

# Undetermined risk factors for suicide among youth, ages 10–24 — Santa Clara County, CA, 2016

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County Briefing

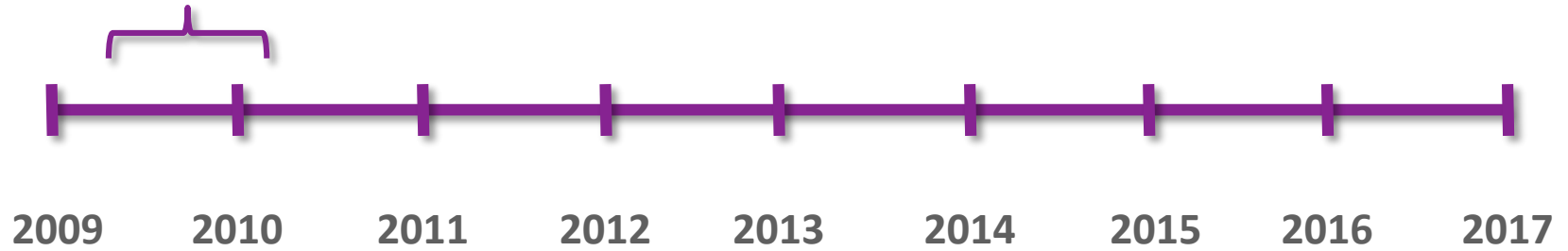
March 10, 2017

# Disclaimer

The findings and conclusions in this presentation are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention and the Substance Abuse and Mental Health Services Administration.

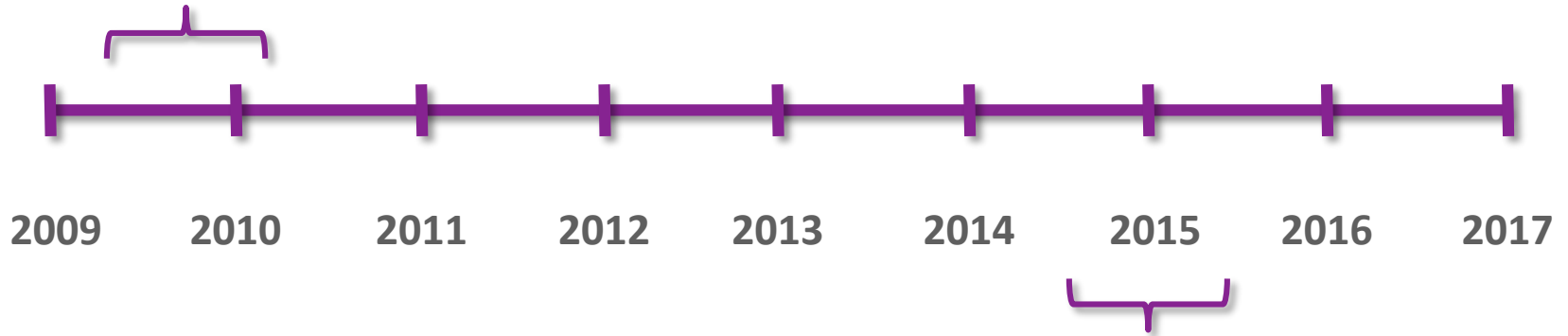
## May 2009 through January 2010

- Five known suicides
- Incoming, current, alumni
- One high school



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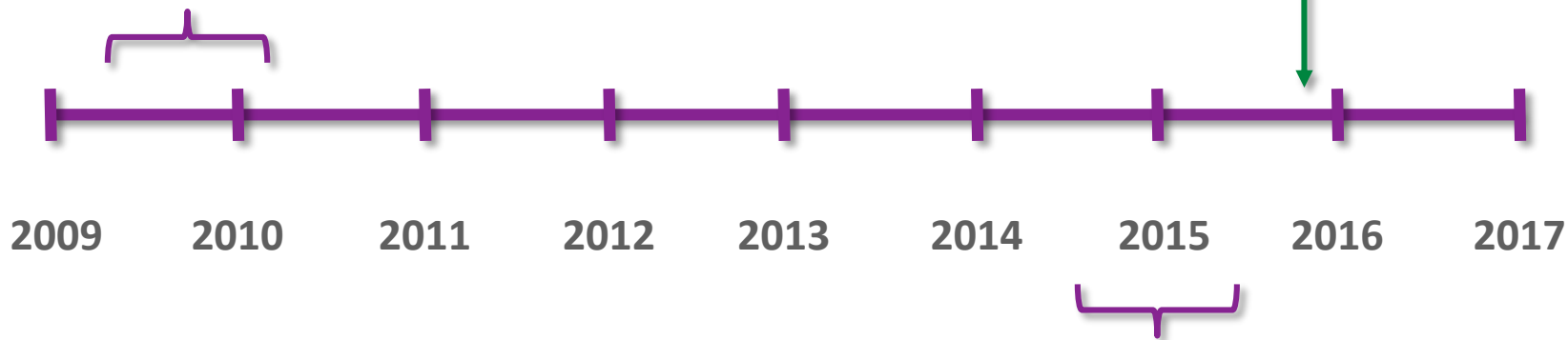
## October 2014 through March 2015

- Four known suicides
- Current or alumni
- Two high schools, same district

### May 2009 through January 2010

- Five known suicides
- Incoming, current, alumni
- One high school

In response to community identified<sup>†</sup> clusters in the city of Palo Alto, a formal request for epidemiological assistance was made on November 11, 2015



### October 2014 through March 2015


- Four known suicides
- Current or alumni
- Two high schools, same district

<sup>†</sup>A community identified suicide cluster is a cluster that has been identified by a community but has not been statistically verified.

# Epi-Aid investigations

- Short, rapid investigation
- Public health authorities must make a formal request
- Not research studies
- Make practical recommendations for public health action

**Epi-Aid — Epidemiologic Assistance**

 **What is an Epi-Aid?**  
An Epi-Aid is the mechanism CDC uses for public health authorities to request short-term (1–3 weeks) epidemiologic assistance. An Epi-Aid allows rapid response by CDC's Epidemic Intelligence Service (EIS) officers, who assist in investigating an infectious or non-infectious disease outbreak, natural or manmade disaster, or other public health emergency. The focus of the epidemiologic investigation is to make practical recommendations for actions to mitigate the urgent public health problem.

**Who participates?**  
An Epi-Aid team consists of an EIS officer and other CDC staff as needed, supervised by a CDC subject matter expert (SME). This team joins local staff in the field to assist the public health authority in that jurisdiction.


**Who can request an Epi-Aid?**  
A local, state, federal, or international public health authority *must* invite CDC to assist in the investigation. Public health authorities who can request an Epi-Aid include:

- State or territorial epidemiologists
- Tribal chiefs
- Foreign countries' ministers of health
- Federal agency officials
- American military base commanding generals
- CDC's Vessel Sanitation Program officials

**How is an Epi-Aid requested and approved?**

1. The public health authority contacts the SME at CDC or the EIS program.
2. The CDC SME and EIS program communicate to discuss the Epi-Aid request. If CDC can support the Epi-Aid, the CDC SME notifies the requesting public health authority.
3. The requesting public health authority sends a letter of invitation to their CDC contact.
4. The EIS program approves the Epi-Aid.

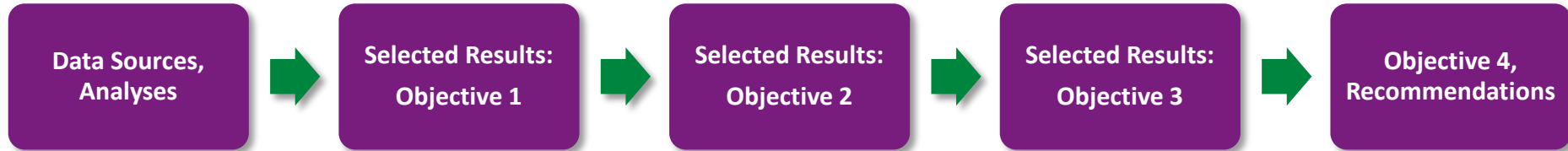
Center for Surveillance, Epidemiology, and Laboratory Services  
Division of Scientific Education and Professional Development



# Objectives

1. Characterize the epidemiology of, and trends in, fatal and nonfatal suicidal behaviors among youth occurring from 2003 through 2015 in Santa Clara County, California; and data permitting, compare characteristics at multiple levels, such as school districts and cities.
2. Examine the degree to which media coverage of youth suicides occurring from 2008 through 2015 in Santa Clara County, California, met safe suicide reporting guidelines.
3. Inventory and compare youth suicide prevention policies, activities, and protocols used in the community to evidence-based and national recommendations.
4. Synthesize information from objectives 1-3 to make recommendations on youth suicide prevention strategies that can be used at the school-, community-, and county- levels.

# Presentation outline

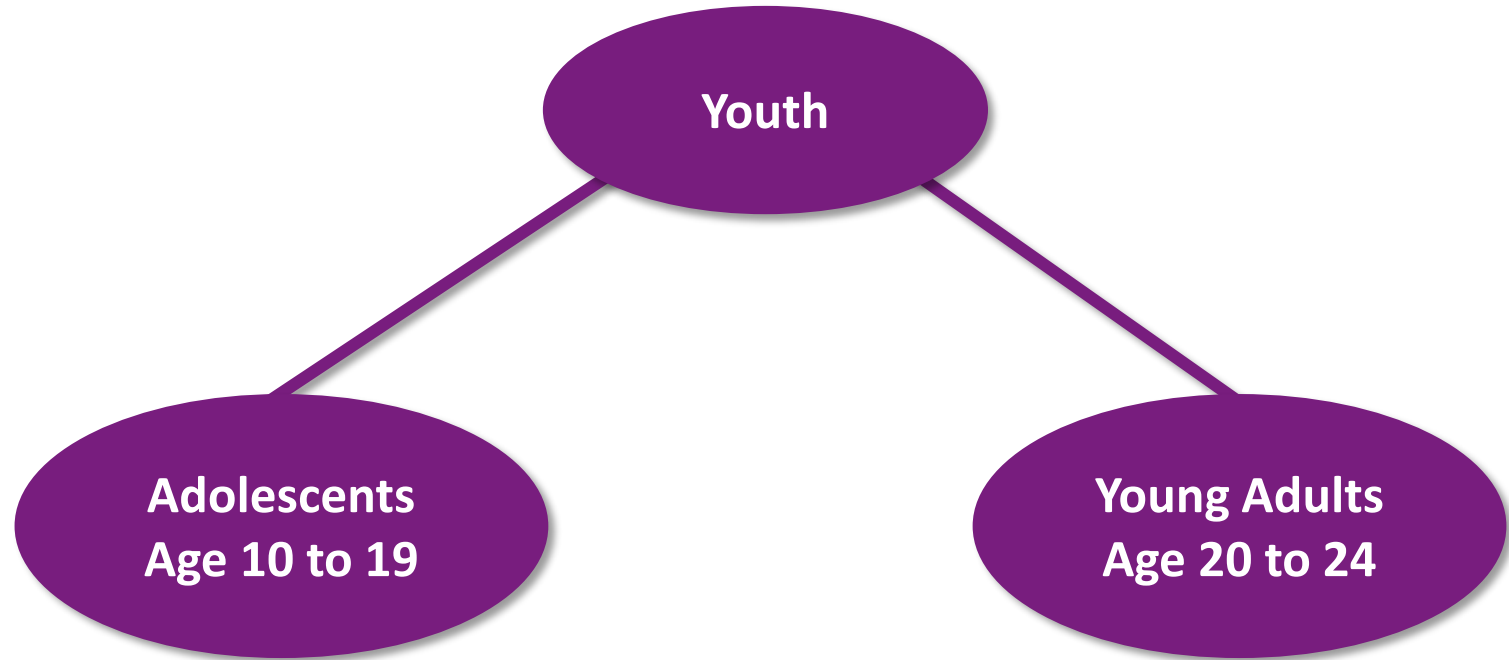




# Presentation notes

- Broad overview of investigation
- Selection, but not all findings and results will be presented
- For detailed and comprehensive information about methods, results, and recommendations refer to the Final Report

# Presentation notes



# Data sources

**CDC WONDER**

**Vital statistics**

**Medical  
examiner  
reports**

**National Violent  
Death Reporting  
System**

**Emergency  
Department (ED)  
data**

**Patient  
Discharge data**

**Developmental  
Assets Survey**

**California  
Healthy Kids  
Survey**

**Project Safety  
Net Community  
Survey**

**Media scan**

**Inventory of  
programs and  
policies**

# Statistical analyses

- Descriptive statistics
  - *Counts, frequencies, percentages*
- Calculation and comparison of youth suicide rates
  - *Rate: # suicide deaths divided by total population in given time period*
- Bivariate comparisons to compare factors and characteristics by groups
  - *Bivariate comparisons: associations between given factor and outcome (e.g., suicide attempt)*
- Temporal and spatial cluster analyses
  - *Assess whether suicide deaths occur closer together in time or location than expected by chance*

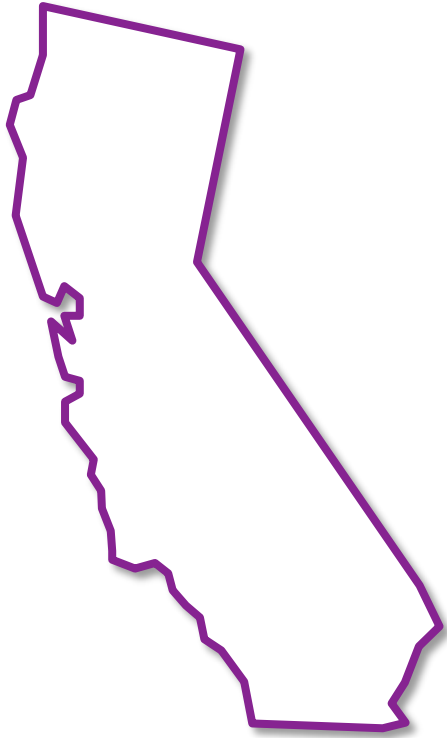
# Ethical considerations

- Steps taken to ensure confidentiality and limit the possibility of identification of an individual
- Suppressing data when cell size less than 10 individuals
- Suppressing data when cell size was larger than 10 individuals when possibility of identification based on
  - Topic, geographic level, population denominator size
- Data suppressed when cell size was less than or equal to 15 for patient discharge and emergency department data

# Selected Results: Objective 1

Characterize the epidemiology of, and trends in, fatal and nonfatal suicidal behaviors among youth occurring from 2003 through 2015 in Santa Clara County, California; and data permitting, compare characteristics at multiple levels, such as school districts and cities.

**Fatal suicidal behavior**



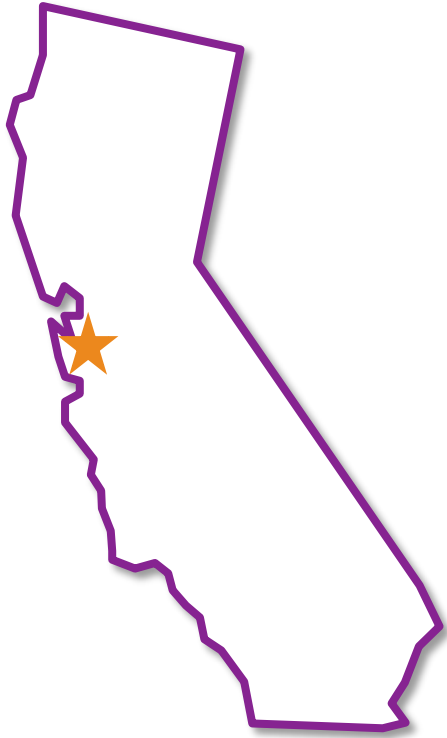
# Crude suicide rate for youth residents of California: 5.3 per 100,000

*For combined years of 2003–2014*

**Data Source:** CDC WONDER

**Case Definition:** Youth suicide decedent, age 10-24, 2003-2014



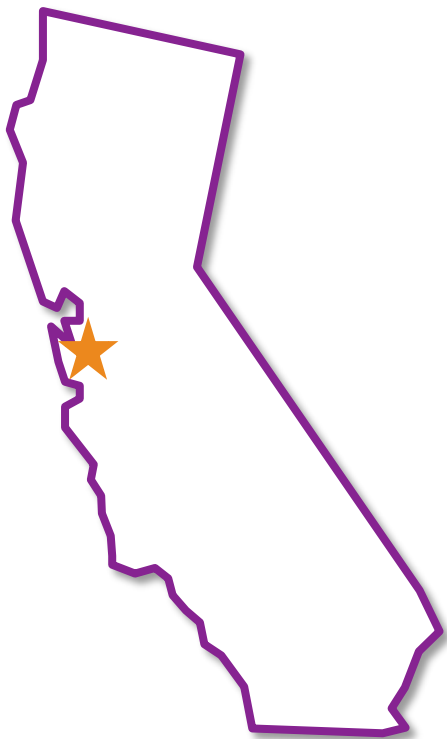


# Crude suicide rate for youth residents of Santa Clara County: 5.4 per 100,000

*For combined years of 2003–2014*

**Data Source:** CDC WONDER

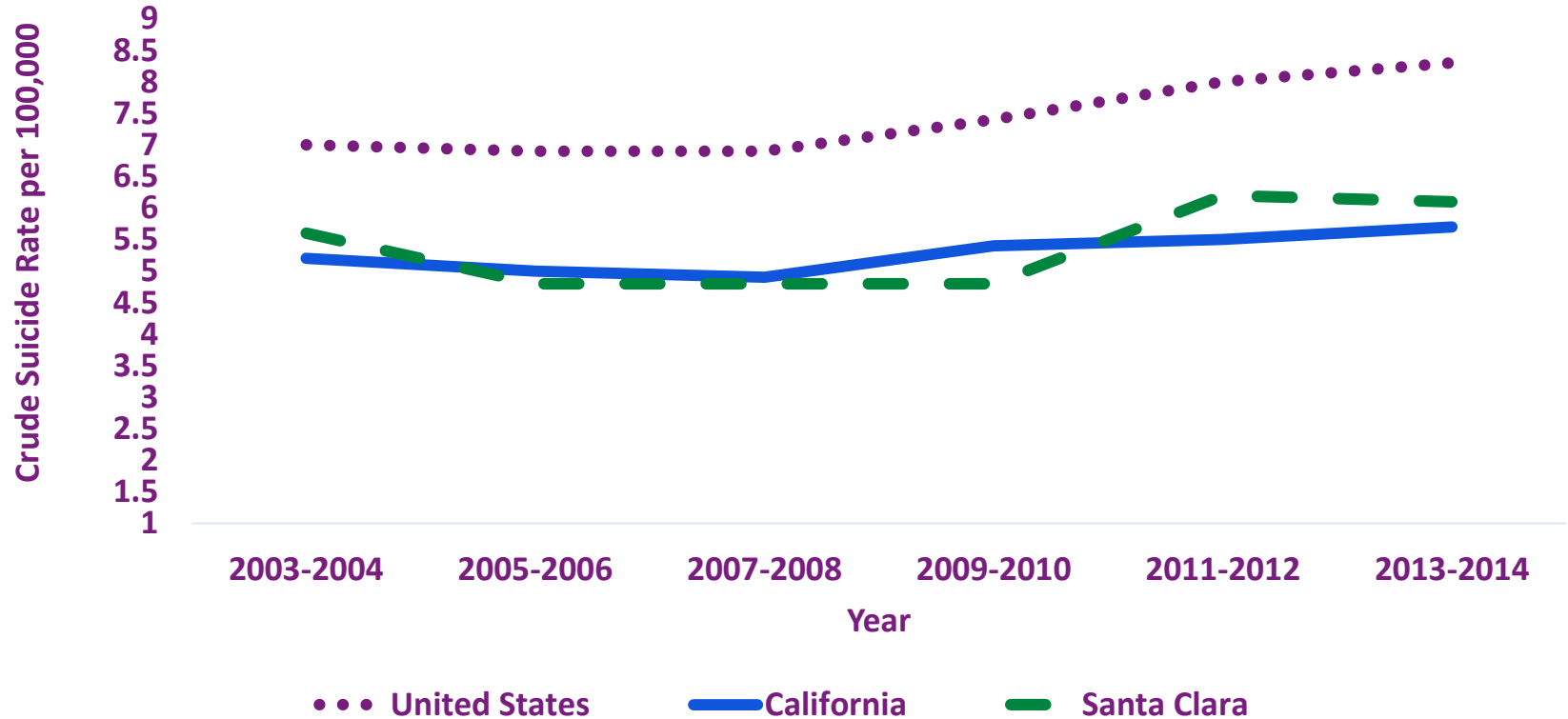
**Case Definition:** Youth suicide decedent, age 10-24, 2003-2014



