

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

Amanda Garcia-Williams, MPH, PhD

Julie O'Donnell, PhD, MPH

County Briefing

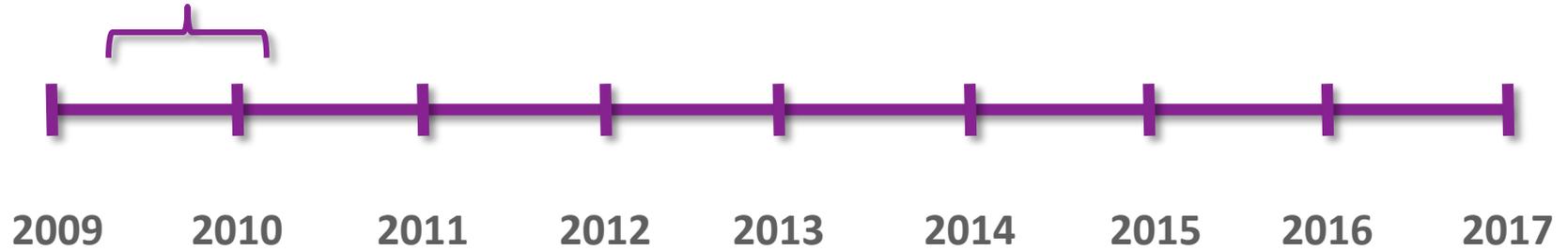
March 10, 2017

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.

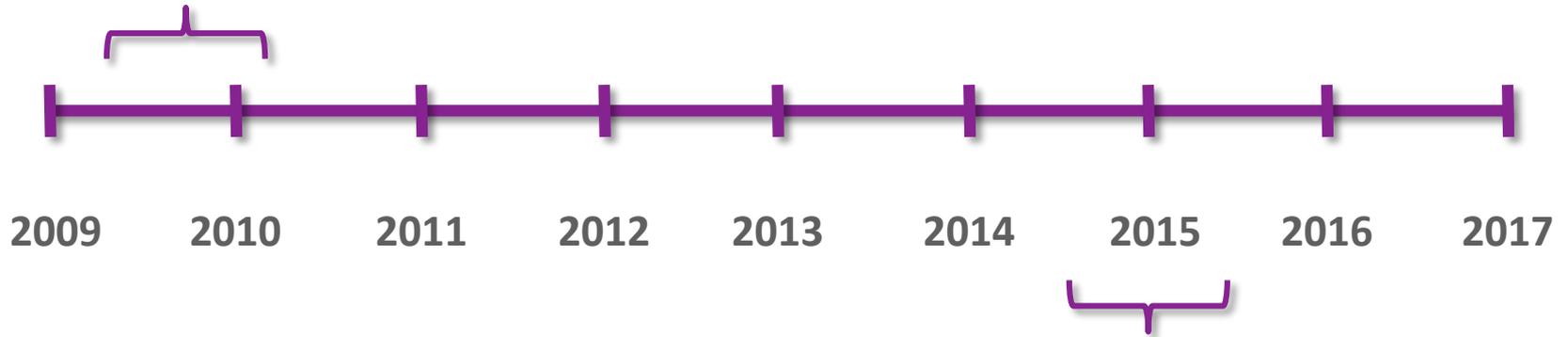
May 2009 through January 2010

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



May 2009 through January 2010

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



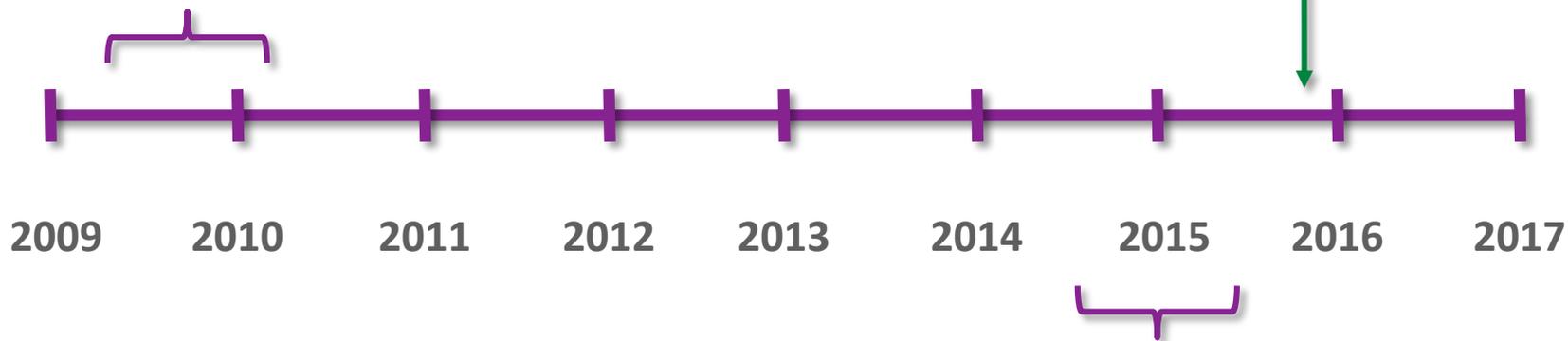
October 2014 through March 2015

- 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[†] 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

[†]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.

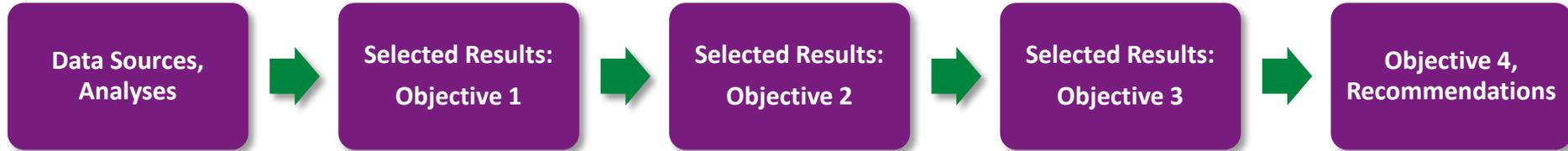
Center for Surveillance, Epidemiology, and Laboratory Services
Division of Scientific Education and Professional Development



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.

