 2009: 6,684,413	GLS National Evaluation and NCHS (2012)
Decrease in suicide rate following the implementation of GLS (per 100,000)	4.91 (1.57)	Walrath et al. (2015)
Percentage of attempts that require hospitalization	.245 (.017)	NSDUH 2-Year R-DAS (2008–2011)
Ratio of ED visits due to self-harm not requiring hospitalization to episodes requiring hospitalization	.587 (.103)	WISQARS Nonfatal Injury Report
Average medical cost self-harm hospitalization (U.S.\$ 2010)	\$10,895	WISQARS Cost of Injury Reports
Average medical ER self-harm visit (U.S.\$ 2010)	\$3,386	WISQARS Cost of Injury Reports
Average medical cost one night hospitalization for any cause (U.S.\$ 2010)	\$8,478 (606.4)	MEPS
Average medical cost ED visit for any cause (U.S.\$ 2010)	\$969 (37.1)	MEPS
GLS Cost MM U.S.\$ 2010	2005: 1.5; 2006: 5.9; 2007: 12.1; 2008: 14.8; 2009: 15.1	SAMSHA and SPRC

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