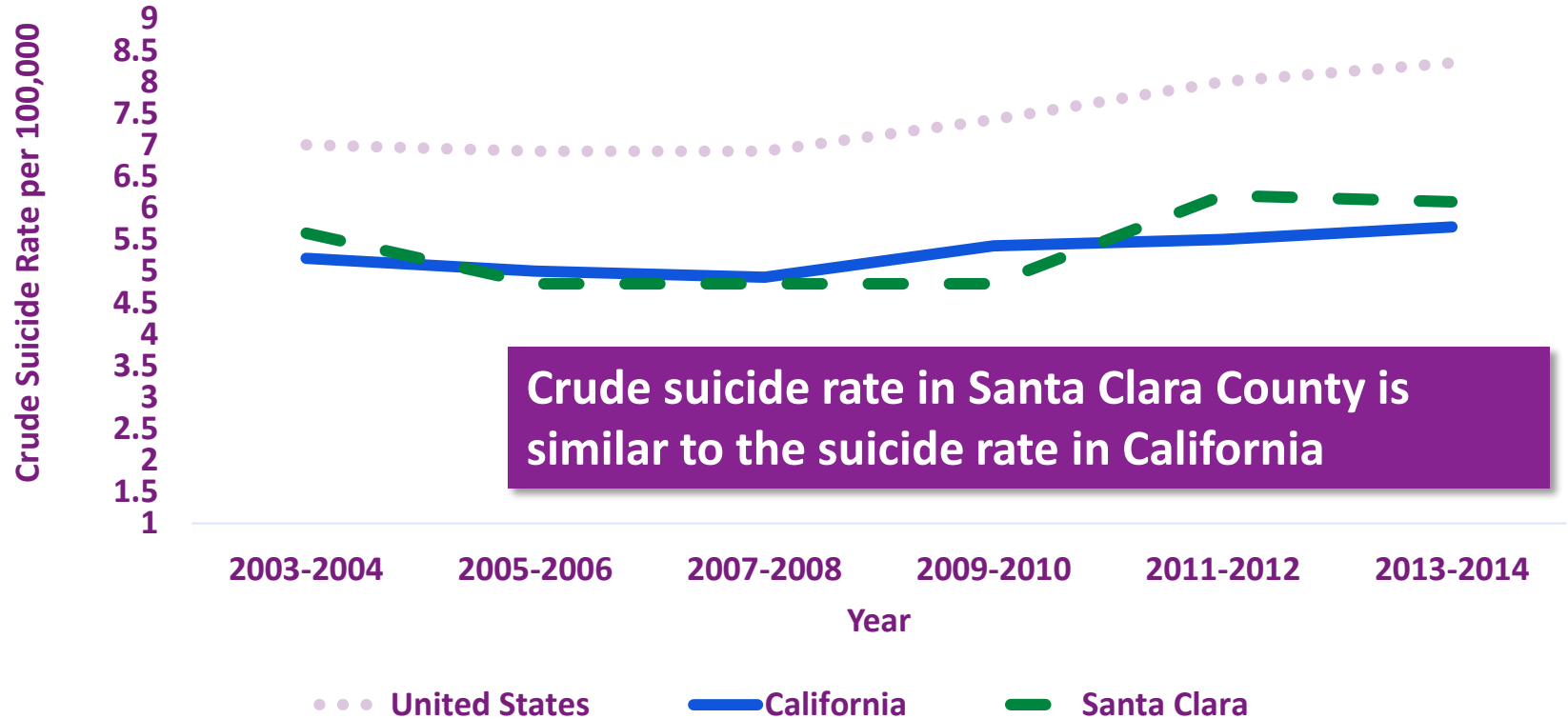
**Crude suicide rate for youth residents of California (5.3/100,000) was similar to the crude suicide rate for youth residents of Santa Clara County (5.4/100,000)**

*For combined years of 2003–2014*

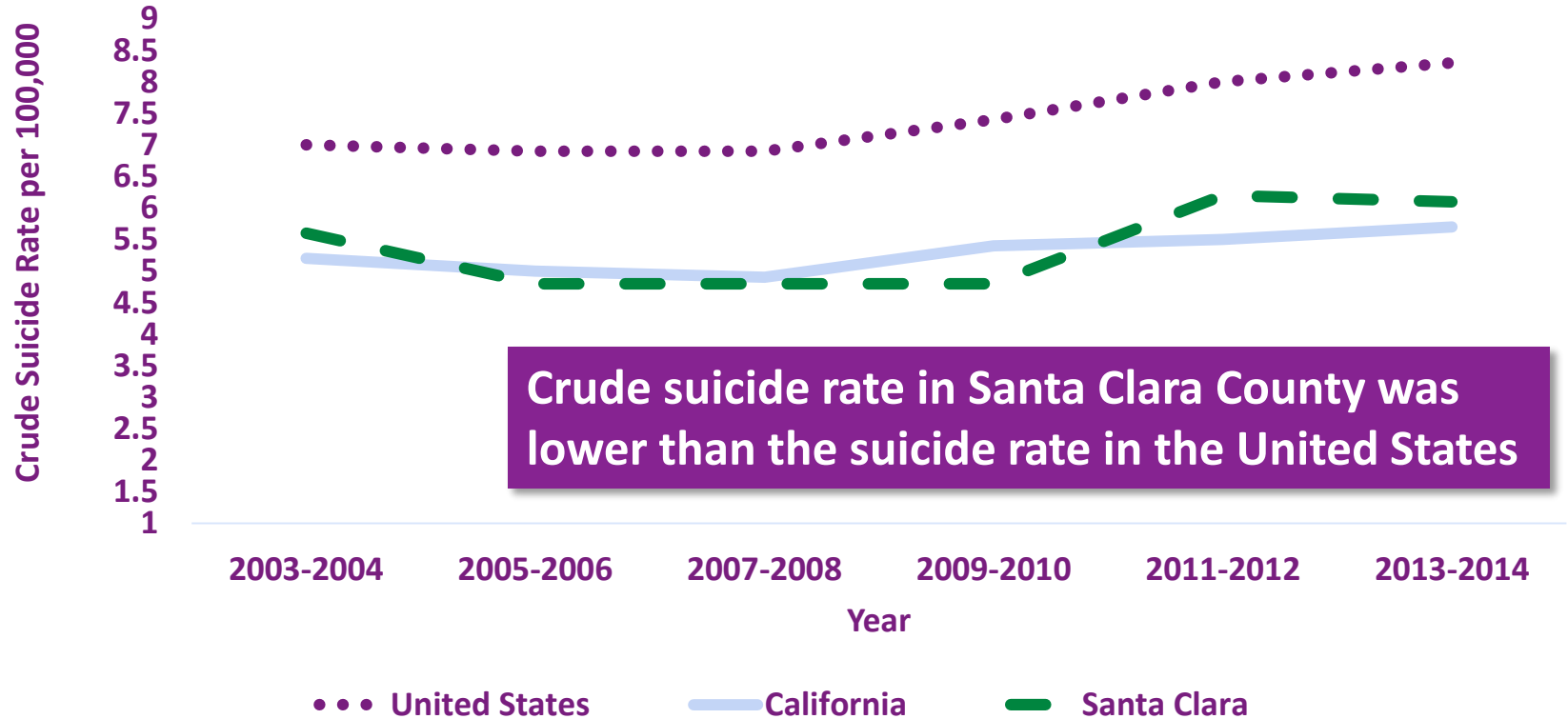
# Crude youth suicide rate by two year periods



# Crude youth suicide rate by two year periods



# Crude youth suicide rate by two year periods



# Predicted crude youth suicide rates by city of residence, 2003–2015

	Predicted Crude Suicide Rate per 100,000	95% Confidence Interval	
San Jose	4.6	3.8	5.5
Morgan Hill	12.7	7.3	21.8
Palo Alto	14.1	9.0	22.2
Sunnyvale	6.4	4.0	10.3
Santa Clara	5.1	3.0	8.5

**Data Source:** Vital statistics, combined years 2003-2015

**Case Definition:** (1) County of residence listed as Santa Clara County, (2) Death occurred in state of California, (3) Decedent 10 to 24 years of age, (4) Manner of death listed as suicide.

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# Predicted crude youth suicide rates by city of residence, 2003–2015

Predicted youth suicide rate in Palo Alto significantly higher than San Jose, Sunnyvale, Santa Clara

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Data Source: Vital statistics, combined years 2003-2015

Case Definition: (1) County of residence listed as Santa Clara County, (2) Death occurred in state of California, (3) Decedent 10 to 24 years of age, (4) Manner of death listed as suicide.



# Predicted crude youth suicide rates by city of residence, 2003–2015

Predicted youth suicide rate in Palo Alto not significantly different than Morgan Hill

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**Data Source:** <sup>†</sup>Vital statistics, combined years 2003-2014, <sup>‡</sup>CDC WONDER data 2003-2014

**Case Definition Vital Statistics:** (1) County of residence listed as Santa Clara County, (2) Death occurred in state of California, (3) Decedent 10 to 24 years of age, (4) Manner of death listed as suicide. **Case Definition CDC WONDER:** Youth suicide decedent, age 10-24, that died in Santa Clara County by suicide.

# Predicted crude youth suicide rates, 2003–2014

Predicted youth suicide rate in Morgan Hill significantly higher than Santa Clara County

	Predicted Crude Suicide Rate per 100,000	95% Confidence Interval	
Morgan Hill <sup>†</sup>	12.7	7.2	22.3
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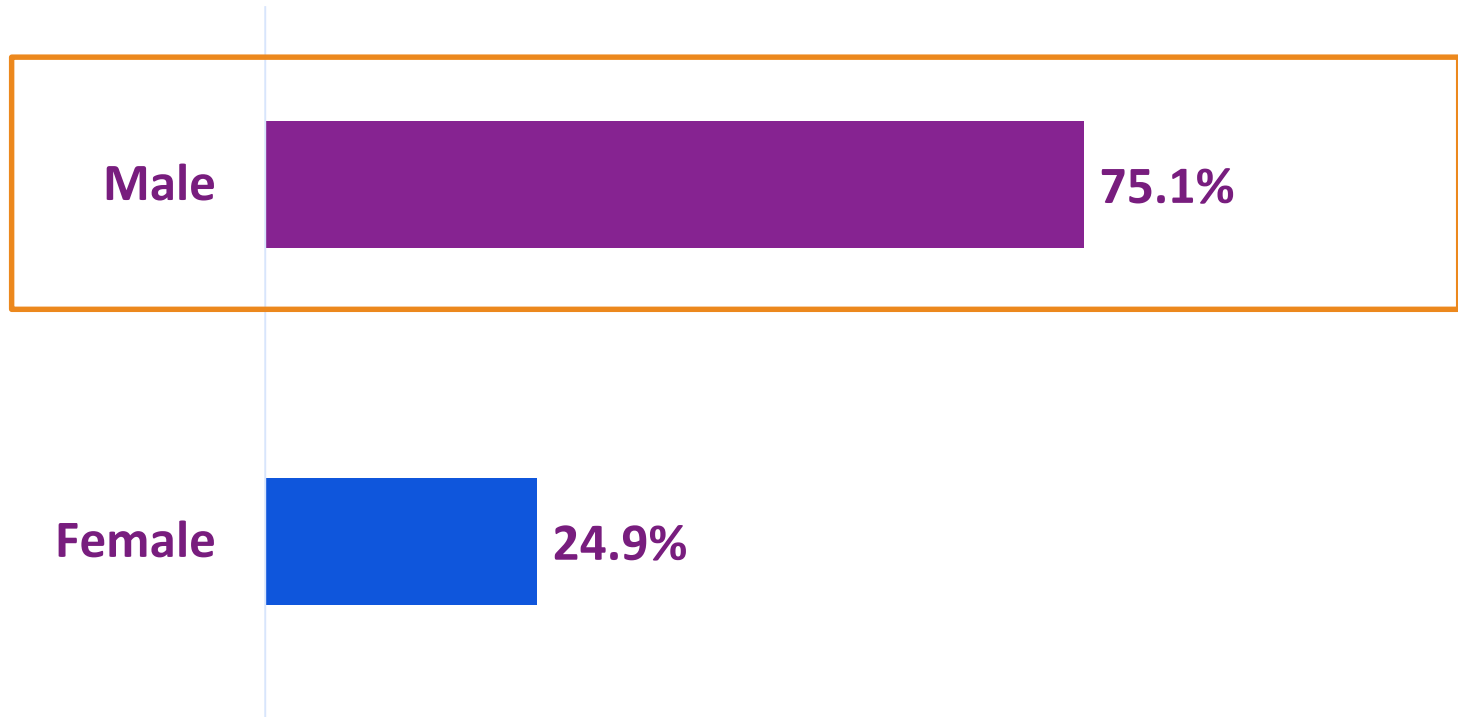
# 229 suicides among youth residents of Santa Clara County that died in California

*For combined years of 2003–2015*

**Data Source:** Vital statistics, combined years 2003-2015

**Case Definition:** (1) County of residence listed as Santa Clara County, (2) Death occurred in state of California, (3) Decedent 10 to 24 years of age, (4) Manner of death listed as suicide.

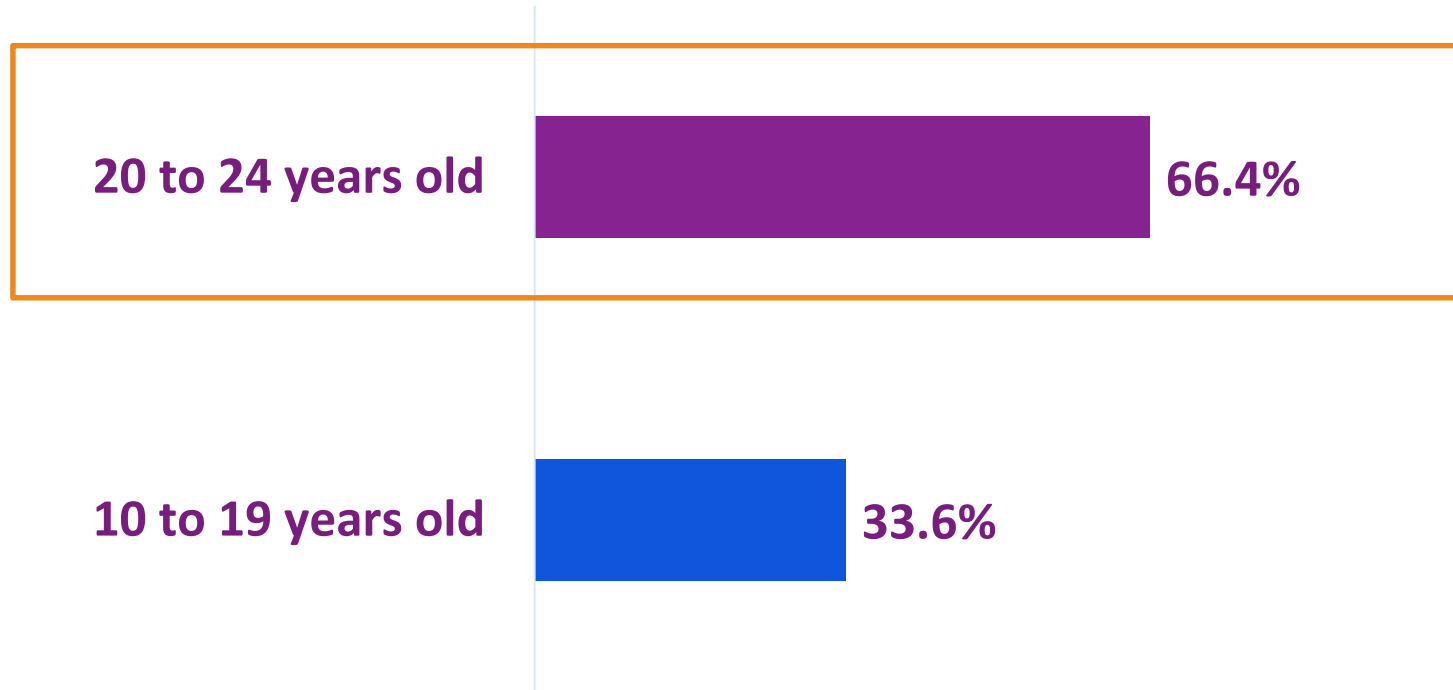
# Biological sex of youth suicide decedents, 2003–2015



**Data Source:** Vital statistics, combined years 2003-2015

**Case Definition:** (1) County of residence listed as Santa Clara County, (2) Death occurred in state of California, (3) Decedent 10 to 24 years of age, (4) Manner of death listed as suicide.

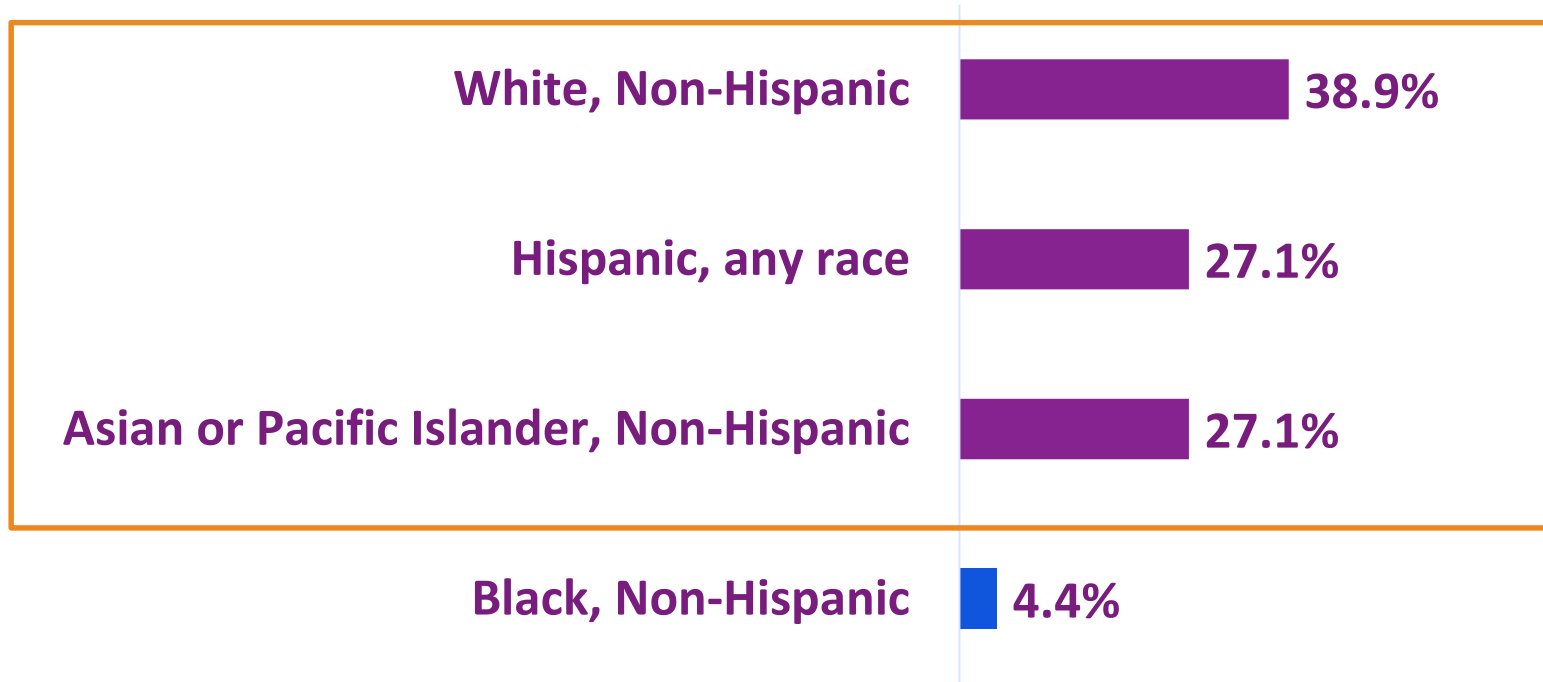
# Age category of youth suicide decedents, 2003–2015



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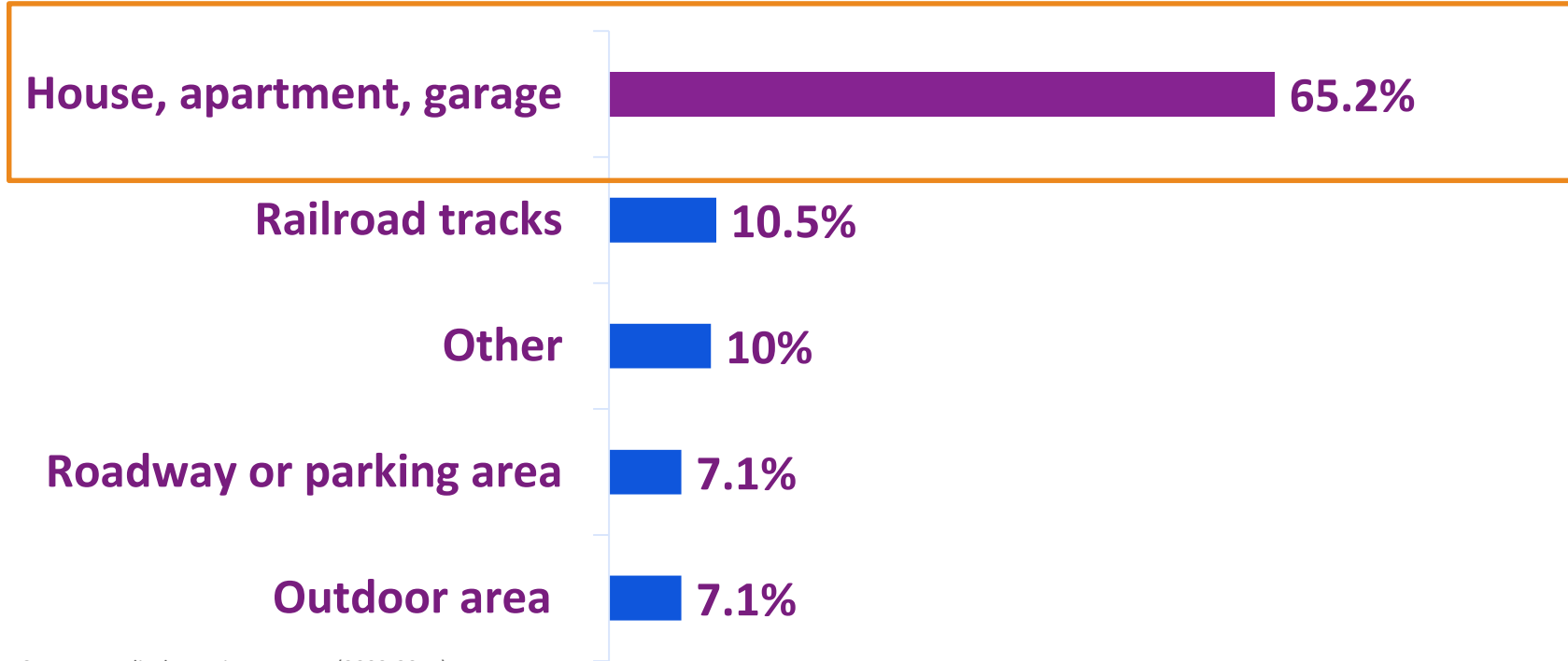
# Race/ethnicity of youth suicide decedents, 2003–2015



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# Location of youth suicides, 2003–2015



Data Source: Medical examiner reports (2003-2015)

Population: (1) County of residence listed as Santa Clara County, (2) Death occurred in Santa Clara County, (3) Decedent 10 to 24 years of age, (4) Manner of death listed as suicide.