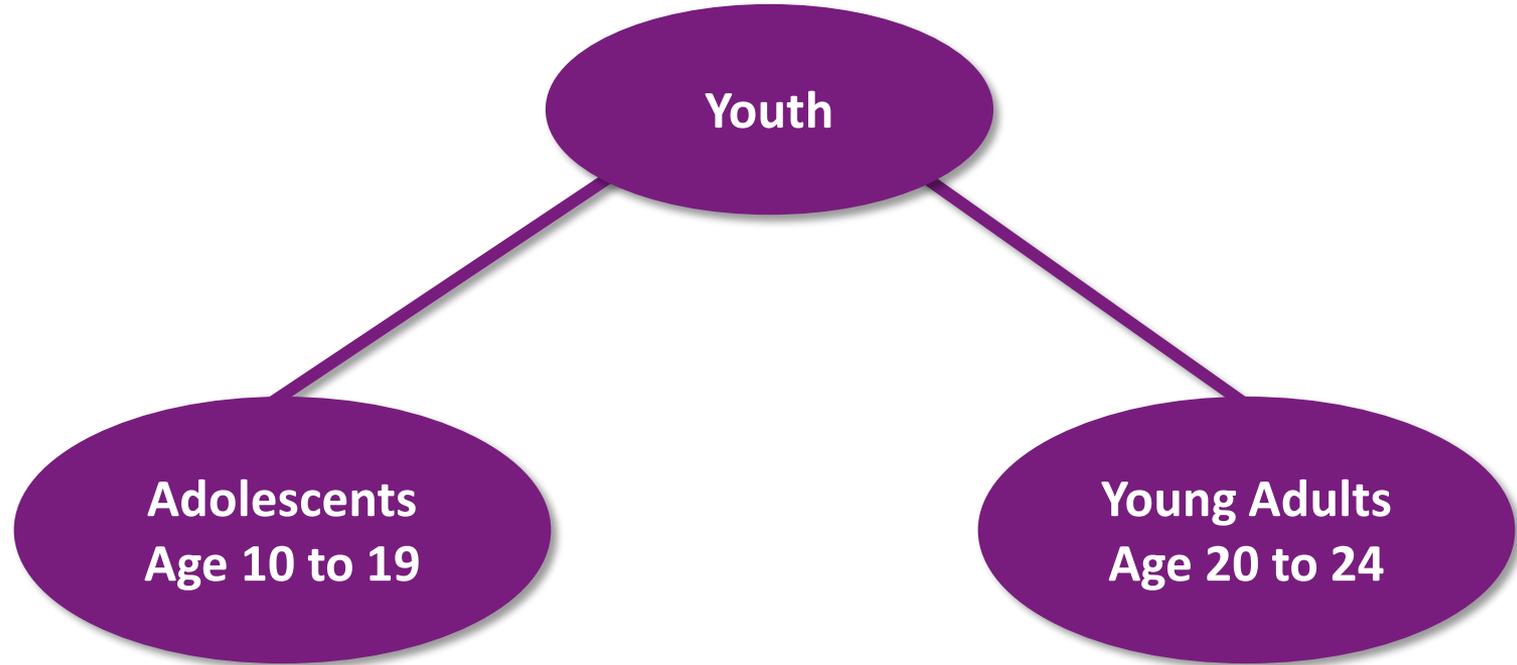
Presentation outline



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

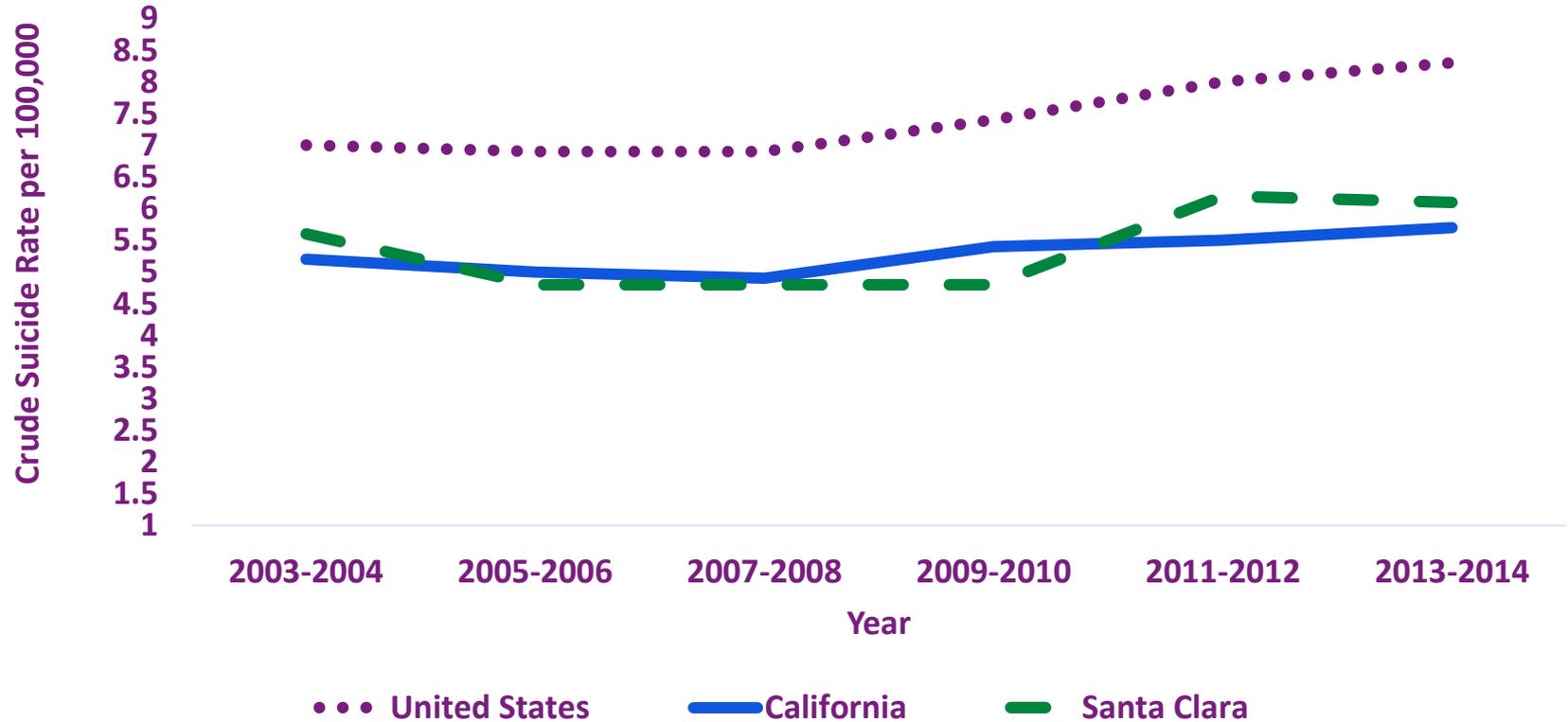
Case Definition: Youth suicide decedent, age 10-24, 2003-2014



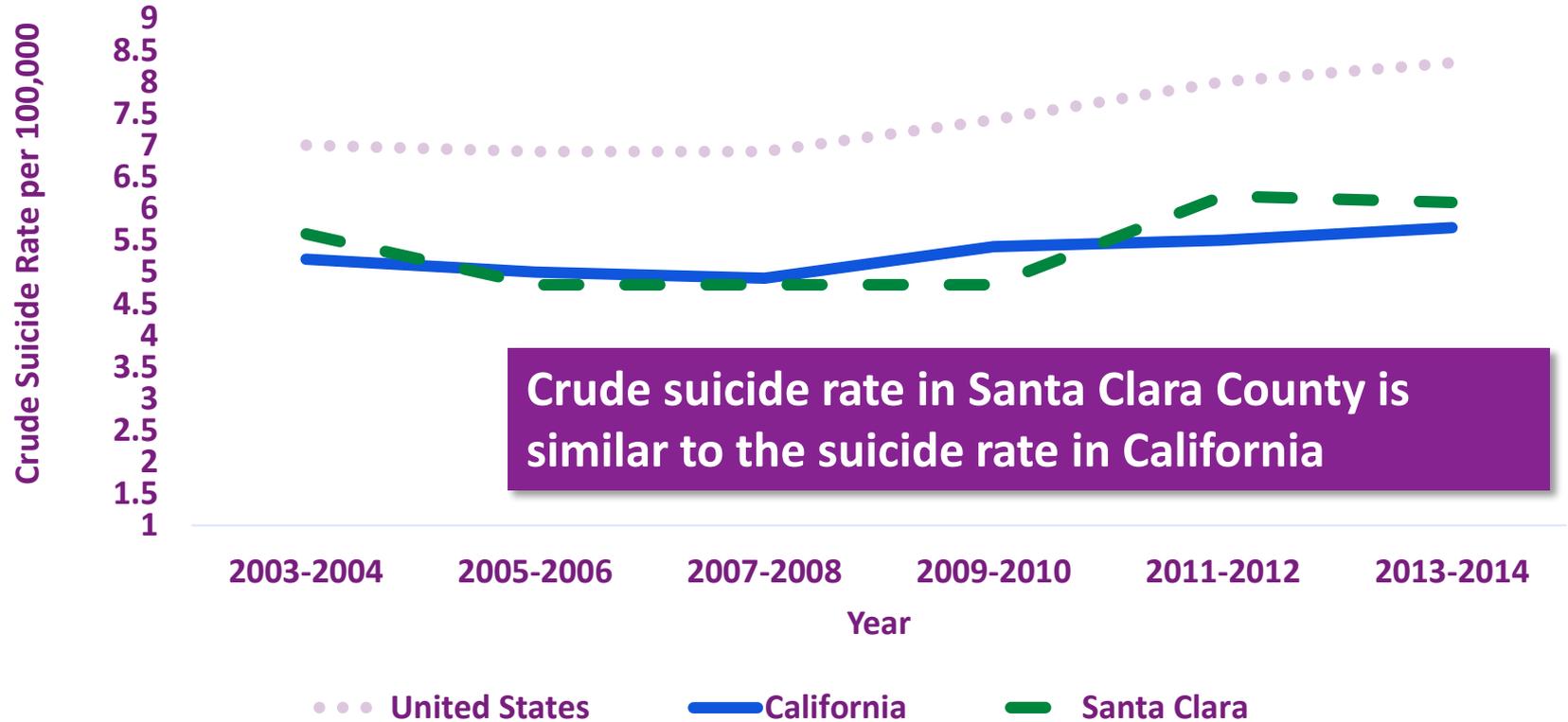
Crude suicide rate for youth residents of California (5.3/100,000) was similar to the crude suicide rate for youth residents of Santa Clara County (5.4/100,000)

For combined years of 2003–2014

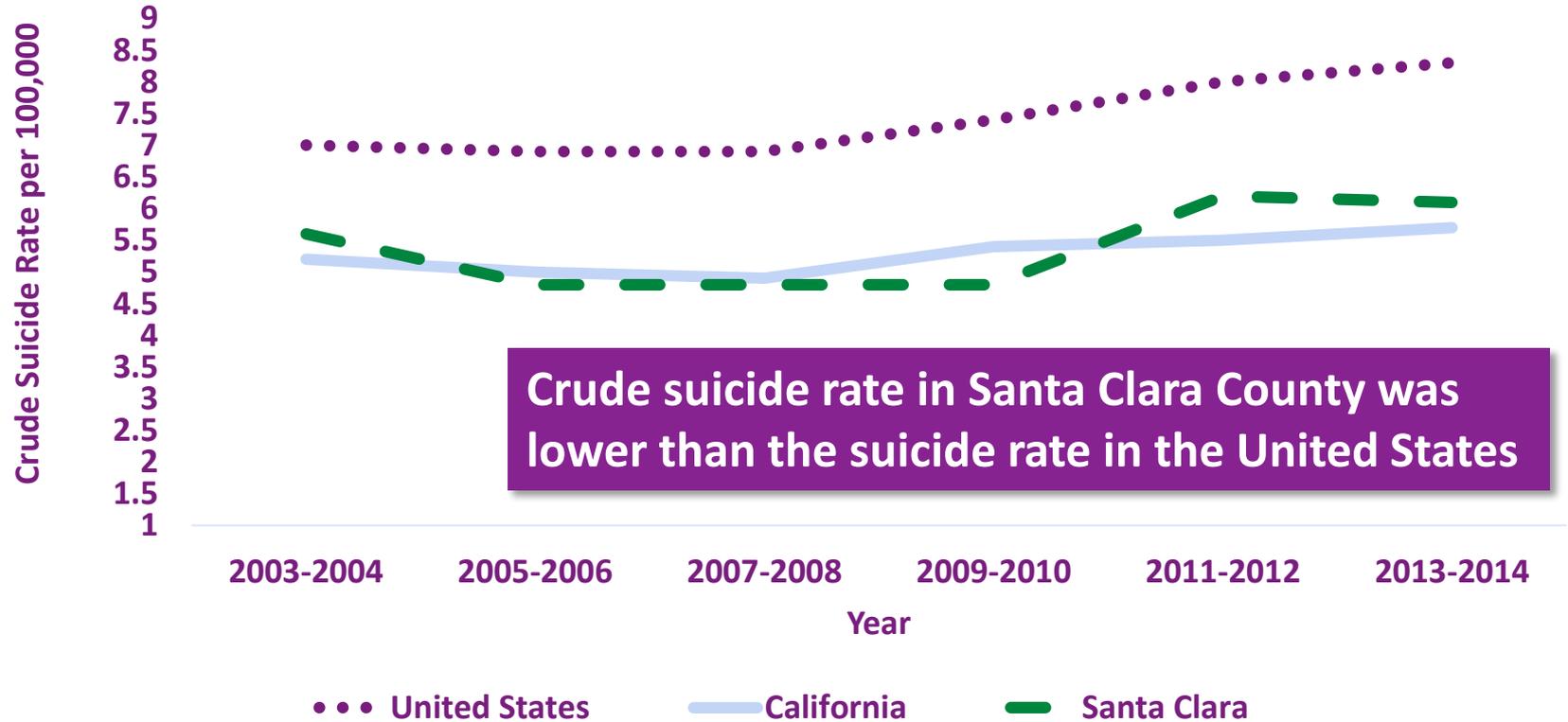
Crude youth suicide rate by two year periods