# Known precipitating circumstances

- Known precipitating factors for suicide identified by medical examiner and/or law enforcement investigators
- Known precipitating circumstances included in medical examiner reports depends on information provided by family and friends of the decedent
  - May not include all actual precipitating circumstances

# Youth suicide decedents had, on average, 4.8 known precipitating circumstances

**Data Source:** Medical examiner reports (2003-2015)

**Population:** (1) County of residence listed as Santa Clara County, (2) Death occurred in Santa Clara County, (3) Decedent 10 to 24 years of age, (4) Manner of death listed as suicide.

**81% of youth suicide decedents had two or more known precipitating circumstances**

**Data Source:** Medical examiner reports (2003-2015)

**Population:** (1) County of residence listed as Santa Clara County, (2) Death occurred in Santa Clara County, (3) Decedent 10 to 24 years of age, (4) Manner of death listed as suicide.

# Known precipitating circumstances for youth suicide, 2003–2015

	%
Recent crisis	52.6
Current mental health problem	47.4
Ever treated for mental health problem	42.8
Suicide note	42.3
Suicide thought history	37.1
Current depressed mood	32.5
Current treatment for mental illness	30.4
Suicide intent disclosed	29.4
Suicide attempt history	29.9

**Data Source:** Medical examiner reports (2003-2015)

**Population:** (1) County of residence listed as Santa Clara County, (2) Death occurred in Santa Clara County, (3) Decedent 10 to 24 years of age, (4) Manner of death listed as suicide.

# Known precipitating circumstances for youth suicide, by city of residence, 2003–2015

	Morgan Hill	Palo Alto	San Jose	Santa Clara	Sunnyvale	Other
Current mental health problem	X	X	X		X	X
Current depressed mood	X	X	X	X	X	X
Current treatment for mental illness	X	X			X	X
Ever treated for mental health problem	X	X	X		X	X
Suicide note	X	X	X	X	X	X
Suicide intent disclosed	X	X	X		X	
Suicide thought history			X	X	X	X
Suicide attempt history	X	X	X		X	
Recent crisis	X	X	X	X	X	X
Intimate partner problems	X		X	X	X	
Argument	X		X			
School problem	X	X			X	X
Family relationship problem	X					

X indicates that ≥25% of suicide decedents had the precipitating circumstance indicated in their medical examiner report

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**Nonfatal suicidal behavior**

**3,915 emergency department visits for suicide attempt<sup>†</sup> among youth residents of Santa Clara County, and seen in California**

*For combined years of 2005–2014*

**1,787 hospitalizations for suicide attempt<sup>†</sup> among youth residents of Santa Clara County, and hospitalized in California**

*For combined years of 2003–2014*

<sup>†</sup> suicide attempt without suicidal ideation

**Data Source:** Emergency Department Data (2005-2014)

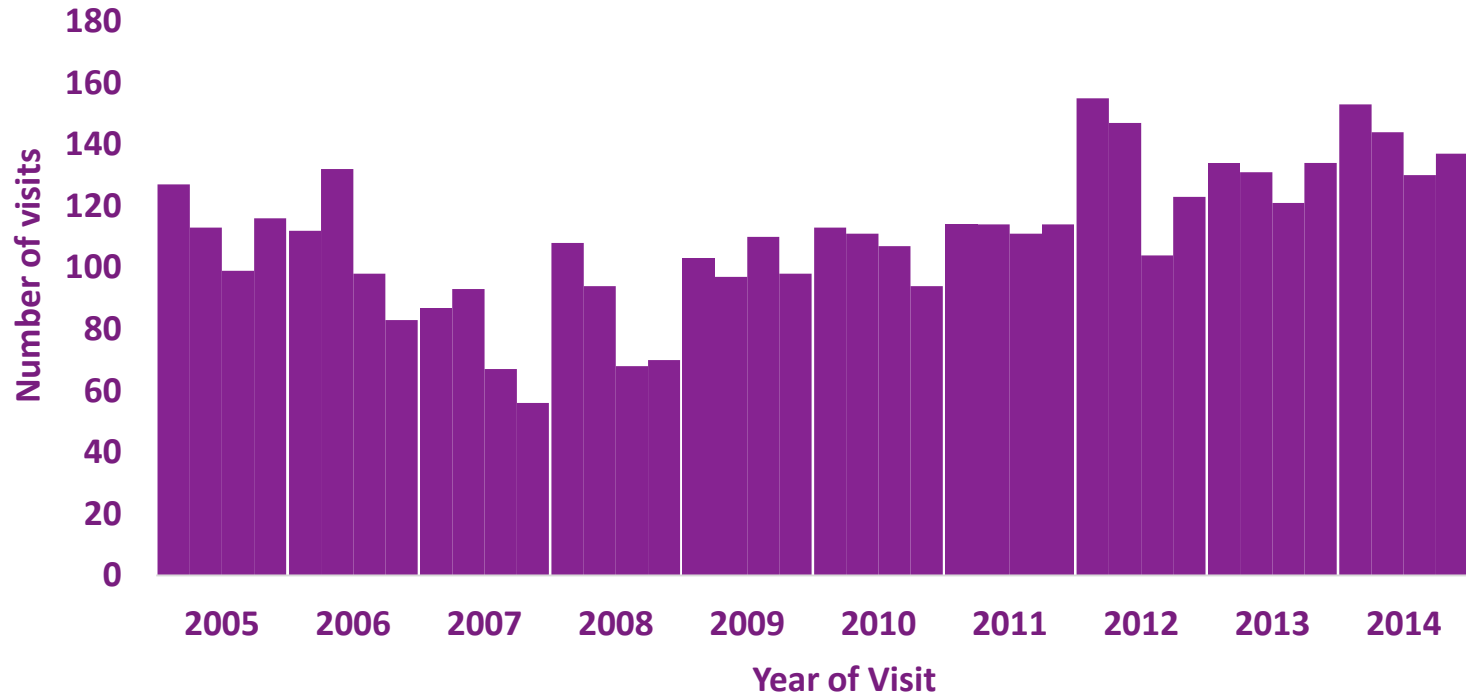
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<sup>†</sup> suicide attempt without suicidal ideation

**Data Source:** Patient Discharge Data (2003-2014)

**Population:** (1) Patient was 10 to 24 years of age, (2) Patient was a resident of Santa Clara County, and (3) Hospitalization was for suicide attempt/self-injury. Suicide attempt/self-injury was defined based on ICD-9 external cause of injury codes (E-codes) in the range 950.0–959.9, corresponding to suicide attempt and self-inflicted injury.

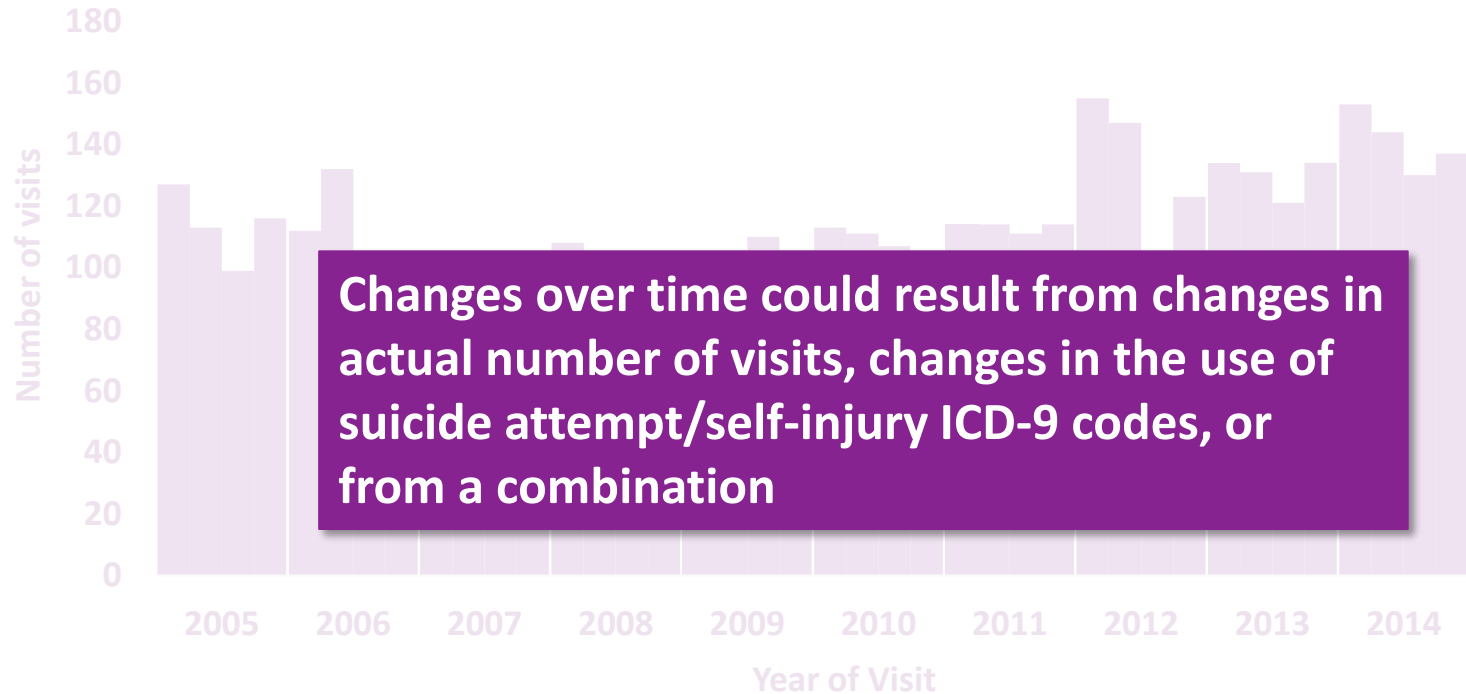
# Emergency Department visits for suicide attempt by Santa Clara County youth residents



**Data Source:** Emergency Department Data (2005-2015). **Population:** (1) Patient was 10 to 24 years of age, (2) Patient was a resident of Santa Clara County, and (3) Visit was for suicide attempt/self-injury. Suicide attempt/self-injury was defined based on the principal or any other diagnosis coded with ICD-9 external cause of injury codes (E-codes) in the range 950.0–959.9, corresponding to suicide attempt and self-inflicted injury.

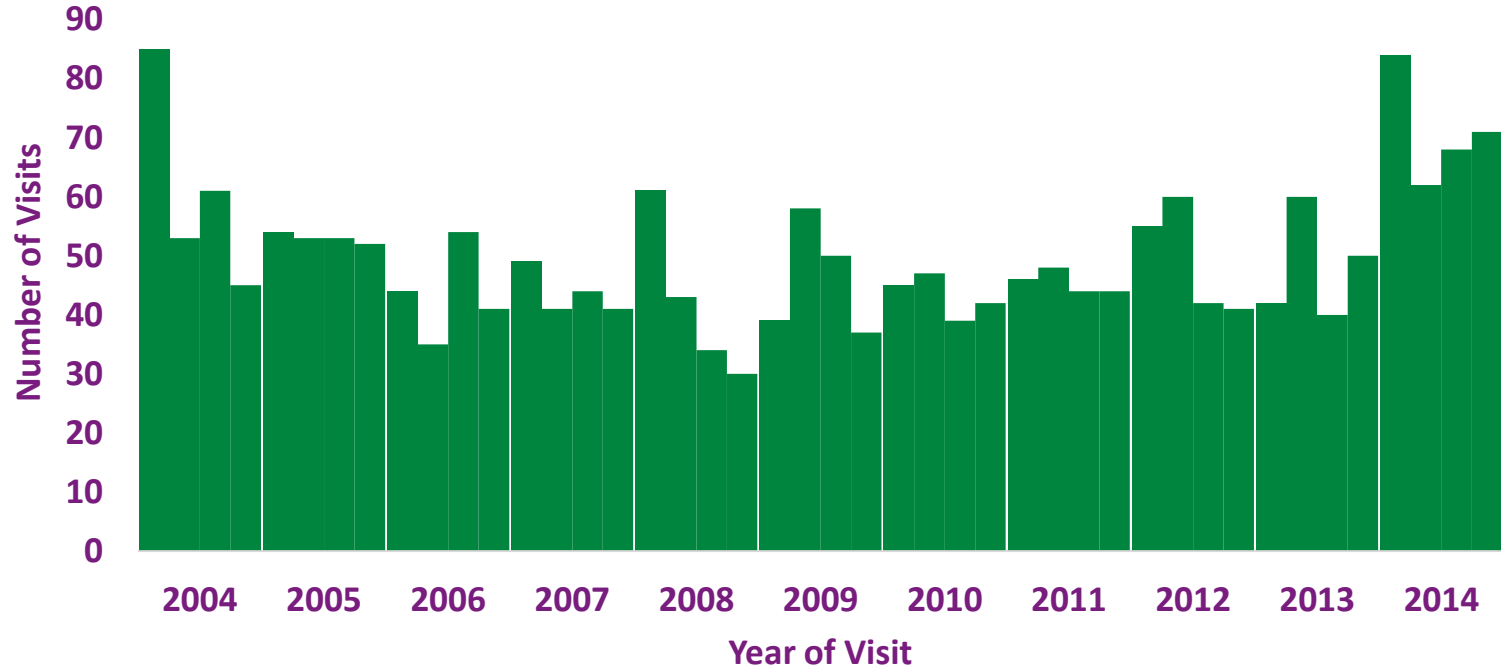


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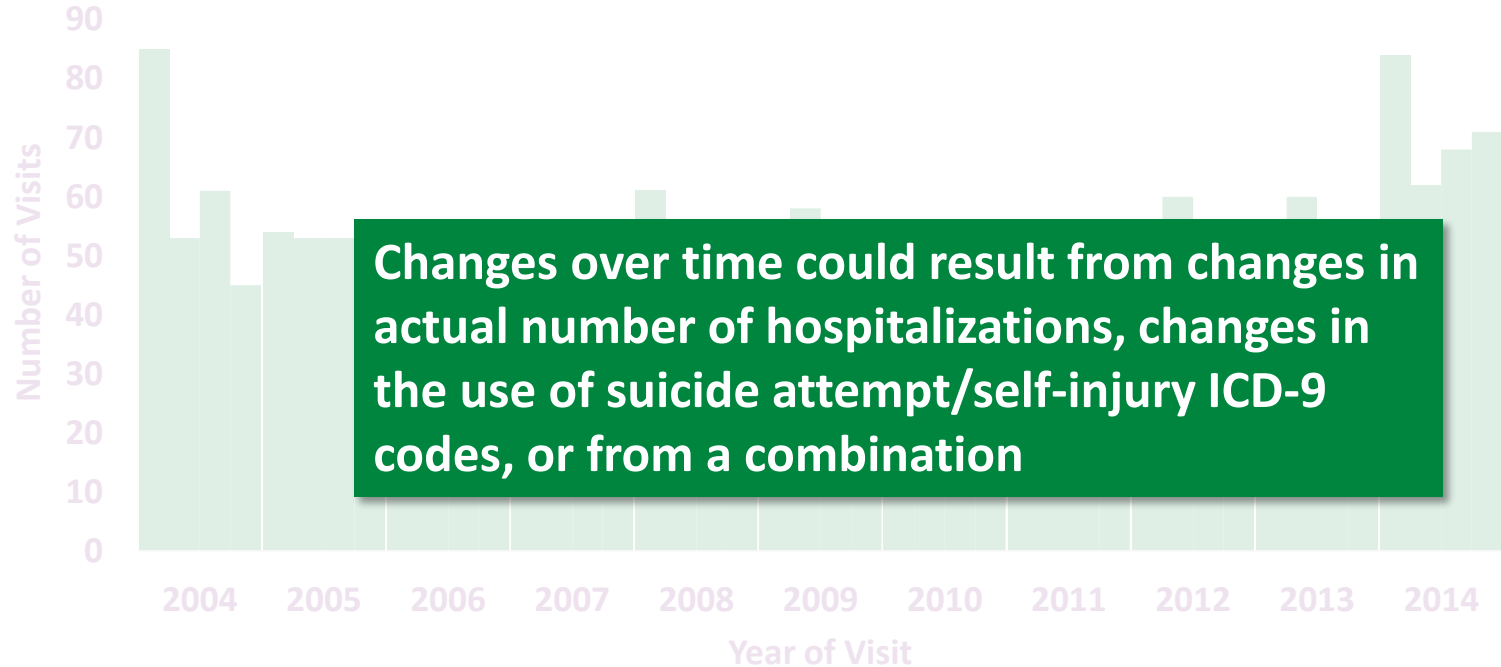
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# Hospitalization for suicide attempt by Santa Clara County youth residents

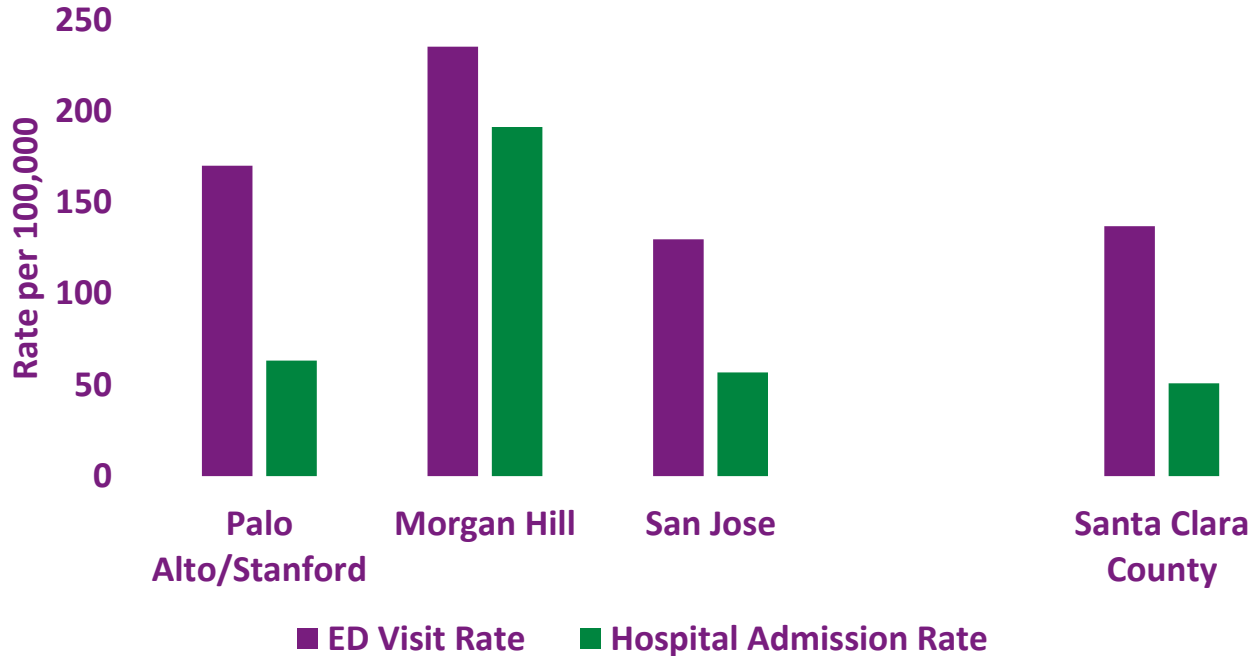


**Data Source:** Patient Discharge Data (2004-2014) **Population:** (1) Patient was 10 to 24 years of age, (2) Patient was a resident of Santa Clara County, and (3) Hospitalization was for suicide attempt/self-injury. Suicide attempt/self-injury was defined based on ICD-9 external cause of injury codes (E-codes) in the range 950.0–959.9, corresponding to suicide attempt and self-inflicted injury.