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.

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.

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

| | 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.

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

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

| | 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.

Predicted crude youth suicide rates, 2003–2014

| | Predicted Crude Suicide Rate per 100,000 | 95% Confidence Interval | |
|---------------------------------|--|-------------------------|------|
| Morgan Hill [†] | 12.7 | 7.2 | 22.3 |
| Palo Alto [†] | 13.7 | 8.5 | 22.1 |
| Santa Clara County [‡] | 5.4 | 4.7 | 6.2 |

Data Source: [†]Vital statistics, combined years 2003-2014, [‡]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 [†] | 12.7 | 7.2 | 22.3 |
| Palo Alto [†] | 13.7 | 8.5 | 22.1 |
| Santa Clara County [‡] | 5.4 | 4.7 | 6.2 |

Data Source: [†]Vital statistics, combined years 2003-2014, [‡]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.

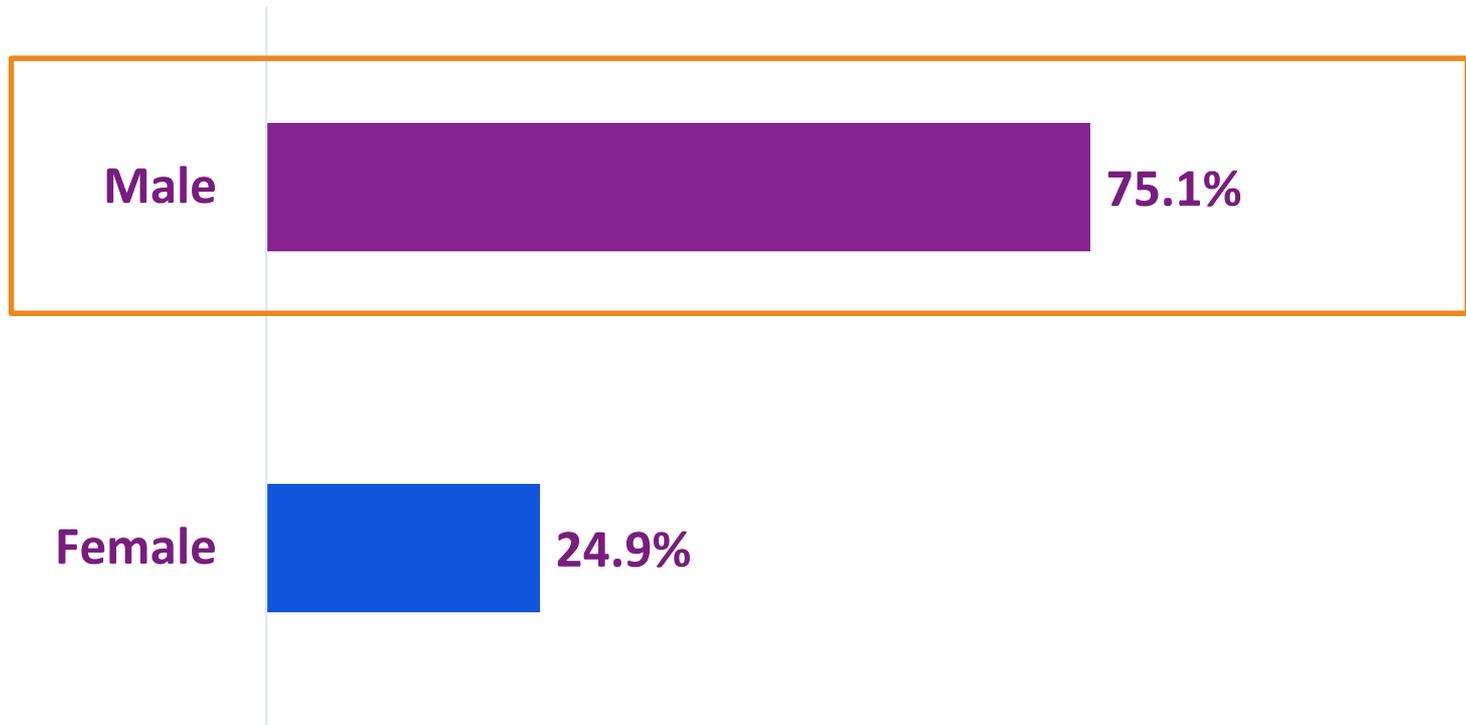
229 suicides among youth residents of Santa Clara County that died in California

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.

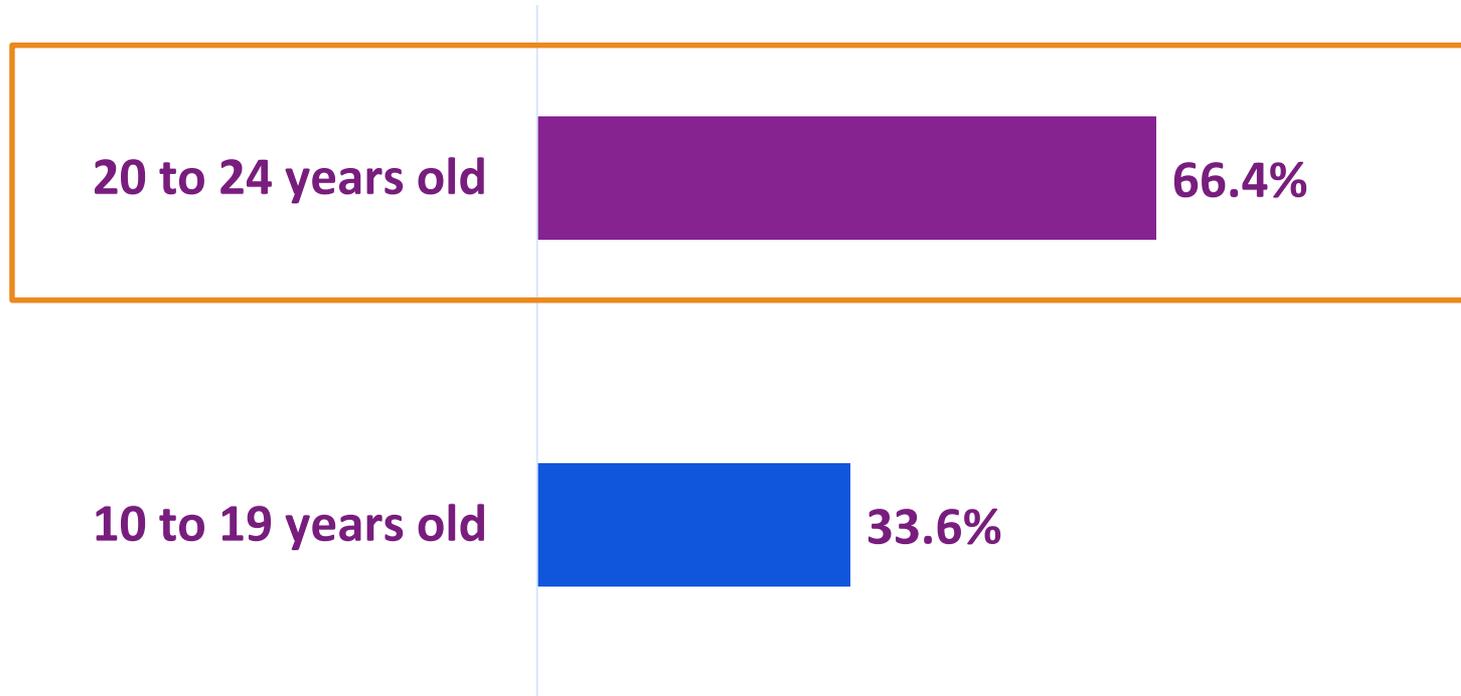
Biological sex of youth suicide decedents, 2003–2015



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.

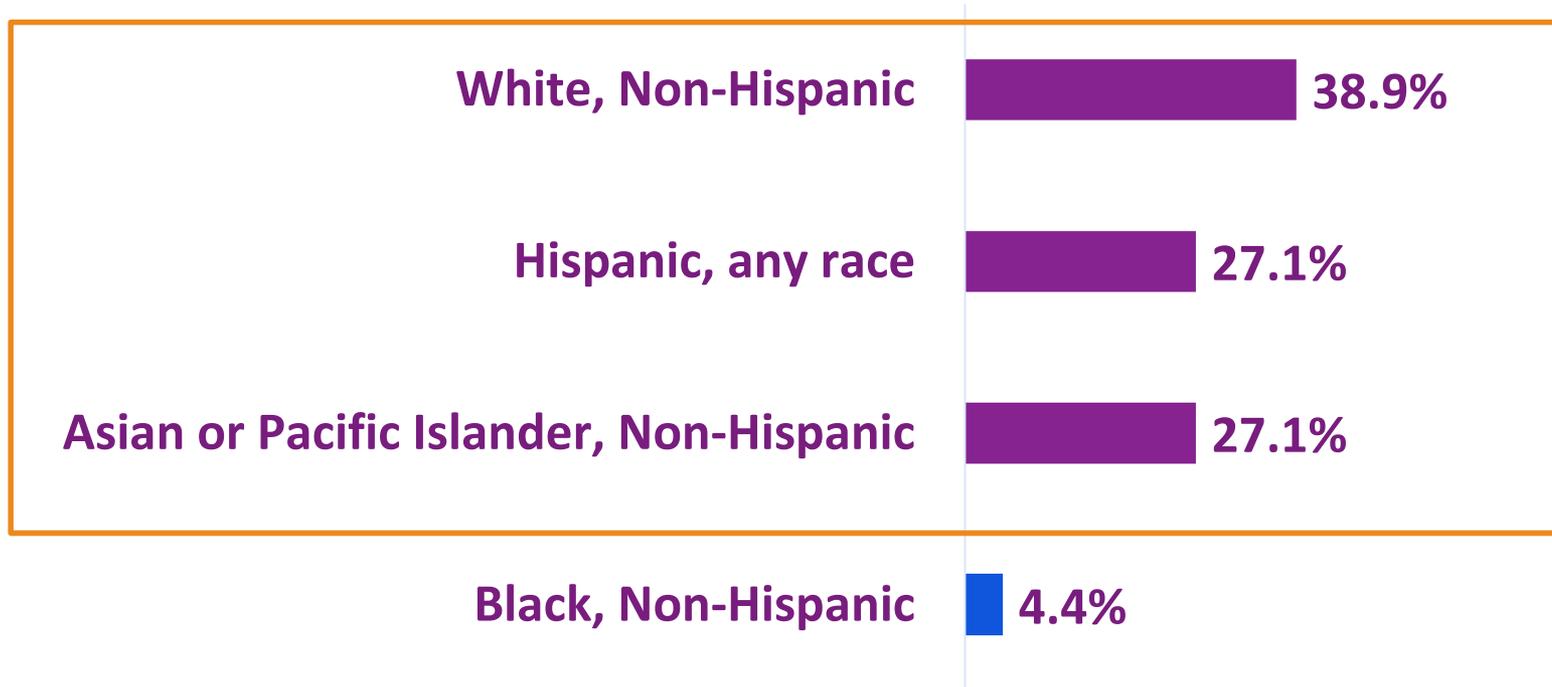
Age category of youth suicide decedents, 2003–2015



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.