# Hospitalization for suicide attempt by Santa Clara County youth residents



# Crude Emergency Department (ED) visit and hospitalization rate for suicide attempt/self injury<sup>†</sup>

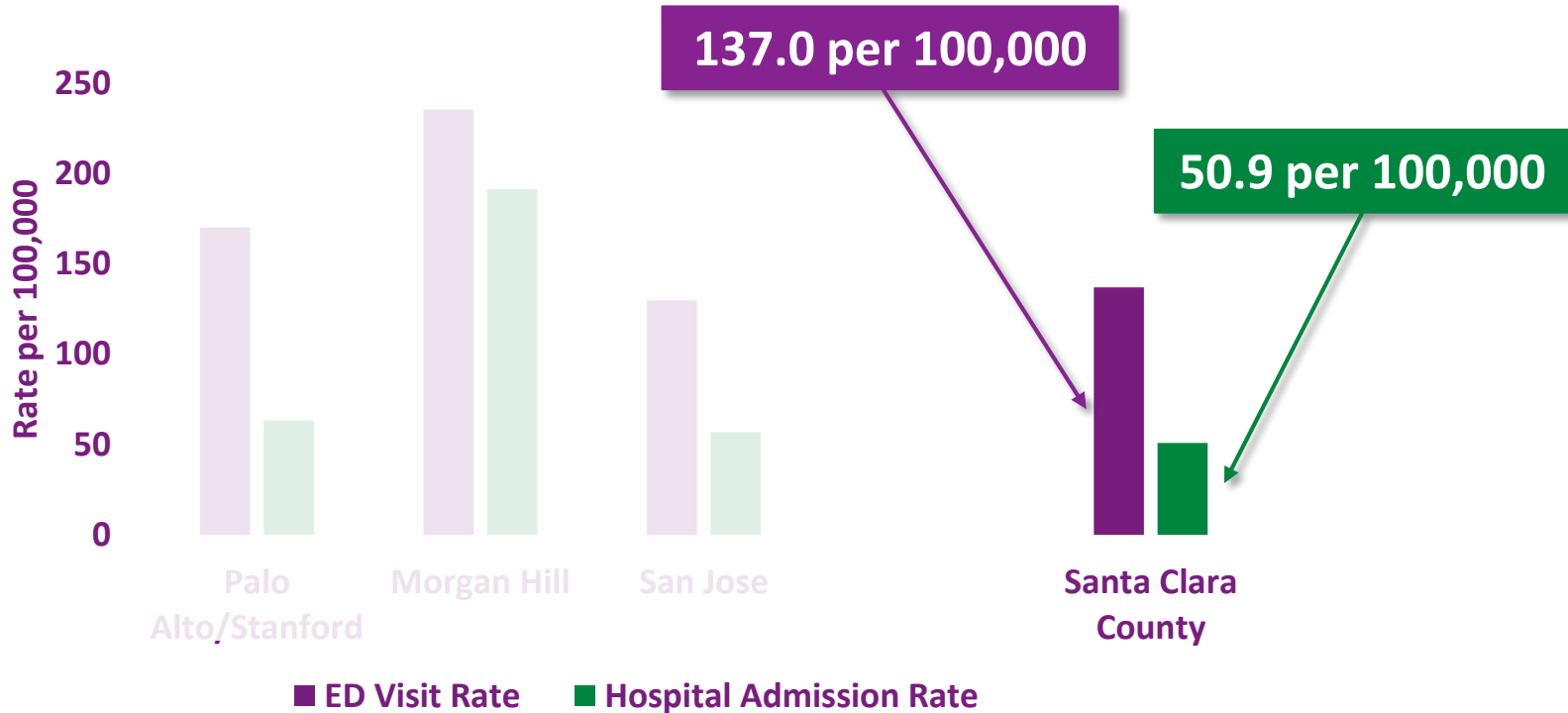


<sup>†</sup> suicide attempt without suicidal ideation

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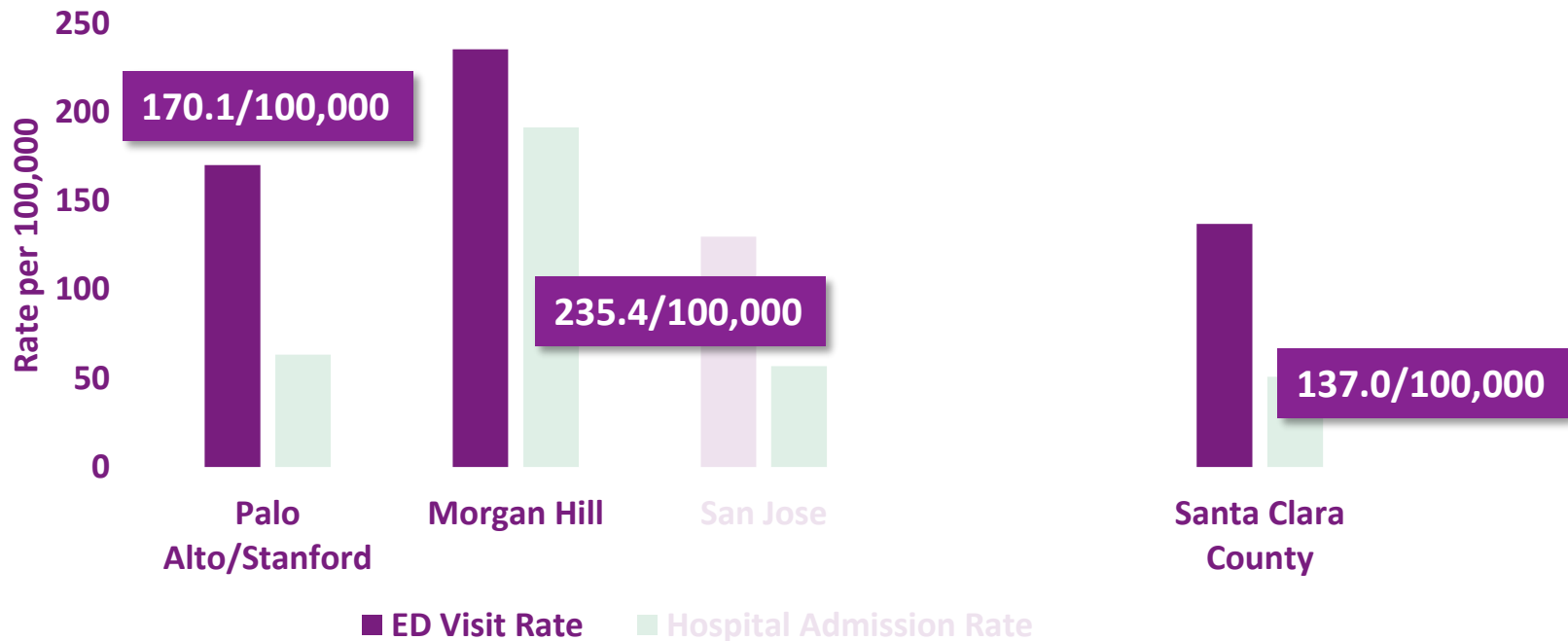


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## ED visit rate for Palo Alto/Stanford and Morgan Hill were higher than rate for Santa Clara County



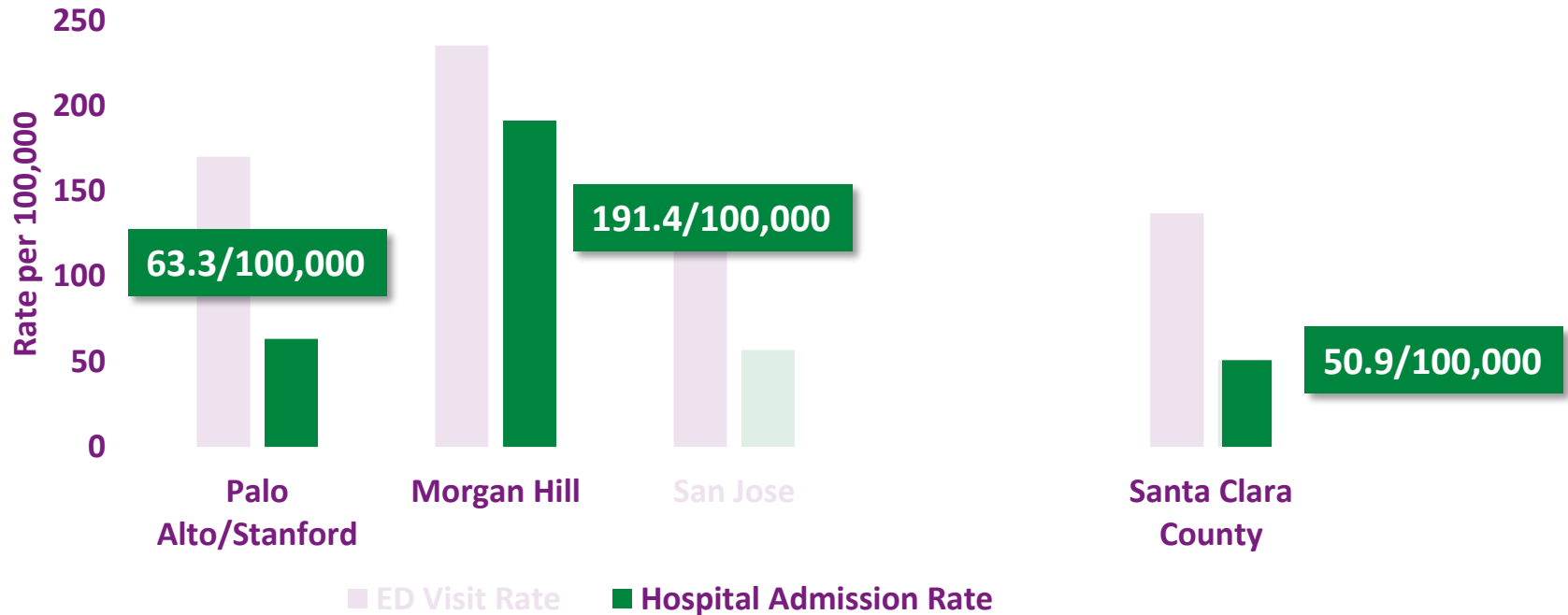
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# Crude Emergency Department (ED) visit and hospitalization rates

## Hospitalization rates for Palo Alto/Stanford and Morgan Hill were higher than rate for Santa Clara County

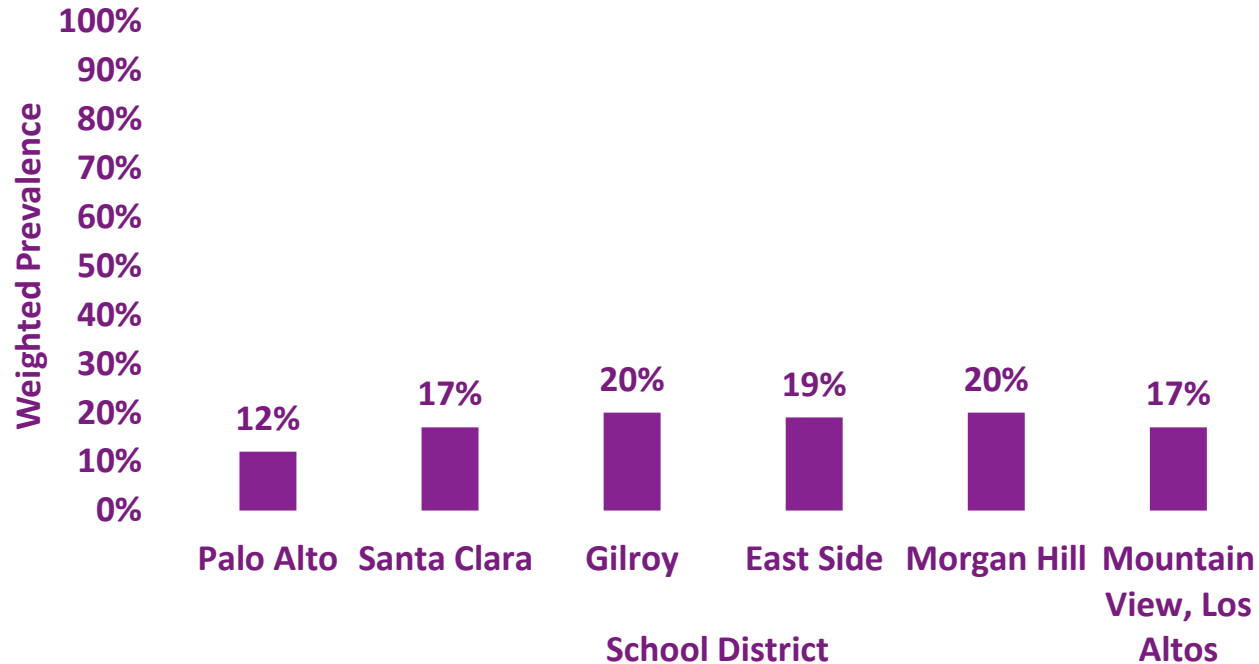


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# Weighted prevalence of past year suicidal ideation among public high school students, 2013–2014

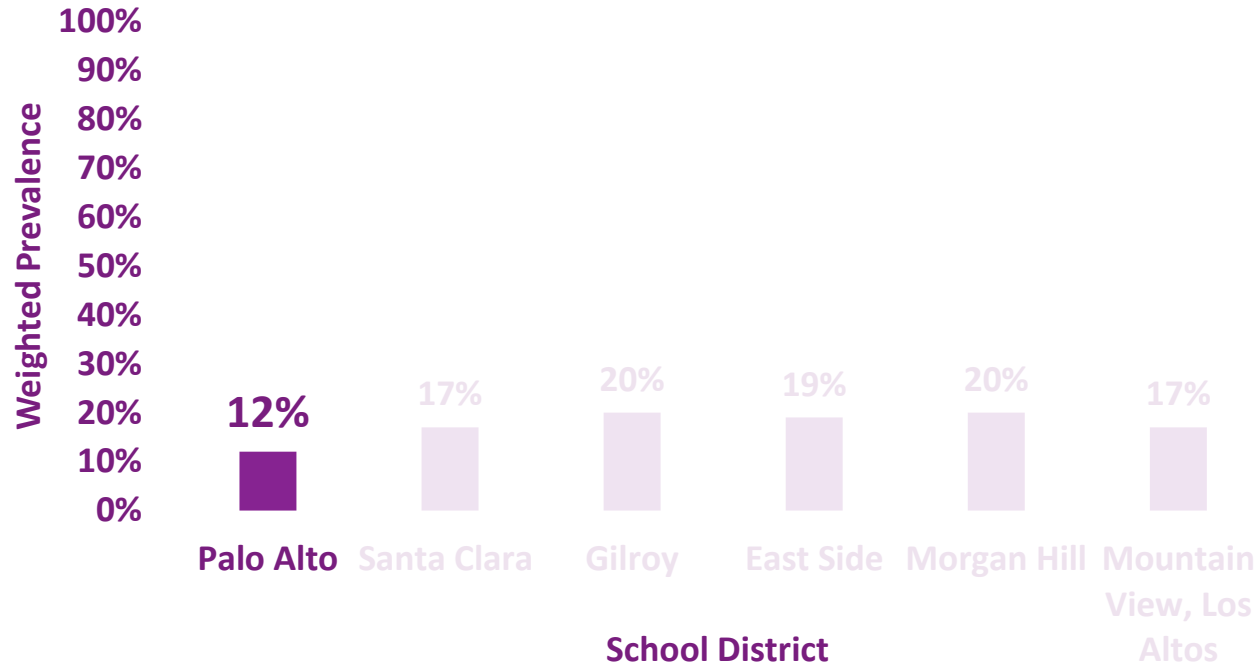


Data Sources: California Healthy Kids Survey (2013-2014)

Population: Public high school students from Santa Clara County



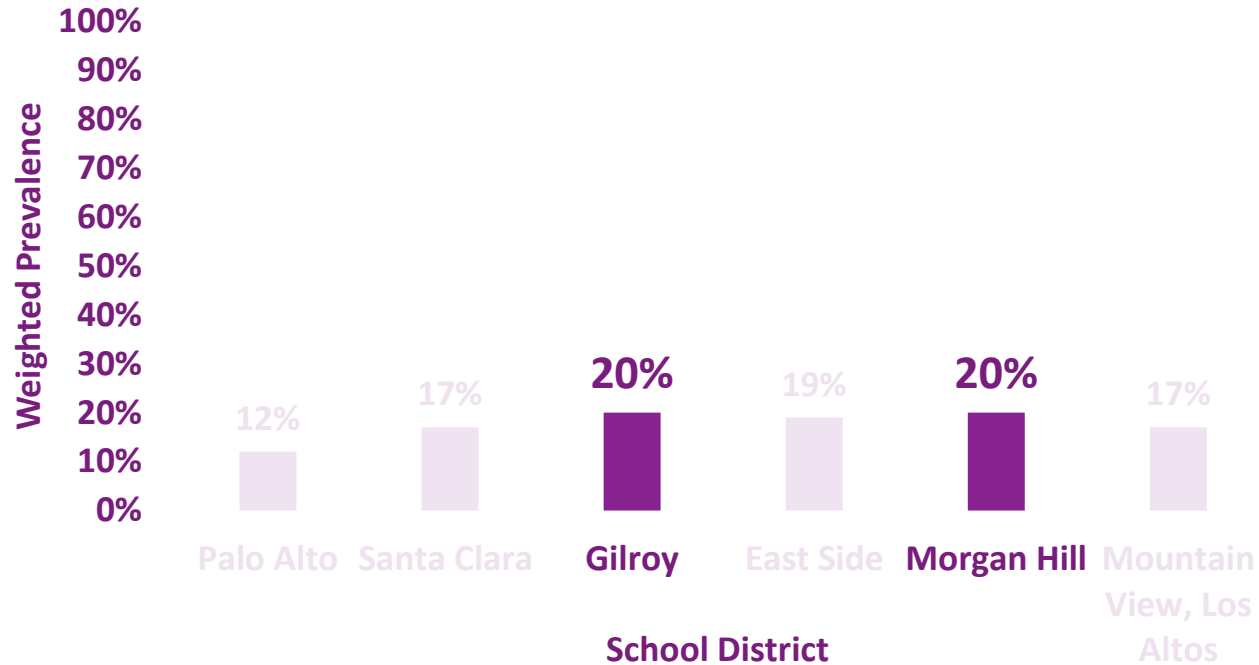
# Weighted prevalence of past year suicidal ideation among public high school students, 2013–2014



Data Sources: California Healthy Kids Survey (2013-2014)

Population: Public high school students from Santa Clara County

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Data Sources: California Healthy Kids Survey (2013-2014)

Population: Public high school students from Santa Clara County

# Risk and protective factors for nonfatal suicidal behavior among public high school students

## Risk Factors

- Characteristics that may put an individual at increased risk for suicide

## Protective Factors

- Characteristics that could help insulate or buffer an individual from suicide

# Individual level risk and protective factors for nonfatal suicidal behavior among public high school students

## Risk Factors

- Drug, alcohol, pain medication, cigarette use
- Mental health problems
- Sexual orientation (Lesbian, Gay, Bisexual)
- Delinquent behavior
- Sleep difficulties
- Female gender
- Lack of purpose and control over life
- Sensation seeking
- Sexual intercourse

## Protective Factors

- Positive perceptions of self
- Positive outlook on future
- Problem solving
- Emotional self-awareness
- Self-efficacy for help-seeking

# Individual level risk and protective factors for nonfatal suicidal behavior among public high school students

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- Sexual intercourse

## Protective Factors

- Positive perceptions of self
- Positive outlook on future
- Problem solving
- Emotional self-awareness
- Self-efficacy for help-seeking

# Interpersonal level risk and protective factors for nonfatal suicidal behavior among public high school students

## Risk Factors

- Violence perpetration/victimization
- Family violence
- Physical, emotional, cyber bullying

## Protective Factors

- Close and positive relationship with parents and family
- Parent involvement in youth's life
- Being encouraged by family to do one's best
- Open communication with parents
- Engagement in outside activities
- Close and positive relationship with adults outside of school/family
- Caring relationships with fellow students

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# Community level risk and protective factors for nonfatal suicidal behavior among public high school students

## Risk Factors

- Feeling unsafe at school
- Feeling unsafe in neighborhood

## Protective Factors

- Caring relationships with teachers and adults at school
- School culture
- Connection to and encouragement from school
- Being pushed by teachers to be best can be
- Positive relationship with neighborhood/community
- High level of school expectations

# Community level risk and protective factors for nonfatal suicidal behavior among public high school students

## Risk Factors

- Feeling unsafe at school
- Feeling unsafe in neighborhood

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- School culture
- Connection to and encouragement from school
- Being pushed by teachers to be best can be
- Positive relationship with neighborhood/community
- High level of school expectations

# Protective factors for past year suicidal ideation among public high school students, by school district, 2013–2014

	School District			
	Palo Alto	Santa Clara	Morgan Hill	San Jose
Teacher-adult in school cares about me	X	X	X	X
High school connectedness	X	X	X	X
School provides meaningful opportunities				X
Academic motivation	X	X	X	X
High school expectation	X	X	X	X

Data Sources: California Healthy Kids Survey (2013-2014)

Population: Public high school students from Santa Clara County

# Risk factors for past year suicidal ideation among public high school students, by school district, 2013–2014

	School District			
	Palo Alto	Santa Clara	Morgan Hill	San Jose
Alcohol, substance, cigarette use, lifetime	X	X	X	X
Sexual orientation (Lesbian, Gay, Bisexual)	X	X	X	X
Mental distress, past year	X	X	X	X
Violent victimization at school, past year	X	X	X	X
Psychological or cyber bullying, past year	X	X	X	X
Skipping school, past year	X	X	X	X

Data Sources: California Healthy Kids Survey (2013-2014)

Population: Public high school students from Santa Clara County

# Selected Results: Objective 2

Examine the degree to which media coverage of youth suicides occurring from 2008 through 2015 in Santa Clara County, California, met safe suicide reporting guidelines.

**246 media articles from 2009 through  
2015 were identified and abstracted  
using a checklist**

# Checklist

- Checklist informed by accepted safe suicide reporting guidelines
  - Safe suicide reporting guidelines available through *reportingonsuicide.org*
  - Negative Characteristics
  - Positive Characteristics

# Example characteristics included in checklist

## Negative Characteristics

- Sensational headline
- Photos of location or methods of suicide
- Photos of memorials/grieving
- Reporting on suicide similar to a crime
- Oversimplification of suicide

## Positive Characteristics

- Inclusion of local/national hotline number
- Inclusion of warning signs
- Discussion of suicide as a public health issue
- Description of suicide as preventable



# Example characteristics included in checklist

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- Discussion of suicide as a public health issue
- Description of suicide as preventable

# Average number of characteristics

## Negative Characteristics

**Average: 4.3**

**Range: 0-11**

## Positive Characteristics

**Average: 0.5**

**Range: 0-7**

# Average number of characteristics

## Negative Characteristics

Average: 4.3

Range: 0-11

## Positive Characteristics

Average: 0.5

Range: 0-7

## Common negative characteristics for media articles

**93%** had description of suicide method in text

**83%** had description of location of suicide in text

## Common negative characteristics for media articles

**66% open comments section**

**22% had comments sections that included memorialization of decedent**

## Common negative characteristics for media articles

**66% open comments section** → **Maximum #  
comments: 224**

**22% had comments sections that included  
memorialization of decedent**

## Less common negative characteristics

**4% pictures of memorials/grieving**

**3% pictures of investigative scenes**

**1% picture of body**

## Less common negative characteristics

**4% pictures of memorials/grieving**

**3% pictures of investigative scenes**

**1% picture of body** →

**All from one outlet,  
all in 2009**



## Positive characteristics

**17%** provide a hotline number

**4%** describe suicide as complex

## Positive characteristics

**17% provide a hotline number**

**Improved by 36%  
from 2009 to 2015**

**2015: only 40% of  
articles**

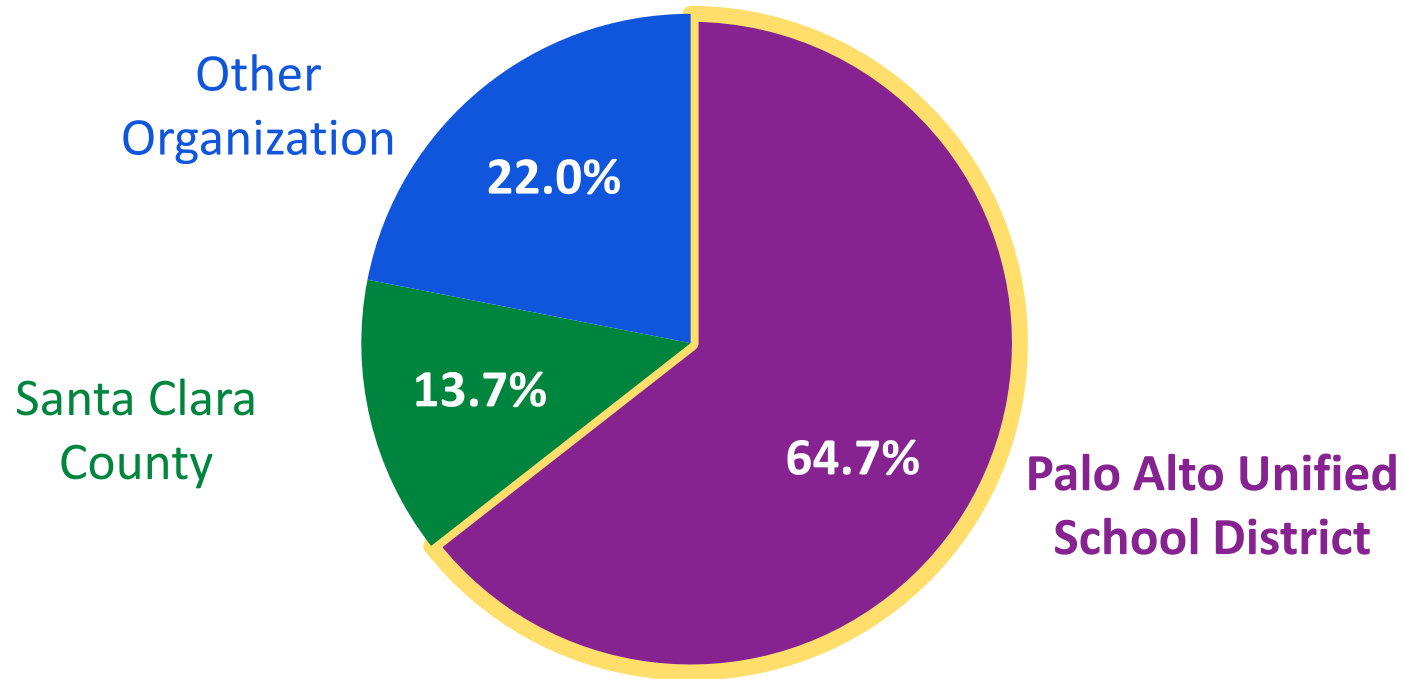
**4% describe suicide as complex**

# Selected Results: Objective 3

Inventory and compare youth suicide prevention policies, activities, and protocols used in the community to evidence-based and national recommendations.

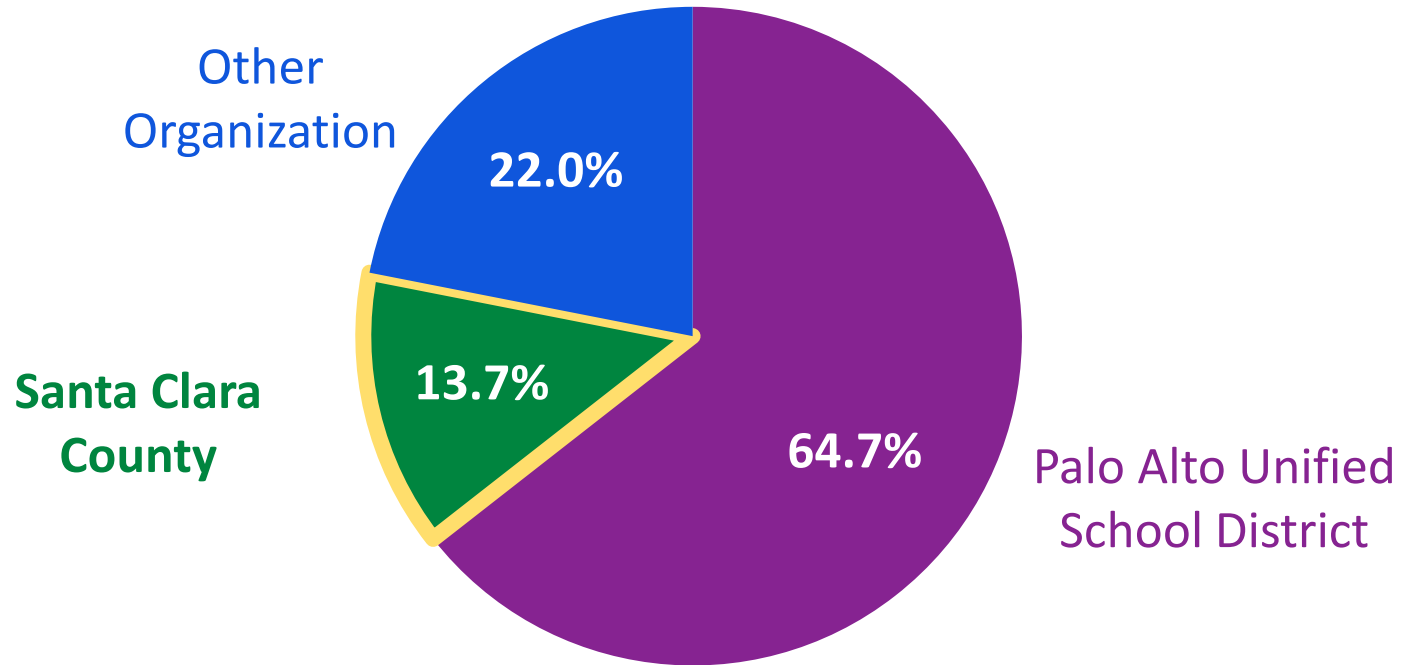
**51 programs and policies were identified that were being used in Santa Clara County that were specifically related to suicide prevention**

# Prevention activities, programs, policies



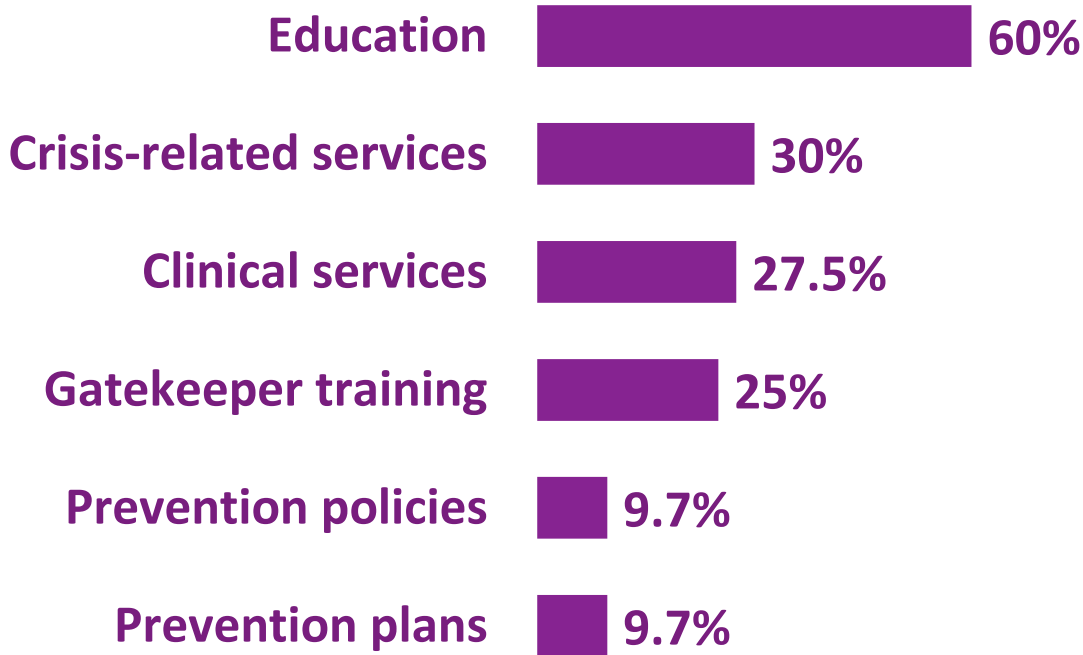
Data Sources: Materials related to programs, policies, and activities being utilized as part of suicide prevention efforts in Santa Clara County that were shared with the Epi-Aid team and were specifically focused on suicide prevention.

# Prevention activities, programs, policies

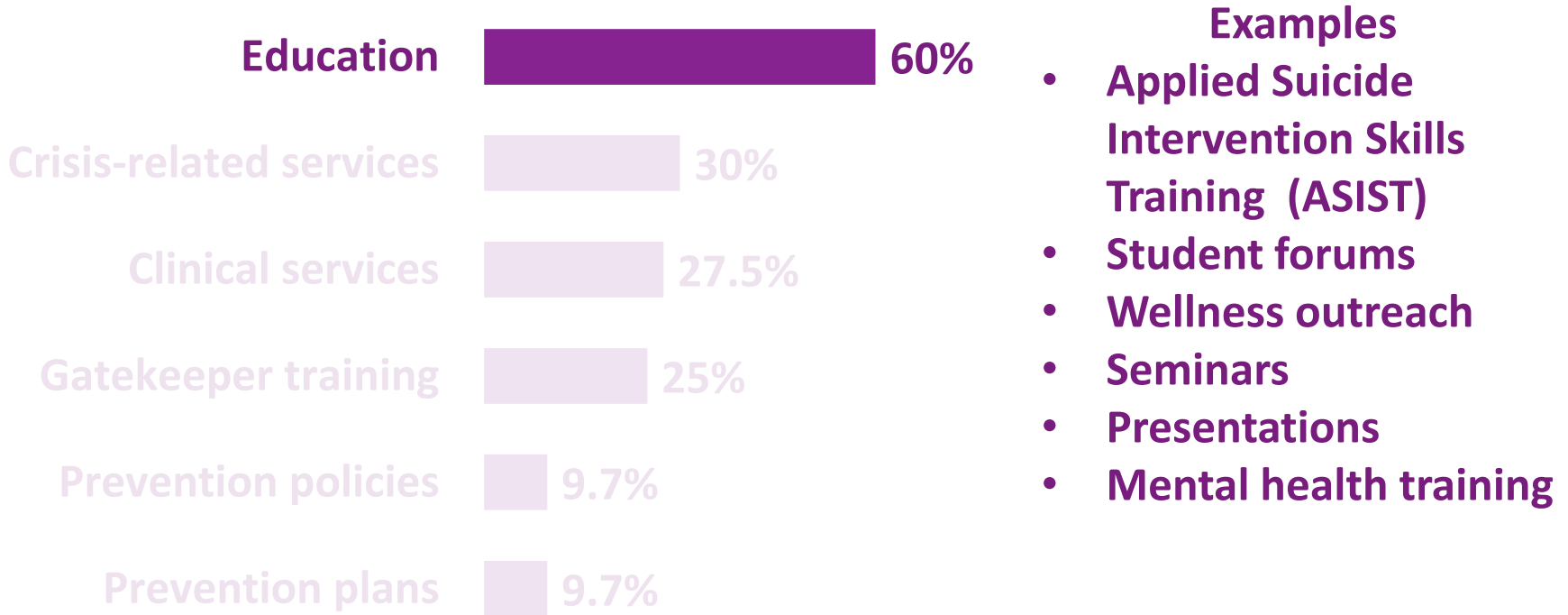


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# Prevention activities, programs, policies

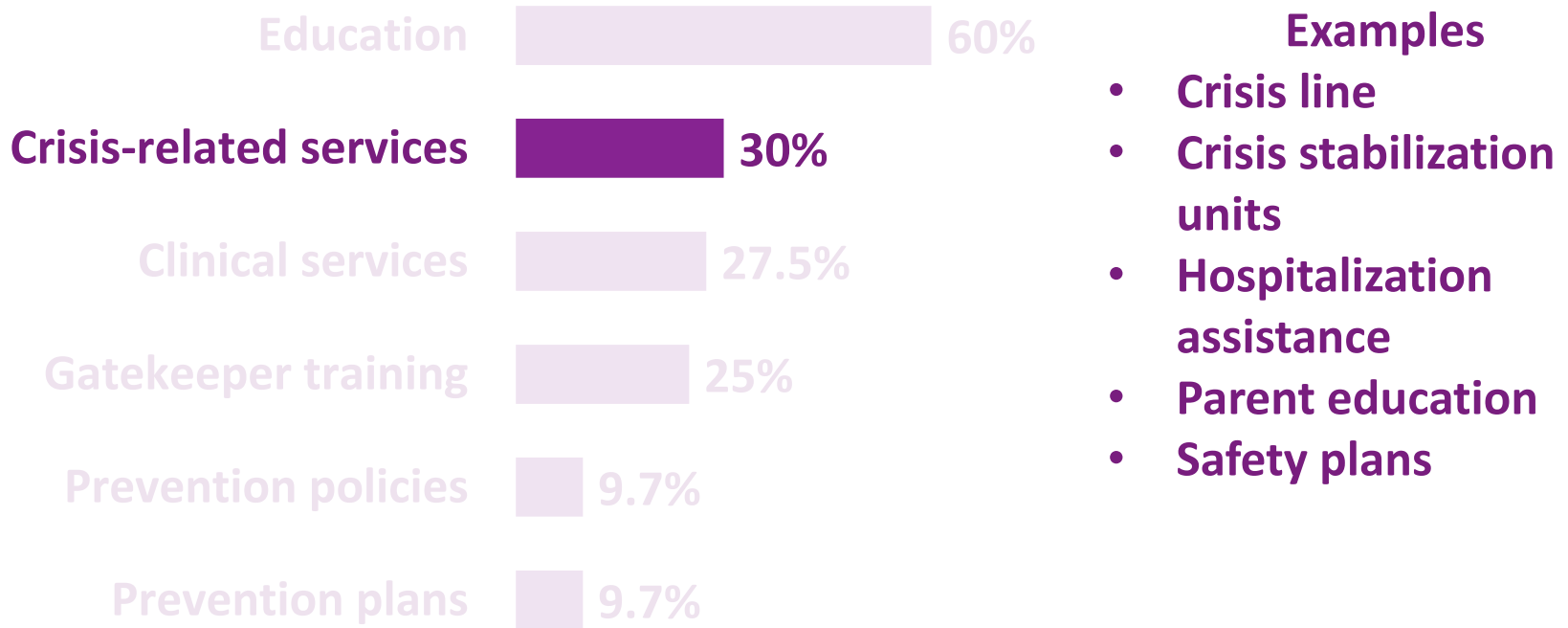


# Prevention activities, programs, policies

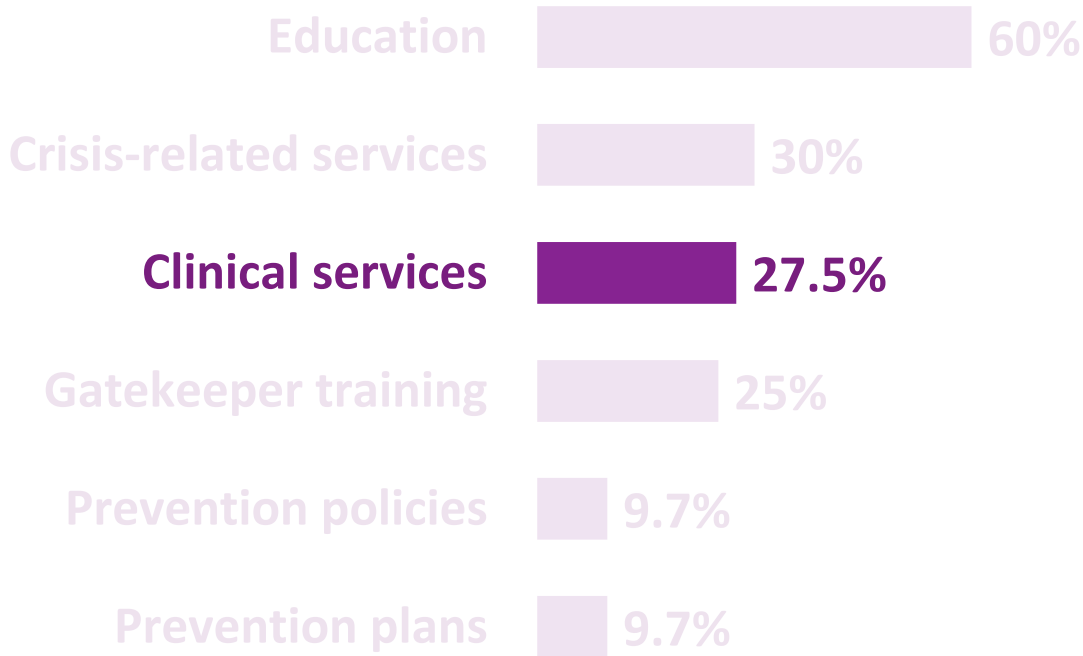




# Prevention activities, programs, policies



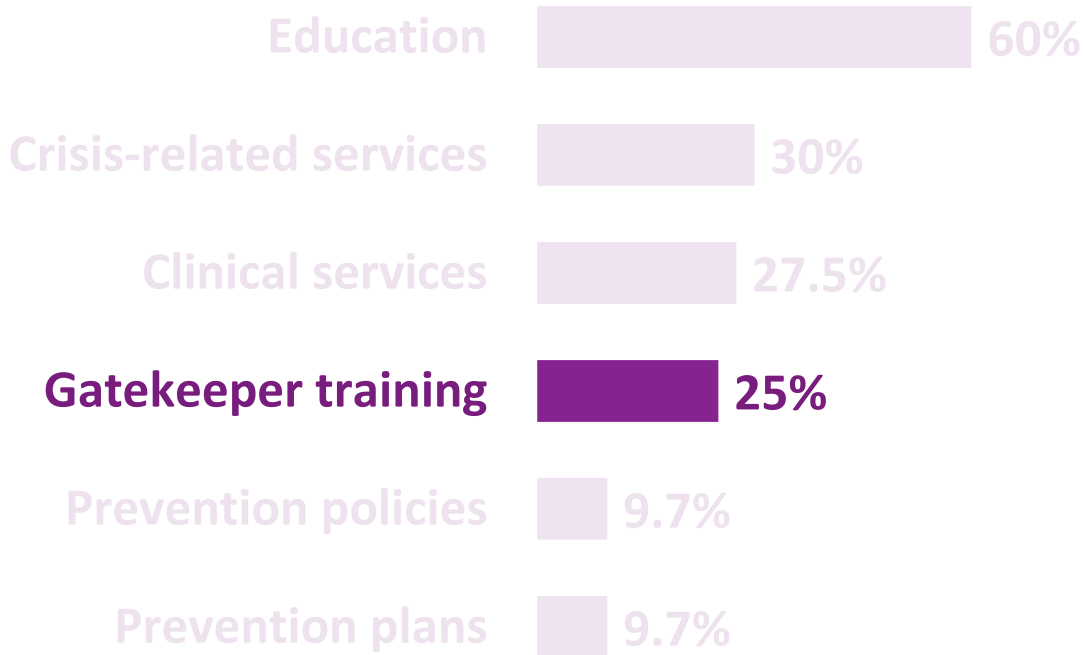
# Prevention activities, programs, policies



## Examples

- **Clinical service availability**
- **Wellness coordinators**
- **Mental health services**
- **Crisis stabilization unit**
- **Mental health therapists**

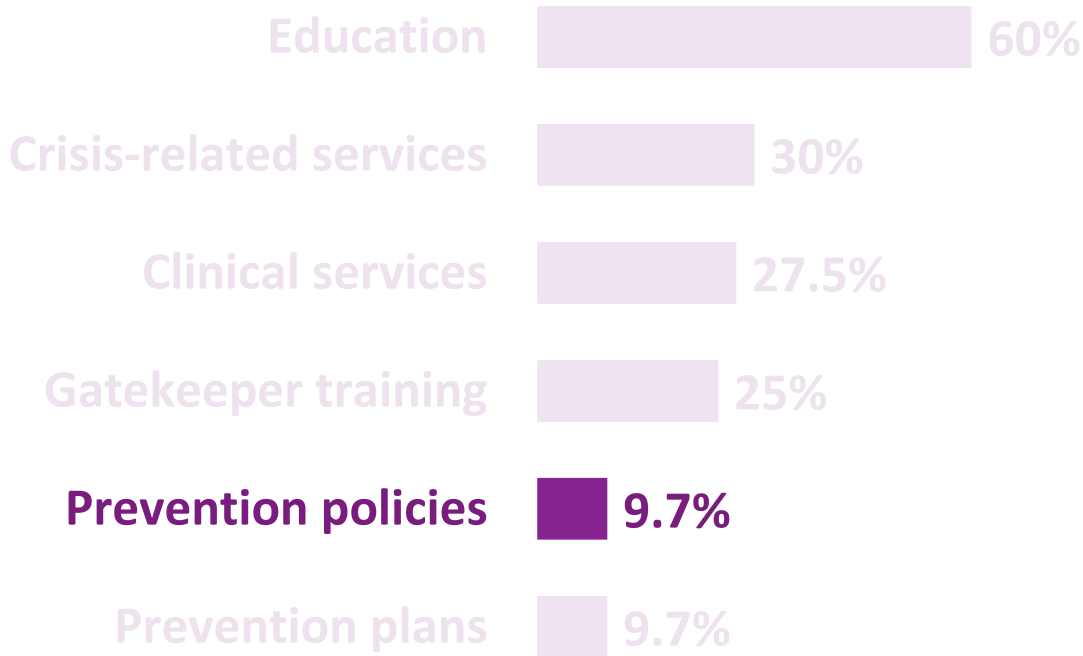
# Prevention activities, programs, policies



## Examples

- Applied Suicide Intervention Skills Training (ASIST)
- Question, Persuade, Refer (QPR)
- Mental Health First Aid