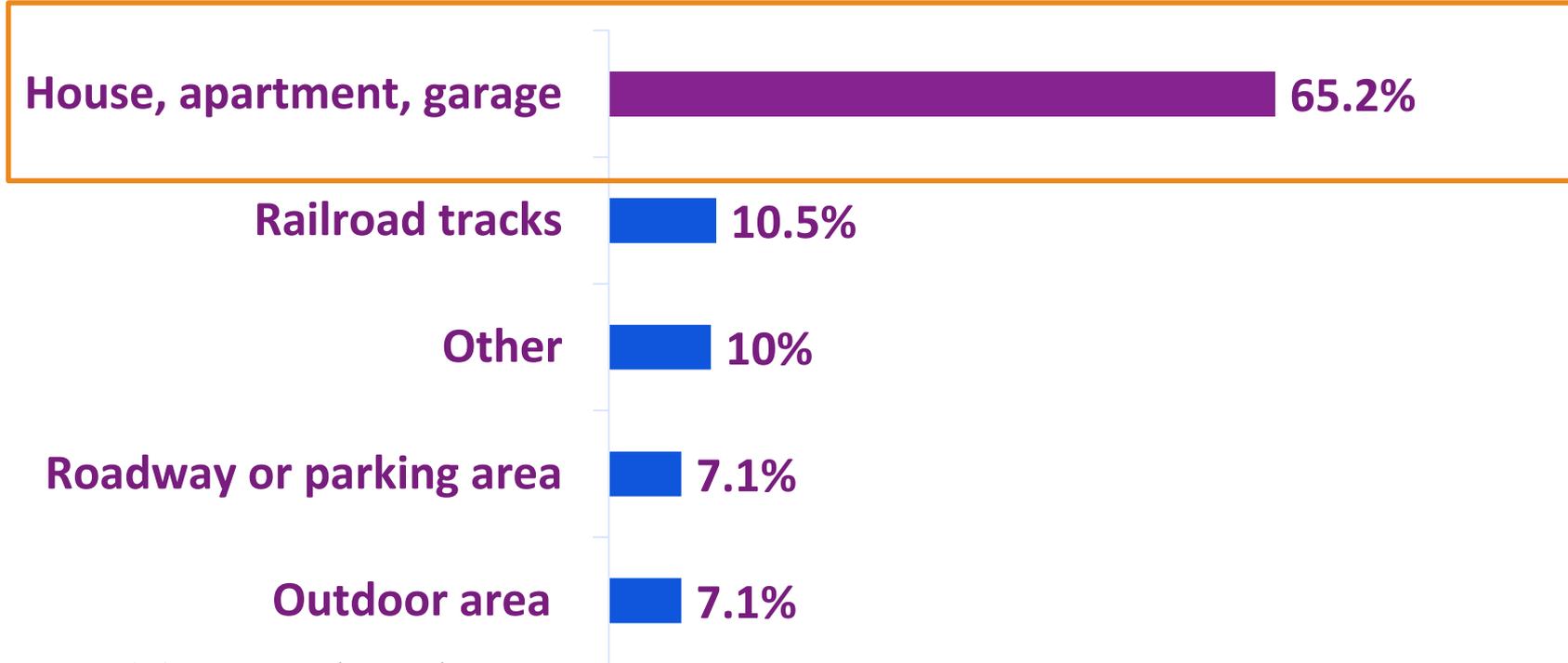
Race/ethnicity of youth suicide decedents, 2003–2015



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.

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

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.

Nonfatal suicidal behavior

3,915 emergency department visits for suicide attempt[†] among youth residents of Santa Clara County, and seen in California

For combined years of 2005–2014

1,787 hospitalizations for suicide attempt[†] among youth residents of Santa Clara County, and hospitalized in California

For combined years of 2003–2014

[†] suicide attempt without suicidal ideation

Data Source: Emergency Department Data (2005-2014)

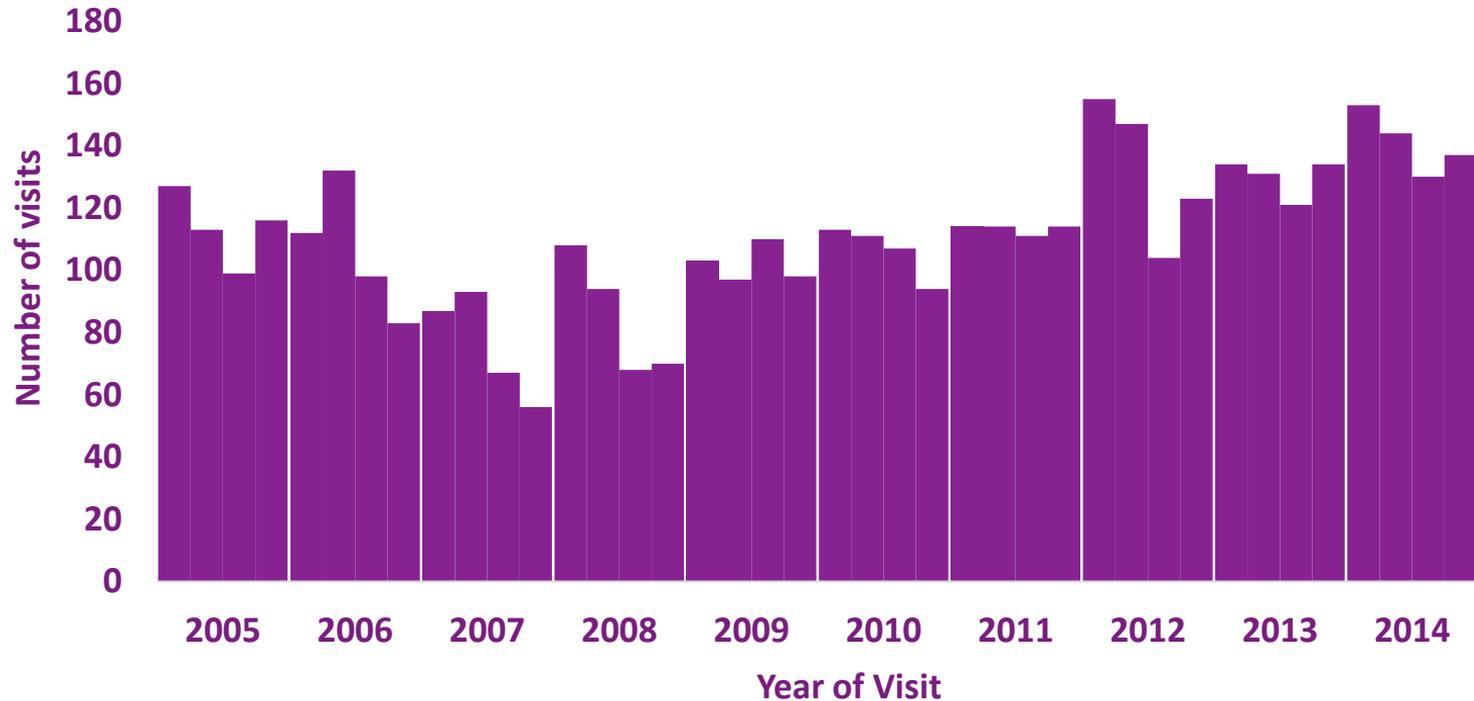
Population: (1) Patient was 10 to 24 years of age, (2) Patient was a resident of Santa Clara County, and (3) Visit was for suicide attempt/self-injury. Suicide attempt/self-injury was defined based on the principal or any other diagnosis coded with ICD-9 external cause of injury codes (E-codes) in the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