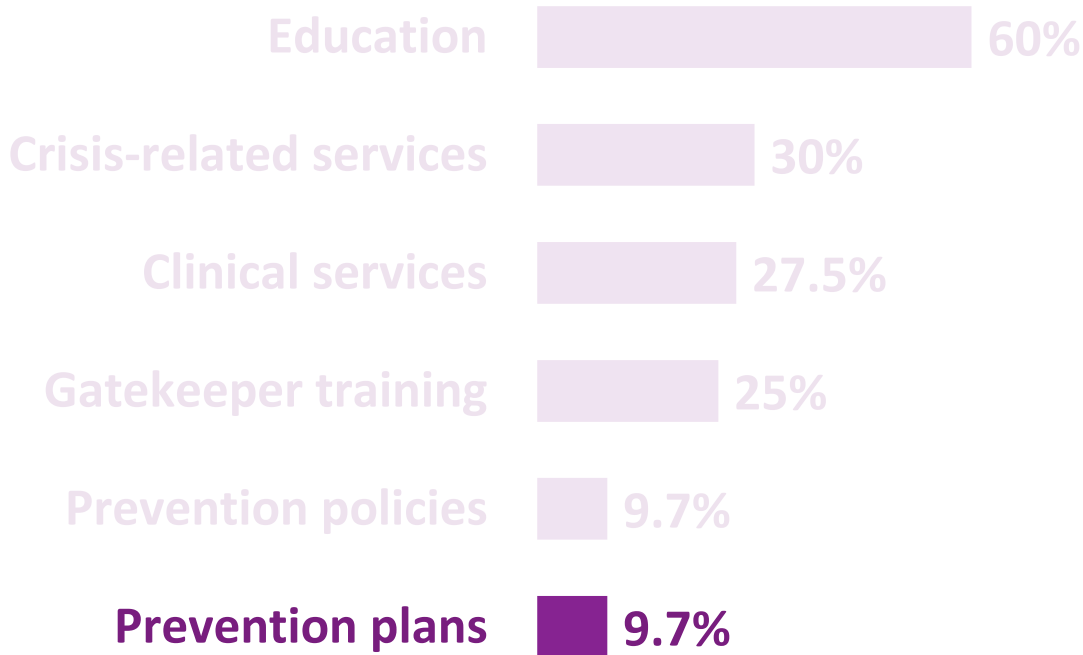
# Prevention activities, programs, policies



## Examples

- **Homework policy**
- **Suicide prevention administration regulations**
- **Suicide prevention and related mental health promotion policy**

# Prevention activities, programs, policies

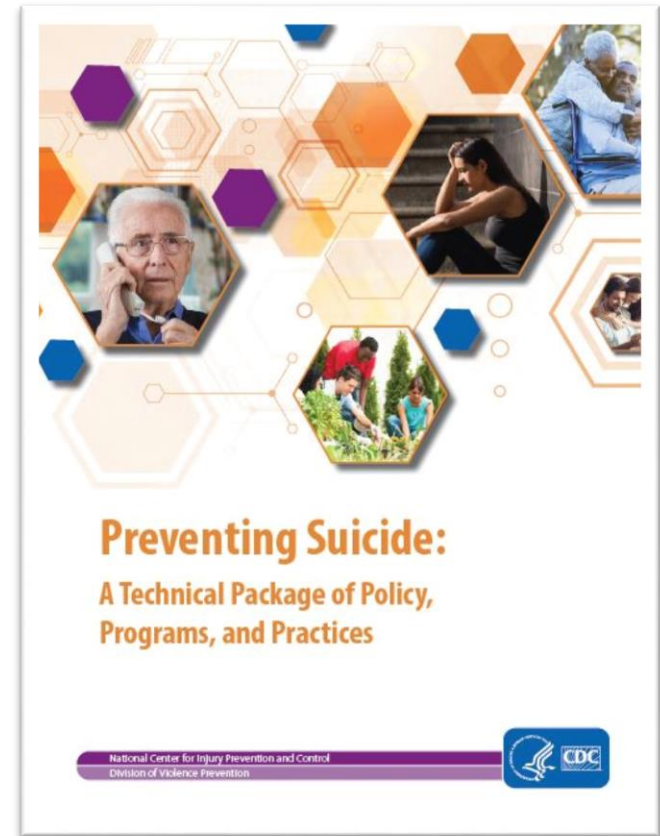


## Examples

- **Suicide prevention toolkit for schools**
- **Re-entry plan process**
- **County-wide suicide prevention strategic plan**

# CDC's "Preventing Suicide: A Technical Package of Policies, Programs, and Practices"

- Includes a core set of strategies that can be used in communities to reduce suicide and associated risk factors for suicide
- Strategies are based on the best available evidence
- Programs and policies identified through the inventory were compared to these strategies



# Example alignment with CDC’s “Preventing Suicide: A Technical Package of Policies, Programs, and Practices”

Example Strategies	Example program or policy from Santa Clara County
<b>Strengthen access and delivery of suicide care</b>	<ul style="list-style-type: none"><li>• School based mental health therapists</li><li>• School based mental health services for special education youth</li><li>• School based mental health and wellness coordinators</li></ul>
<b>Identify and support people at risk</b>	<ul style="list-style-type: none"><li>• School based program Sources of Strength</li><li>• County crisis line</li><li>• County crisis line ASIST training</li></ul>

Data Sources: Materials related to programs, policies, and activities being utilized as part of suicide prevention efforts in Santa Clara County that were shared with the Epi-Aid team and were specifically focused on suicide prevention.

# Evidence based programs

## Program

## Where Listed

### Applied Suicide Intervention Skills Training (ASIST)

- CDC Technical Package to Prevent Suicide
- Suicide Prevention Resource Center Programs and Practices database

### Sources of Strength

- CDC Technical Package to Prevent Suicide
- Suicide Prevention Resource Center Programs and Practices database

### QPR Gatekeeper Training

- Suicide Prevention Resource Center Programs and Practices database



# Evaluation

- Across all programs and activities, a minority were being evaluated for process and/or outcome measures
  - Not possible to determine if programs and activities being used are effective or if they are reaching youth at risk for suicide
- Across prevention policies and plans, only the county-wide suicide prevention strategic plan was being evaluated
  - Evaluation generally limited to process measures

# Selected Results: Objective 4

Synthesize information from objectives 1-3 to make recommendations on youth suicide prevention strategies that can be used at the school-, community-, and county- levels.

**Multiple precipitating circumstances for fatal suicidal behavior and multiple associated risk factors for nonfatal suicidal behavior identified among youth in Santa Clara County**

Multiple precipitating circumstances for fatal suicidal behavior and multiple associated risk factors for nonfatal suicidal behavior identified among youth in Santa Clara County

## **Recommendation 1**

**Multiple prevention approaches to address multiple risk factors**

# Multiple prevention approaches to address multiple risk factors

- Youth suicide is complex, and typically has multiple contributing factors
- Use of a comprehensive and coordinated suicide prevention approach that targets multiple risk factors may be the most effective strategy
- Examples: U.S. Air Force Suicide Prevention Program and the White Mountain Apache Suicide Surveillance and Prevention System
  - Both utilize multiple programs targeting multiple risk factors

**A relationship between mental health problems and fatal and nonfatal suicidal behavior was identified among youth in Santa Clara County**

A relationship between mental health problems and fatal and nonfatal suicidal behavior was identified among youth in Santa Clara County

## **Recommendation 2**

**Access to evidence-based mental health care**

# Access to evidence-based mental health care

- Mental health problems are a common risk factor for youth suicide
- Efforts in Santa Clara County could consider ensuring youth have access to quality mental health services that incorporate evidence-based treatment modalities
- Examples of clinical interventions and level of evidence supporting their efficacy are described in the Final Report



**Connection to family and positive relationships with parents and guardians were identified as protective factors for nonfatal suicidal behavior in Santa Clara County**

Connection to family and positive relationships with parents and guardians were identified as a protective factor for nonfatal suicidal behavior in Santa Clara County

### **Recommendation 3**

**Family relationships and family-based programs**

# Family relationships and family-based programs

- Connection to family and positive relationships with parents/guardians are significant protective factors for suicidal behavior that have been identified in the literature
- Evidence based programs have been developed that focus on bolstering parent-youth relationships
  - For example: Multisystemic Therapy, Parent Management Training, Strengthening Families Program, Incredible Years
  - Frequent family meals

**Connection to, and positive relationships with school, and teachers, were identified as protective factors in Santa Clara County**

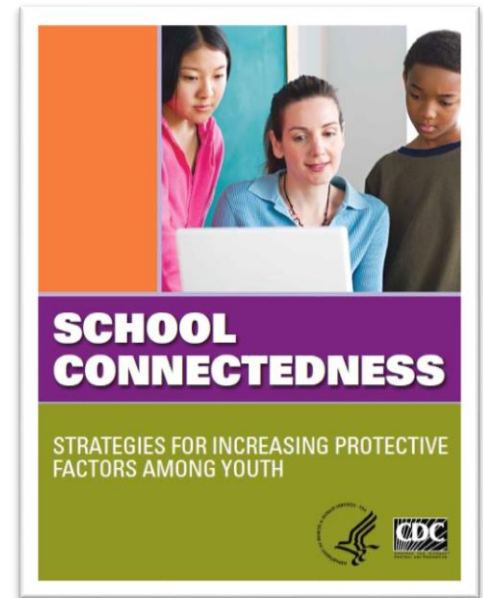
Connection to, and positive relationships with school, and teachers, were identified as a protective factor in Santa Clara County

## **Recommendation 4**

**Connection to school and school-based programs**

# Connection to school and school-based programs

- Connection to school has been identified as a protective factor for suicide in other communities
  - CDC’s report *“School Connectedness: Strategies for Increasing Protective Factors Among Youth”*
- Social-emotional learning programs that bolster protective factors and reduce risk factors for suicidal behavior among youth may be particularly effective
  - For example: the Good Behavior Game, Youth Aware of Mental Health Program, Sources of Strength



**Over a quarter of youth suicide decedents in Santa Clara County had disclosed their thoughts of suicide prior to death**

**Over a quarter of youth suicide decedents in Santa Clara County had previously made a suicide attempt**

Over a quarter of youth suicide decedents in Santa Clara County had disclosed their thoughts of suicide prior to death

Over  
Clara

**Recommendation 5**  
**Identify and support people at risk**



# Identify and support people at risk

- Could consider continuing and/or expanding current gatekeeper prevention efforts
  - May need to be implemented alongside other programs
- Could focus efforts on the care and follow-up of youth after admission or other treatment for suicidal behavior, and ensure youth have continuity of care following discharge for suicidal behavior
  - Could implement prevention programs in emergency departments
  - Final Report has example programs

**Recent crisis was a common precipitating circumstance for youth suicide decedents in Santa Clara County**

**Youth in Santa Clara County were significantly more likely than those in comparison counties to have experienced a recent crisis**

Recent crisis was a common precipitating circumstance for youth suicide decedents in Santa Clara County

Youth  
likely  
expe

**Recommendation 6**  
**Crisis intervention**

# Crisis intervention

- Stressful life events have been identified in other communities as recognized risk factors for youth suicide
- Crisis lines could provide youth with access to immediate help and referral services
- Could consider continuing to offer ASIST training to Santa Clara County crisis line staff

**Suicide of a youth can have an impact on others in the community, such as family, friends, clinicians, teachers, first responders, schools, and coaches**

Suicide of a youth can have an impact on others in the community, such as family, friends, clinicians, teachers, first responders, schools, and coaches

**Recommendation 7**  
**Suicide postvention**

# Suicide postvention

- Evidence from other communities demonstrate that individuals exposed to suicidal behavior and suicide survivors are at an increased risk for mental health distress and suicidal behavior
- Use of short- and long-term suicide postvention programs could help survivors receive support and care they need.
- Consider continuing the use of existing postvention programs
  - Evaluation of existing postvention programs could inform if they are meeting objectives of community

**Other forms of violence (e.g., bullying and family violence) were identified as risk factors for nonfatal suicidal behavior among youth in Santa Clara County**



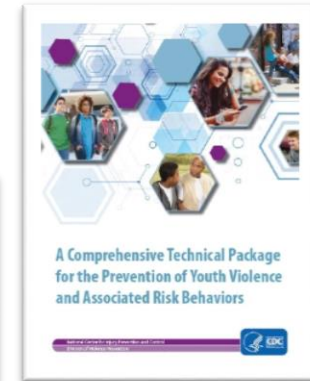
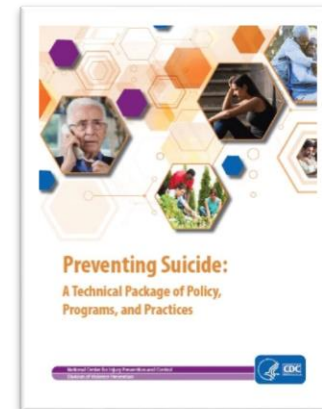
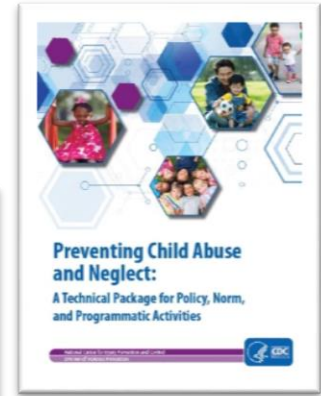
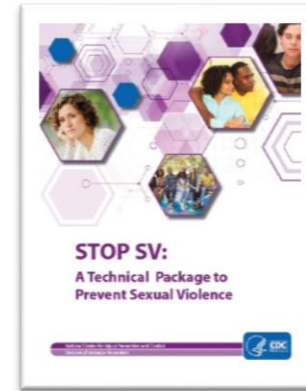
Other forms of violence (e.g., bullying and family violence) were identified as risk factors of nonfatal suicidal behavior among youth in Santa Clara County

## **Recommendation 8**

### **Prevention of other forms of violence**

# Prevention of other forms of violence

- Research in other communities has identified that exposure to various forms of violence is a risk factor for suicidal behavior
- Focus on shared risk and protective factors between suicidal behavior and other forms of violence
  - CDC Technical Packages (child maltreatment, sexual violence, youth violence)
  - Stopbullying.gov



**Most common methods of suicide used in Santa Clara County in a home setting were hanging, firearm, and poisoning**

Most common methods of suicide used in Santa Clara County in a home setting were hanging, firearm, and poisoning

## **Recommendation 9**

**Reducing access to lethal means for youth at-risk**

# Reducing access to lethal means for youth at-risk

- Reducing access to lethal means among persons at-risk for suicide is an evidence-based approach to prevent suicide
- For example, stakeholders could use targeted education programs delivered in emergency departments which have shown some efficacy in improving safe storage in the home
- For railway suicide, limited evidence-based programs found to be effective for at-grade crossings

**Media scan identified unsafe media reporting and limited use of media reporting to educate the public about suicide prevention**

Media scan identified unsafe media reporting and limited use of media reporting to educate the public about suicide prevention

## **Recommendation 10**

**Safe messaging and reporting about suicide**

# Safe messaging and reporting about suicide

- Extensive literature describing the negative effects media reporting can have on suicidal behavior
- Could focus on engaging with local media reporters and news outlets
- Resources include
  - [reportingonsuicide.org](https://reportingonsuicide.org)
  - CDC’s “Suicide contagion and the reporting of suicide: recommendations from a national workshop”
  - Final Report



## **Recommendation 11**

**Strategic planning for suicide prevention**

## **Recommendation 12**

**Selection and implementation of evidence-based programs**

## **Recommendation 13**

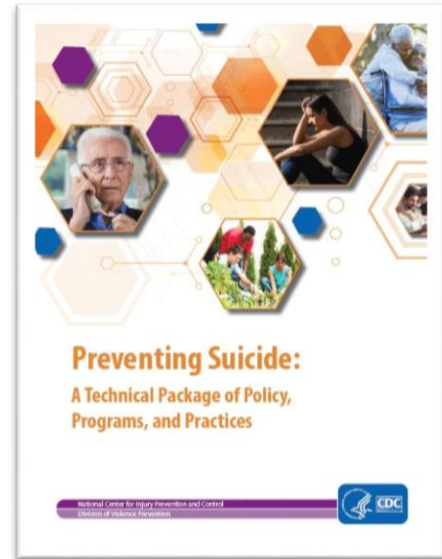
**Continuous program evaluation**

# Strategic planning

- A strategic plan can help guide stakeholders during the planning and implementation of a comprehensive and coordinated approach to suicide prevention
- Santa Clara County has a strategic plan for suicide prevention
  - Could be used as a model for local communities
- Resources about strategic planning are outlined in the Final Report
  - Examples: Suicide Prevention Resource Center, WHO's Community Engagement Toolkit

# Selection and implementation of evidence-based programs

- Stakeholders can utilize data on risk and protective factors to guide selection of evidence-based practices
- Stakeholders are encouraged to continue to use evidence-based programs and consider program benefits
- Resources to identify evidence-based programs are outlined in the Final Report
  - For example: CDC's Technical Package to Prevent Suicide, and Blueprints for Healthy Youth and Development



# Continuous program evaluation

- Many recommendations are consistent with programs and policies currently being implemented in Santa Clara County
- Community stakeholders are encouraged to engage in continuous program evaluation to help to monitor the reach and effectiveness of programs implemented
- Multiple resources are available to help stakeholders learn more about program evaluation
  - For example: RAND's Suicide Prevention Program Evaluation Toolkit and CDC's Framework for Program Evaluation in Public Health

# Final report

- Presentation is a broad overview of this Epi-Aid investigation
- For more information about the investigation, the results, and recommendations, please refer to the Final Report available through the Santa Clara County Public Health Department

# Acknowledgements

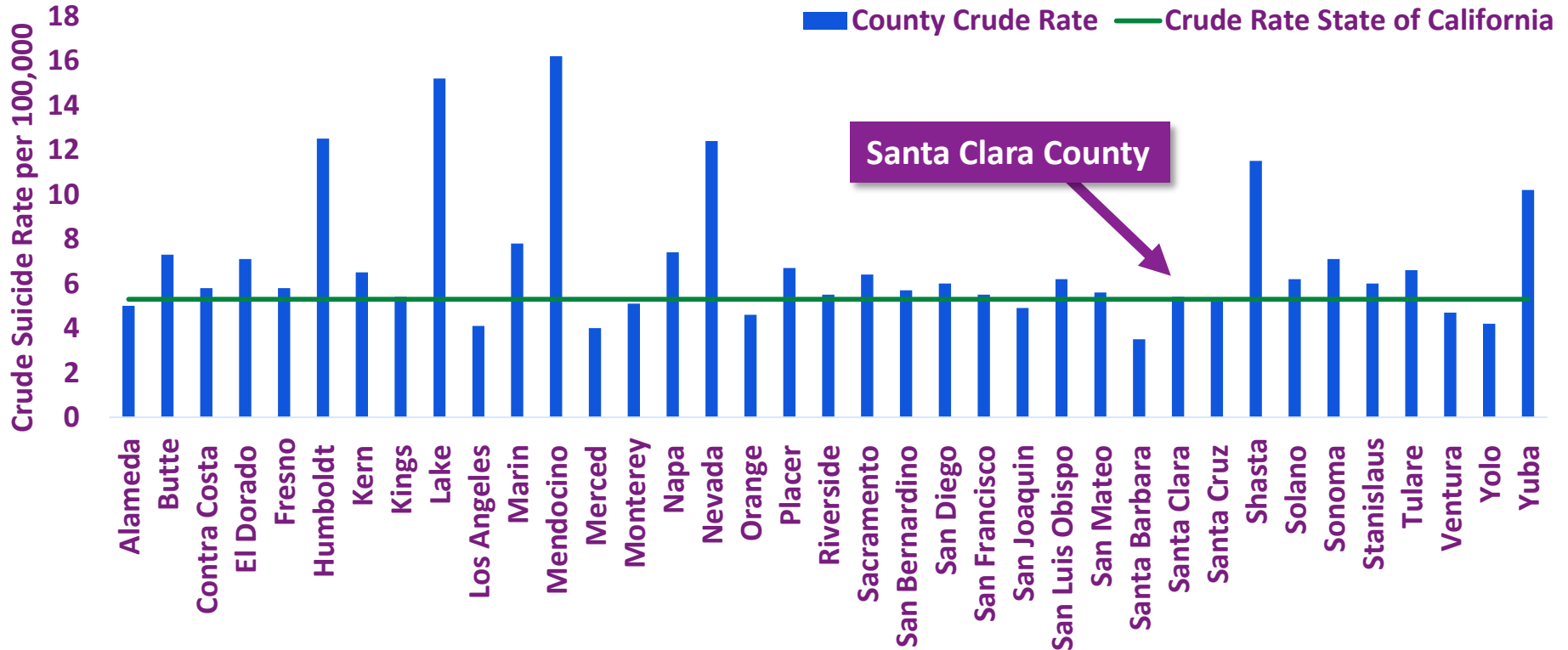
- **CDC**
  - Erica Spies
  - Xinjian Zhang
  - Randall Young
  - Kevin Vagi
  - Cory Ferdon
  - Alex Crosby
  - Deborah Stone
- **SAMHSA**
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  - Captain William Oberst
  - Karin Wells
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  - Toni Tullys
  - Evelyn Tirumalai
- **Project Safety Net**