[†] suicide attempt without suicidal ideation

Data Source: Patient Discharge Data (2003-2014)

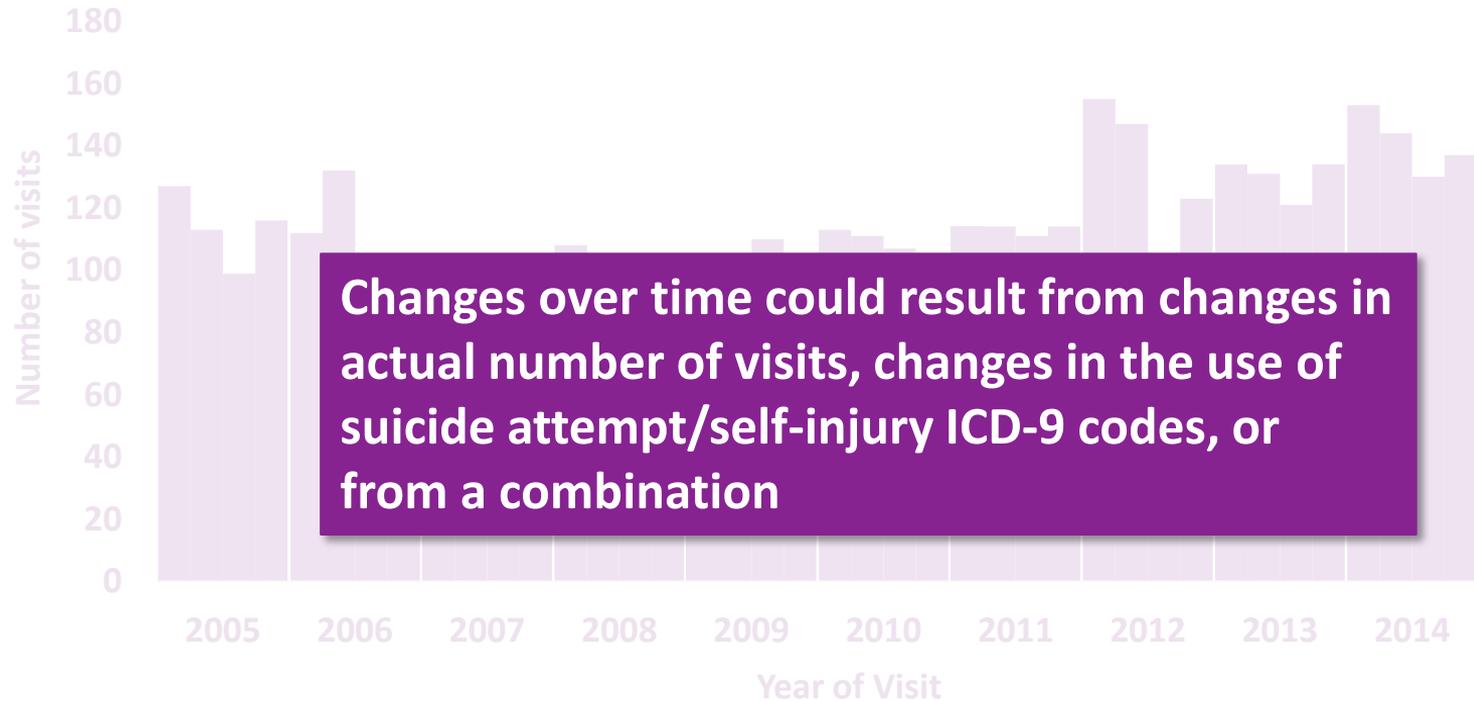
Population: (1) Patient was 10 to 24 years of age, (2) Patient was a resident of Santa Clara County, and (3) Hospitalization was for suicide attempt/self-injury. Suicide attempt/self-injury was defined based on ICD-9 external cause of injury codes (E-codes) in the range 950.0–959.9, corresponding to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