# Questions

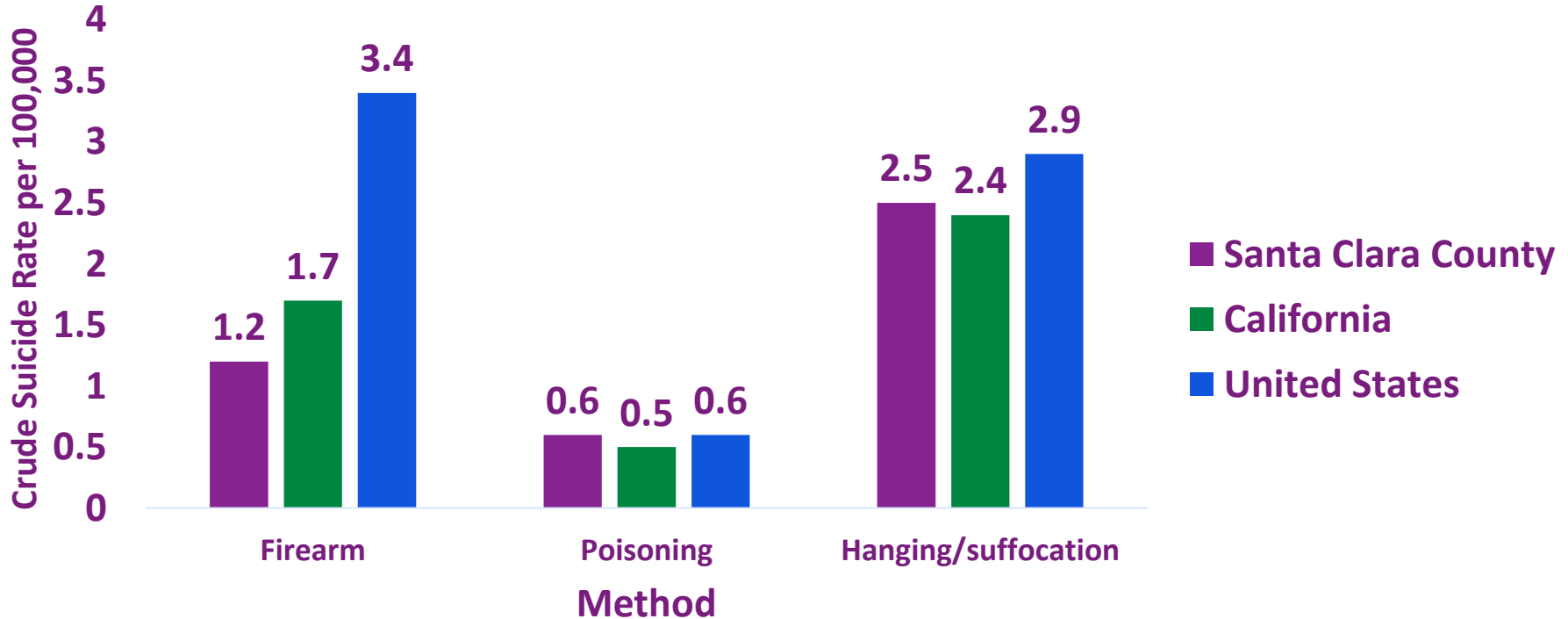
**Extra Slides**



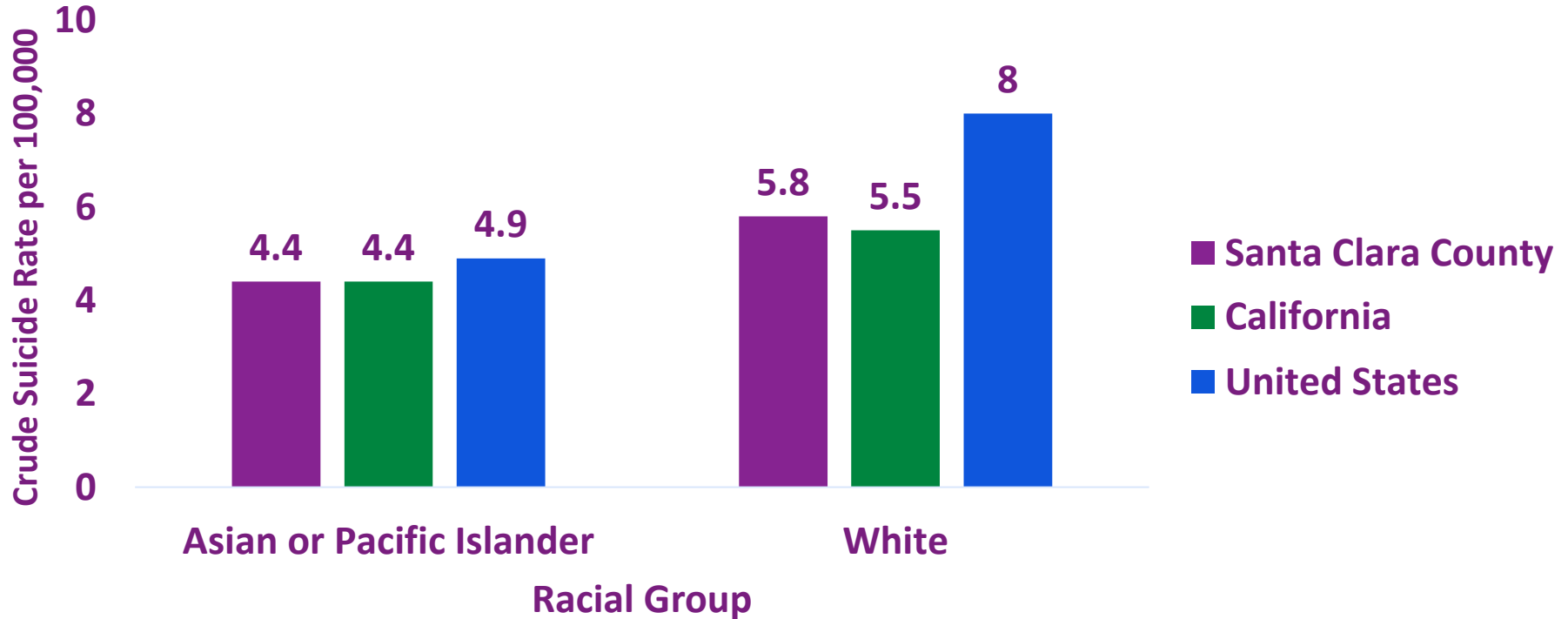
# Crude suicide rate among youth, by California County of residence, 2003–2014



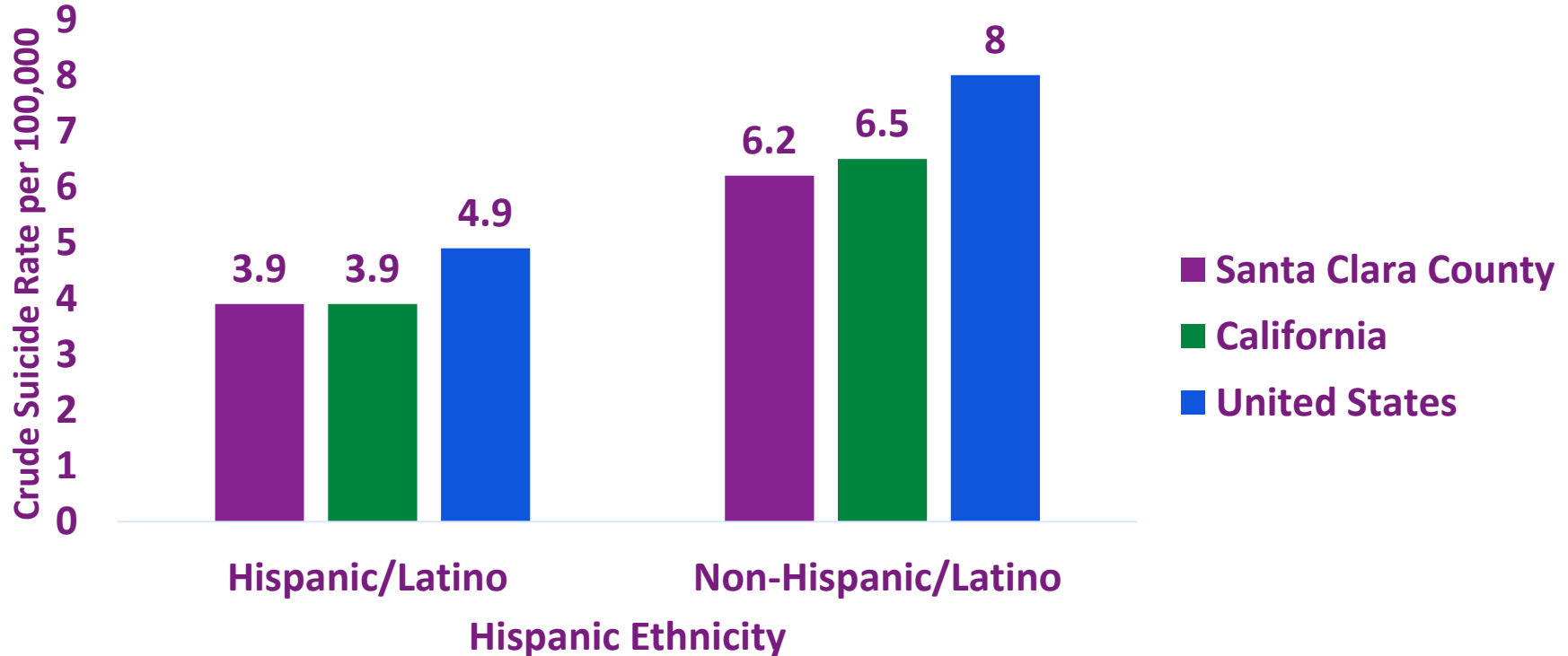
# Crude suicide rate among youth, by method, 2003–2014



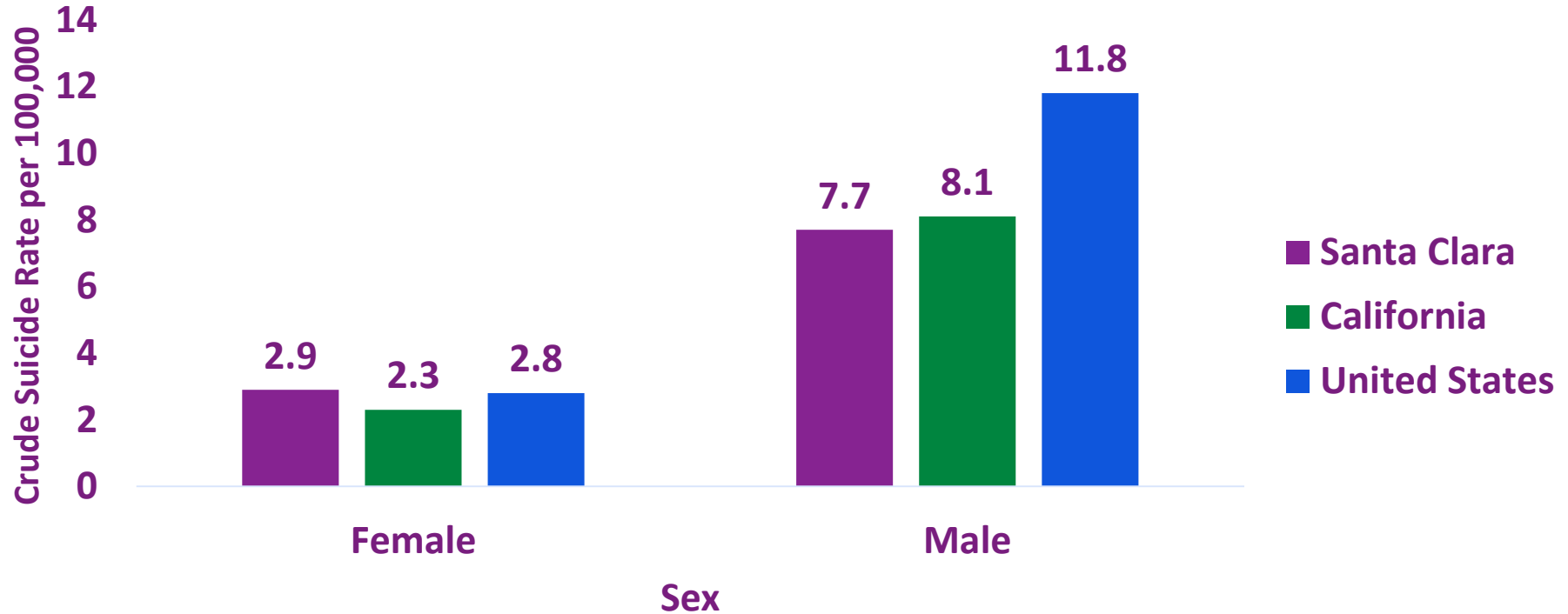
# Crude suicide rate among youth, by race, 2003–2014



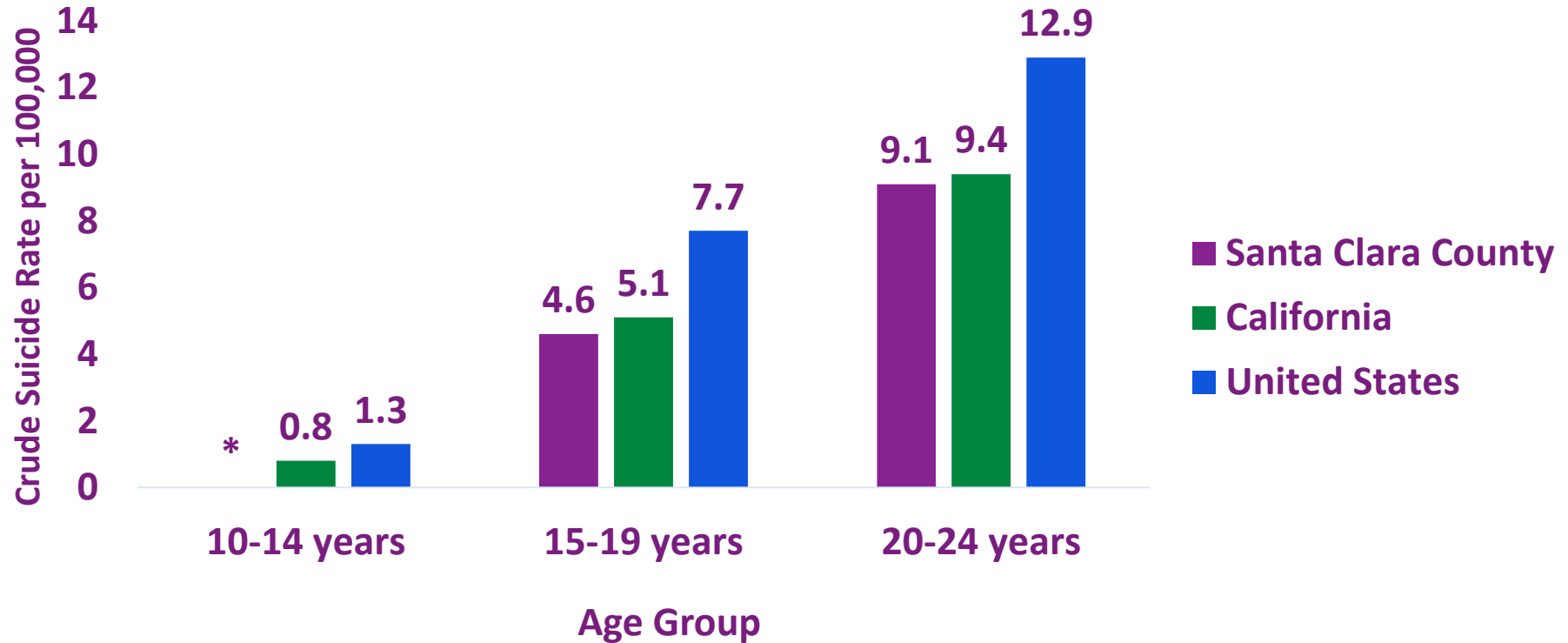
# Crude suicide rate among youth, by ethnicity, 2003–2014



# Crude suicide rate among youth, by biological sex, 2003–2014



# Crude suicide rate among youth, by age category, 2003–2014



Data Source: CDC WONDER Case Definition: Youth suicide decedent, age 10-24, that died in the United States 2003-2014

\*rate not calculated because count < 20

# Crude and predicted crude youth suicide rates by city of residence, 2003–2015

	Crude Suicide Rate per 100,000	Predicted Crude Suicide Rate per 100,000
San Jose	4.6	4.6
Morgan Hill	12.7	12.7
Palo Alto	14.1	14.1
Sunnyvale	6.4	6.4
Santa Clara	5.1	5.1

**Data Source:** Vital statistics, combined years 2003-2015

**Case Definition:** (1) County of residence listed as Santa Clara County, (2) Death occurred in state of California, (3) Decedent 10 to 24 years of age, (4) Manner of death listed as suicide.

# Temporal cluster analysis

- One significant temporal cluster of six suicide-related injuries
  - 1/3/2011 through 1/17/2011
- Vital statistics data on method of suicide, city of residence, city of suicide-related injury, age, and biological sex do not show a connection between these suicides

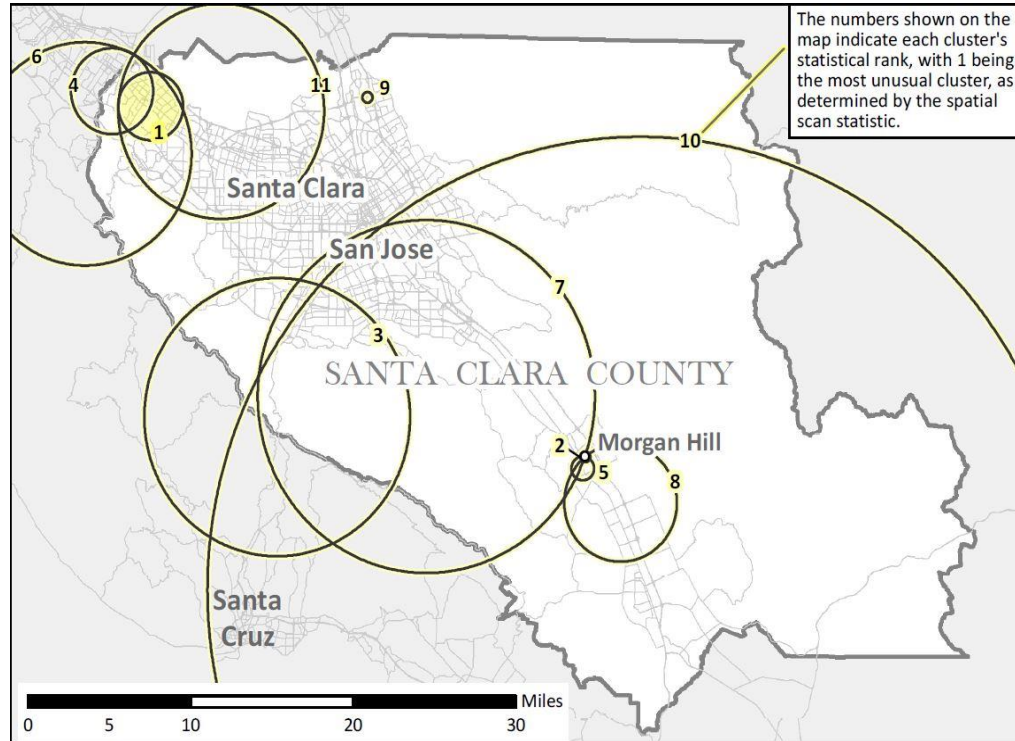
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**Case Definition:** (1) County of residence listed as Santa Clara County, (2) Death occurred in state of California, (3) Decedent 10 to 24 years of age, (4) Manner of death listed as suicide.



# Spatial cluster analysis

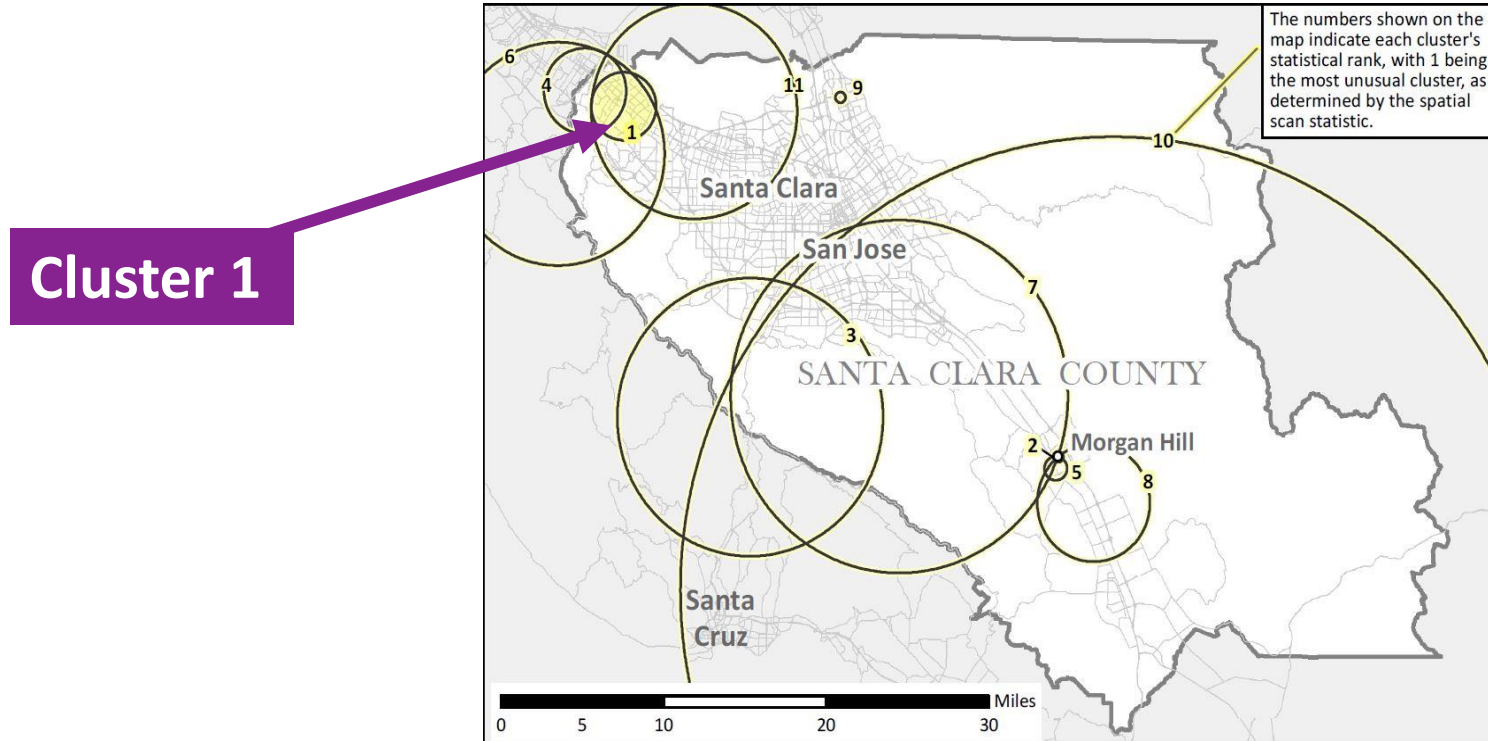
- Based on zip code of decedent's residence
- 11 significant clusters
- Each circle centered on a zip code
- Numbered according to rank of likelihood compared to chance



**Data Source:** Vital statistics, combined years 2003-2015

**Case Definition:** (1) County of residence listed as Santa Clara County, (2) Death occurred in state of California, (3) Decedent 10 to 24 years of age, (4) Manner of death listed as suicide.

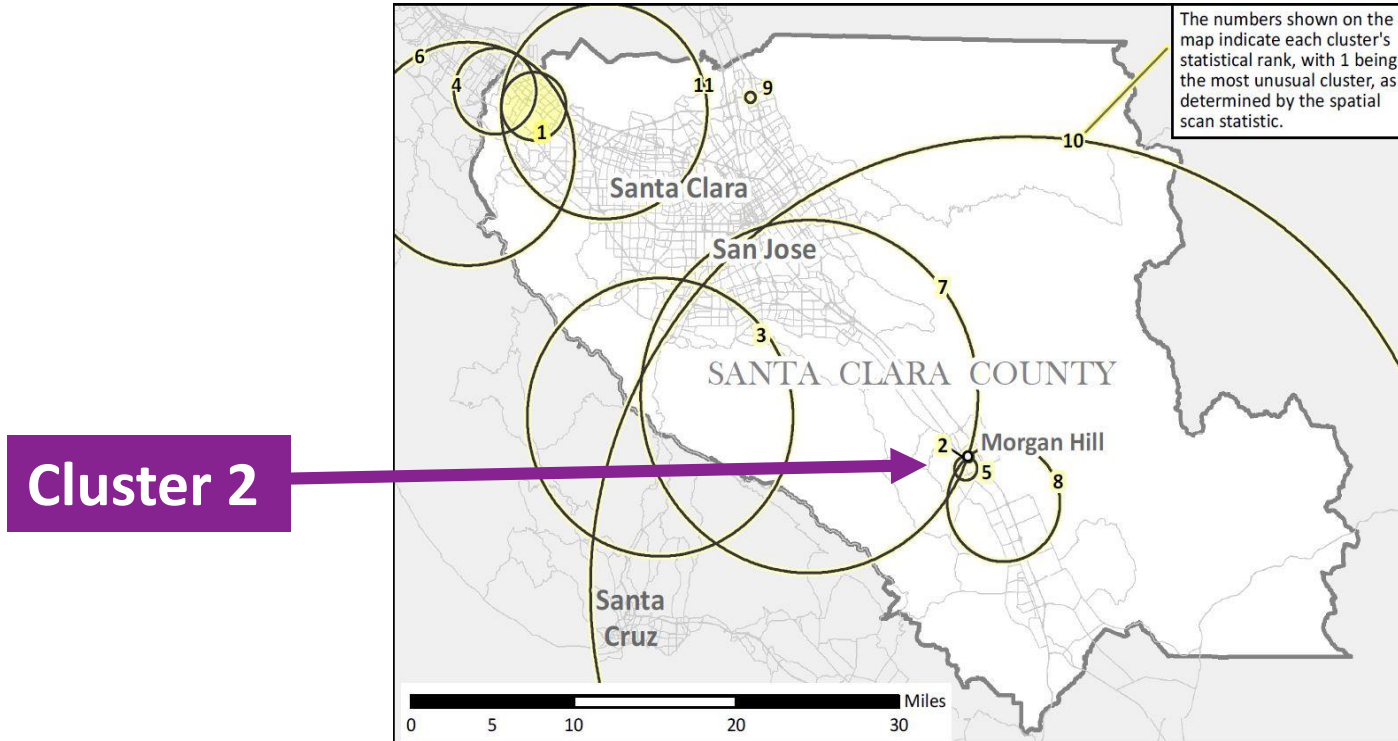
# Spatial cluster analysis



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# Spatial cluster analysis

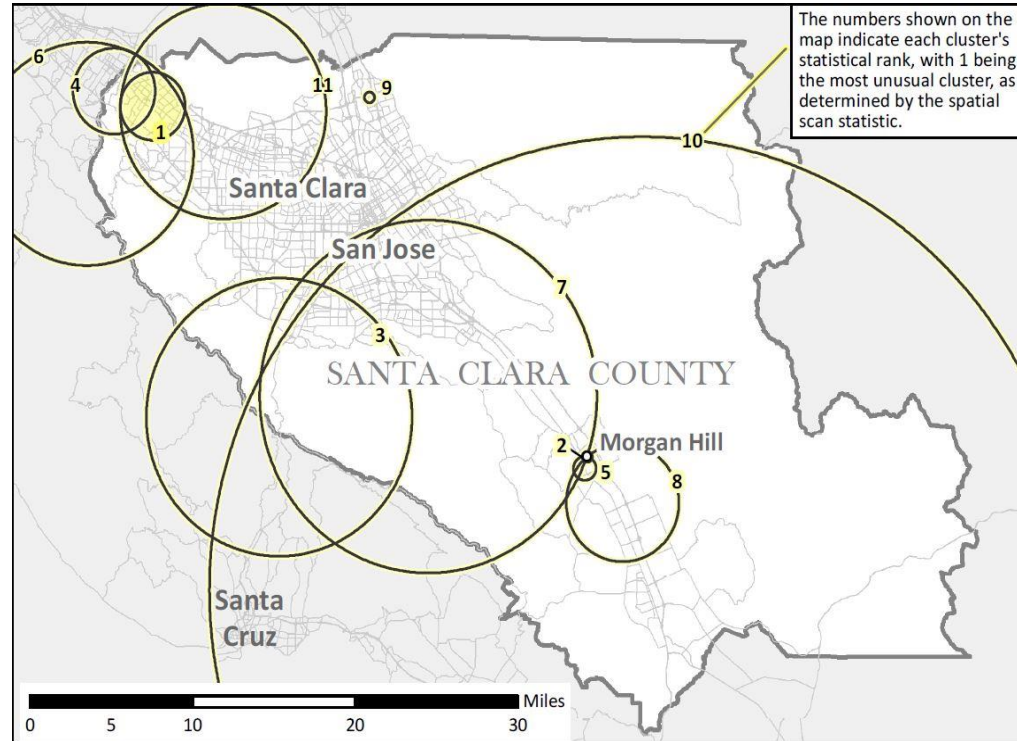


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# Spatial cluster analysis

Clusters 1, 4, 6, 11  
centered near  
Palo Alto

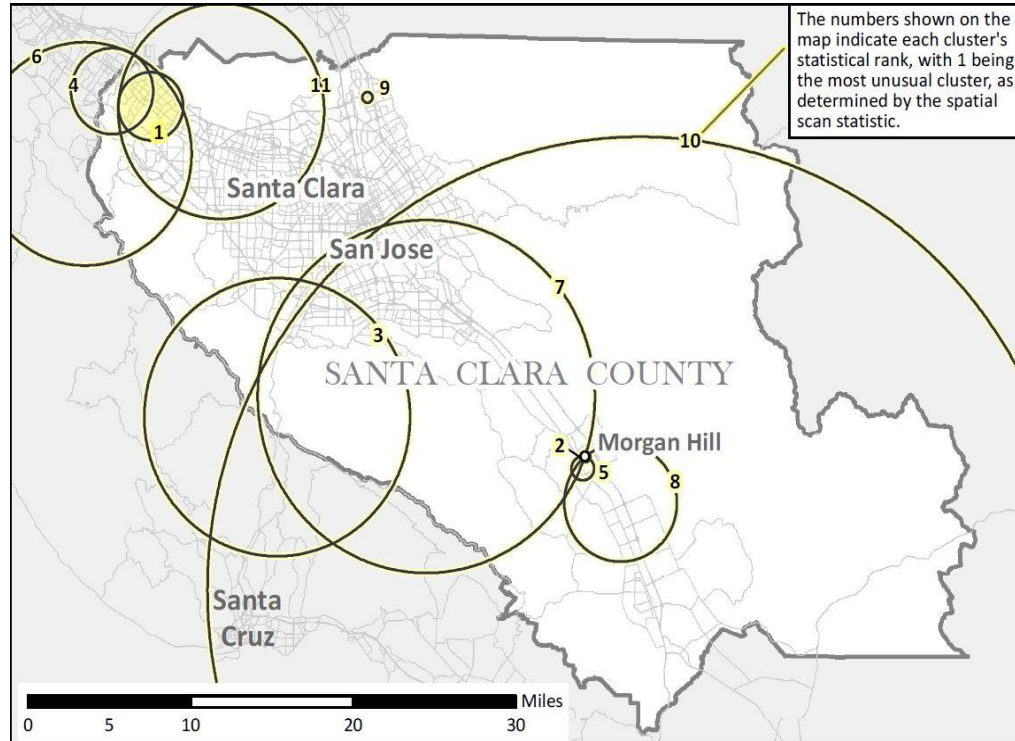


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# Spatial cluster analysis

Clusters 2, 5, 8, 10  
centered near  
Morgan Hill



Data Source: Vital statistics, combined years 2003-2015

Case Definition: (1) County of residence listed as Santa Clara County, (2) Death occurred in state of California, (3) Decedent 10 to 24 years of age, (4) Manner of death listed as suicide.

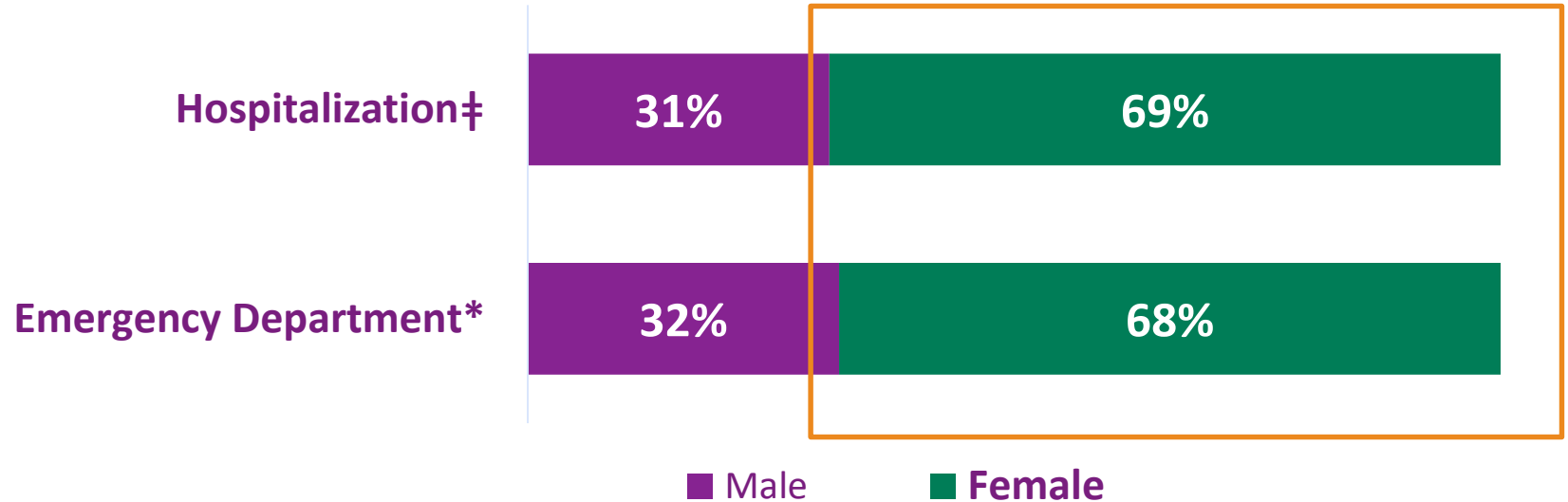
# Precipitating circumstances for youth suicide by method of suicide, 2003–2015

	Hanging	Firearm	Poisoning	Train	Fall
Current mental health problem	X	X	X	X	X
Current depressed mood	X	X	X	X	X
Current treatment for mental illness	X		X	X	X
Ever treated for mental problem	X	X	X	X	X
Suicide note	X	X	X	X	X
Suicide intent disclosed		X	X	X	X
Suicide thought history	X	X	X	X	X
Suicide attempt history	X		X	X	X
Recent crisis	X	X	X	X	X
Intimate partner problems	X	X	X		
Argument	X				
School problem			X	X	

X indicates that ≥25% of suicide decedents had the precipitating circumstance indicated in their medical examiner report

Data Source: Medical examiner reports (2003-2015). Population: (1) County of residence listed as Santa Clara County, (2) Death occurred in Santa Clara County, (3) Decedent 10 to 24 years of age, (4) Manner of death listed as suicide.

# Biological sex of Santa Clara County youth residents seen for suicide attempt<sup>†</sup>

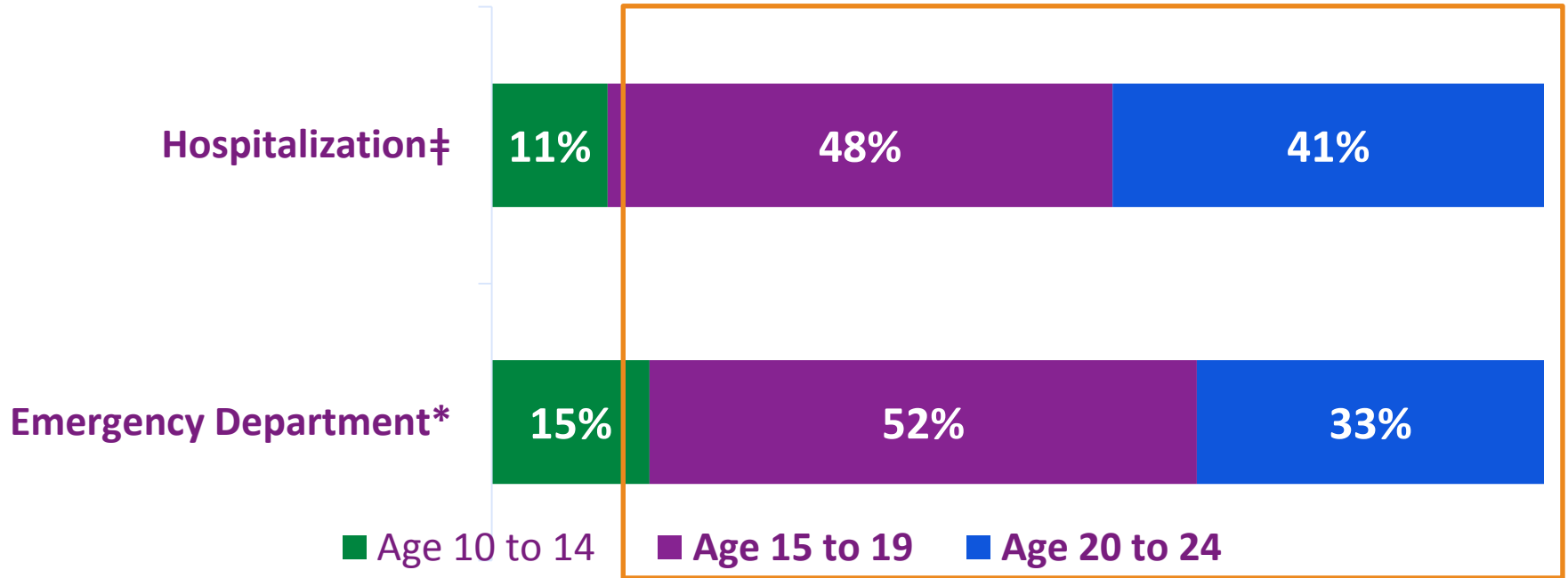


<sup>†</sup> suicide attempt without suicidal ideation

\* **Data Source:** Emergency Department Data (2004-2015). **Population:** (1) Patient was 10 to 24 years of age, (2) Patient was a resident of Santa Clara County, and (3) Visit was for suicide attempt/self-injury. Suicide attempt/self-injury was defined based on the principal or any other diagnosis coded with ICD-9 external cause of injury codes (E-codes) in the range 950.0–959.9, corresponding to suicide attempt and self-inflicted injury.

<sup>‡</sup> **Data Source:** Patient Discharge Data (2003-2014) **Population:** (1) Patient was 10 to 24 years of age, (2) Patient was a resident of Santa Clara County, and (3) Hospitalization was for suicide attempt/self-injury. Suicide attempt/self-injury was defined based on ICD-9 external cause of injury codes (E-codes) in the range 950.0–959.9, corresponding to suicide attempt and self-inflicted injury.

# Age Category of Santa Clara County residents seen for suicide attempt†



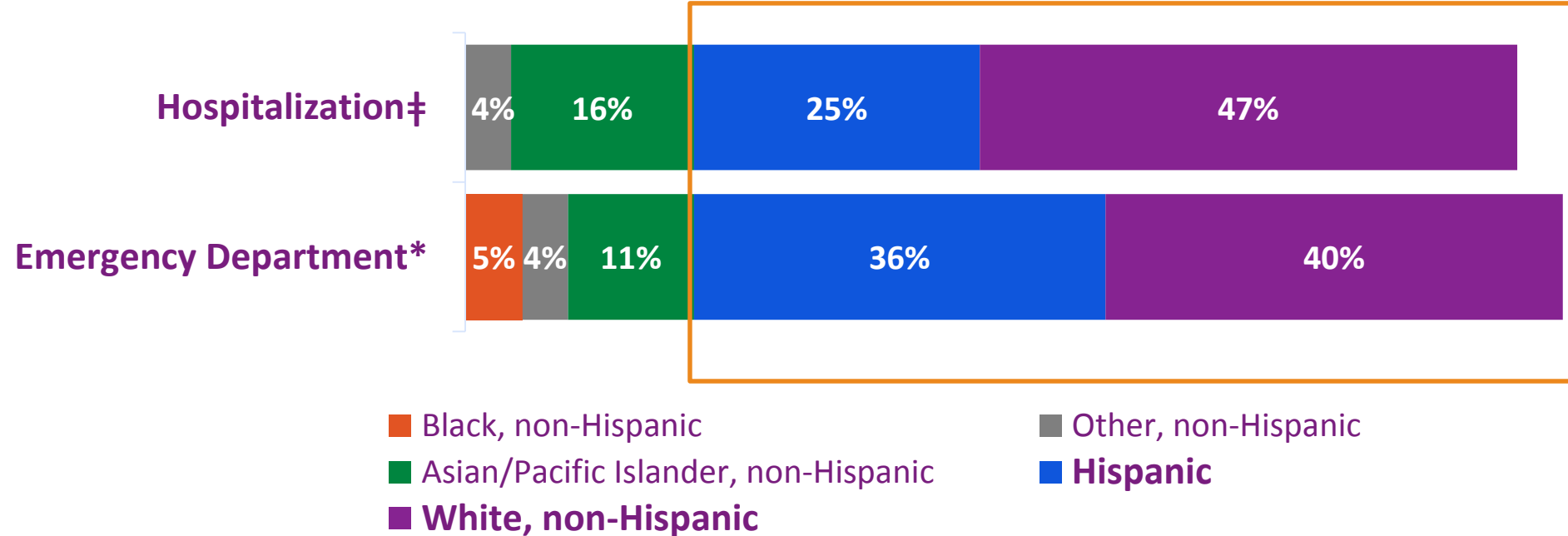
† suicide attempt without suicidal ideation

\* **Data Source:** Emergency Department Data (2004-2015). **Population:** (1) Patient was 10 to 24 years of age, (2) Patient was a resident of Santa Clara County, and (3) Visit was for suicide attempt/self-injury. Suicide attempt/self-injury was defined based on the principal or any other diagnosis coded with ICD-9 external cause of injury codes (E-codes) in the range 950.0–959.9, corresponding to suicide attempt and self-inflicted injury.

‡ **Data Source:** Patient Discharge Data (2003-2014) **Population:** (1) Patient was 10 to 24 years of age, (2) Patient was a resident of Santa Clara County, and (3) Hospitalization was for suicide attempt/self-injury. Suicide attempt/self-injury was defined based on ICD-9 external cause of injury codes (E-codes) in the range 950.0–959.9, corresponding to suicide attempt and self-inflicted injury.



# Race/Ethnicity of Santa Clara County residents seen for suicide attempt<sup>†</sup>



<sup>†</sup> suicide attempt without suicidal ideation

\* **Data Source:** Emergency Department Data (2004-2015). **Population:** (1) Patient was 10 to 24 years of age, (2) Patient was a resident of Santa Clara County, and (3) Visit was for suicide attempt/self-injury. Suicide attempt/self-injury was defined based on the principal or any other diagnosis coded with ICD-9 external cause of injury codes (E-codes) in the range 950.0–959.9, corresponding to suicide attempt and self-inflicted injury.

<sup>‡</sup> **Data Source:** Patient Discharge Data (2003-2014) **Population:** (1) Patient was 10 to 24 years of age, (2) Patient was a resident of Santa Clara County, and (3) Hospitalization was for suicide attempt/self-injury. Suicide attempt/self-injury was defined based on ICD-9 external cause of injury codes (E-codes) in the range 950.0–959.9, corresponding to suicide attempt and self-inflicted injury.

# Recommended suicide prevention strategies

1. Multiple prevention approaches to address multiple risk factors
2. Access to evidence-based mental health care
3. Family relationships and family-based programs
4. Connection to school and school-based programs
5. Identify and support people at risk
6. Crisis intervention
7. Suicide postvention
8. Prevention of other forms of violence
9. Reducing access to lethal means for youth at risk
10. Safe messaging and reporting about suicide
11. Strategic planning for suicide prevention
12. Selection and implementation of evidence-based programs
13. Continuous program evaluation