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



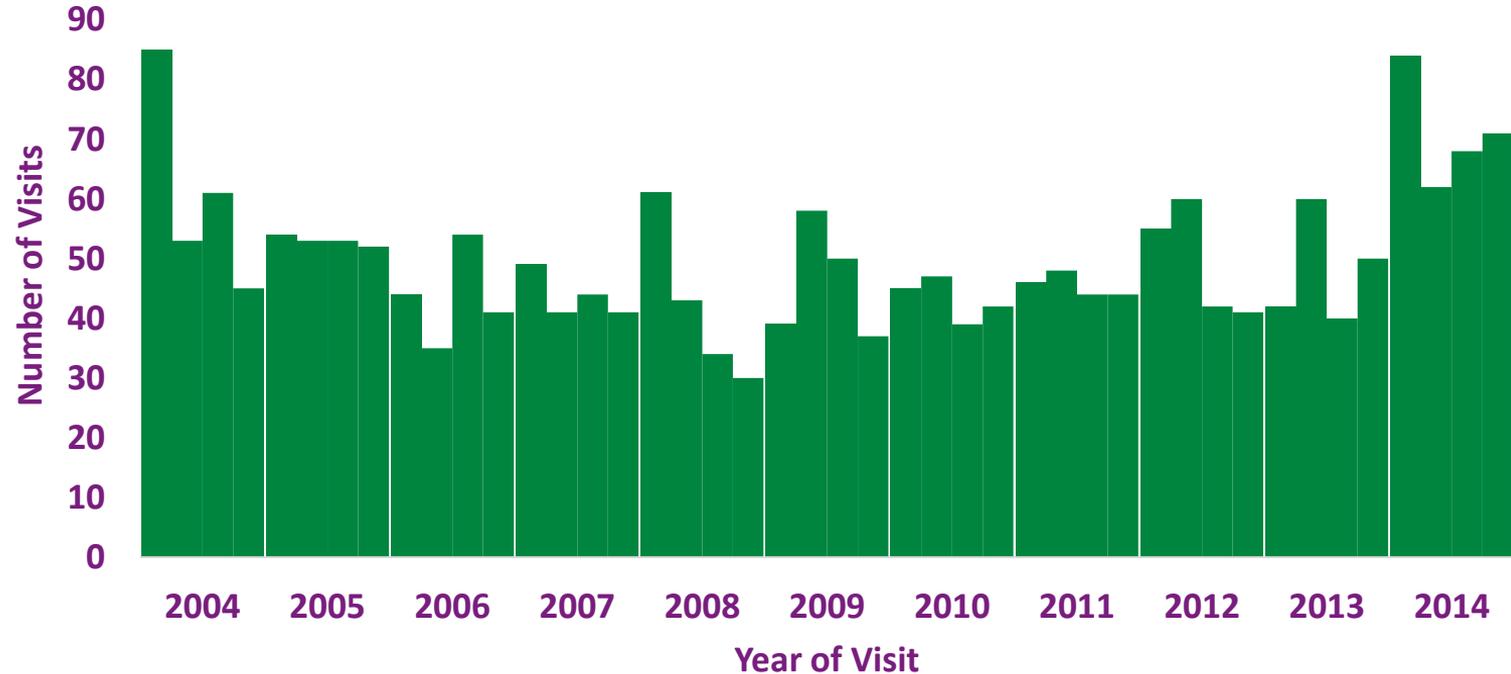
Data Source: Emergency Department Data (2005-2015). **Population:** (1) Patient was 10 to 24 years of age, (2) Patient was a resident of Santa Clara County, and (3) Visit was for suicide attempt/self-injury. Suicide attempt/self-injury was defined based on the principal or any other diagnosis coded with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

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



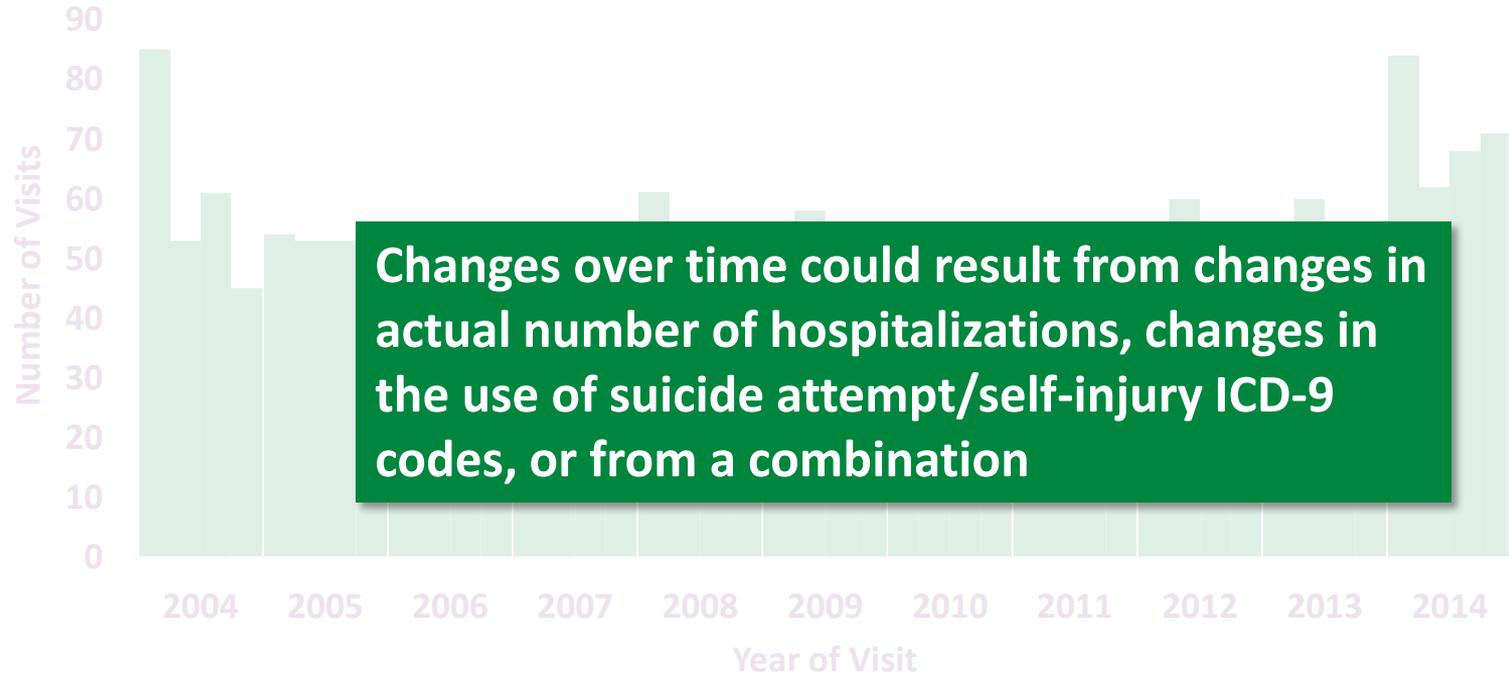
Data Source: Emergency Department Data (2005-2015). **Population:** (1) Patient was 10 to 24 years of age, (2) Patient was a resident of Santa Clara County, and (3) Visit was for suicide attempt/self-injury. Suicide attempt/self-injury was defined based on the principal or any other diagnosis coded with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

Hospitalization for suicide attempt by Santa Clara County youth residents

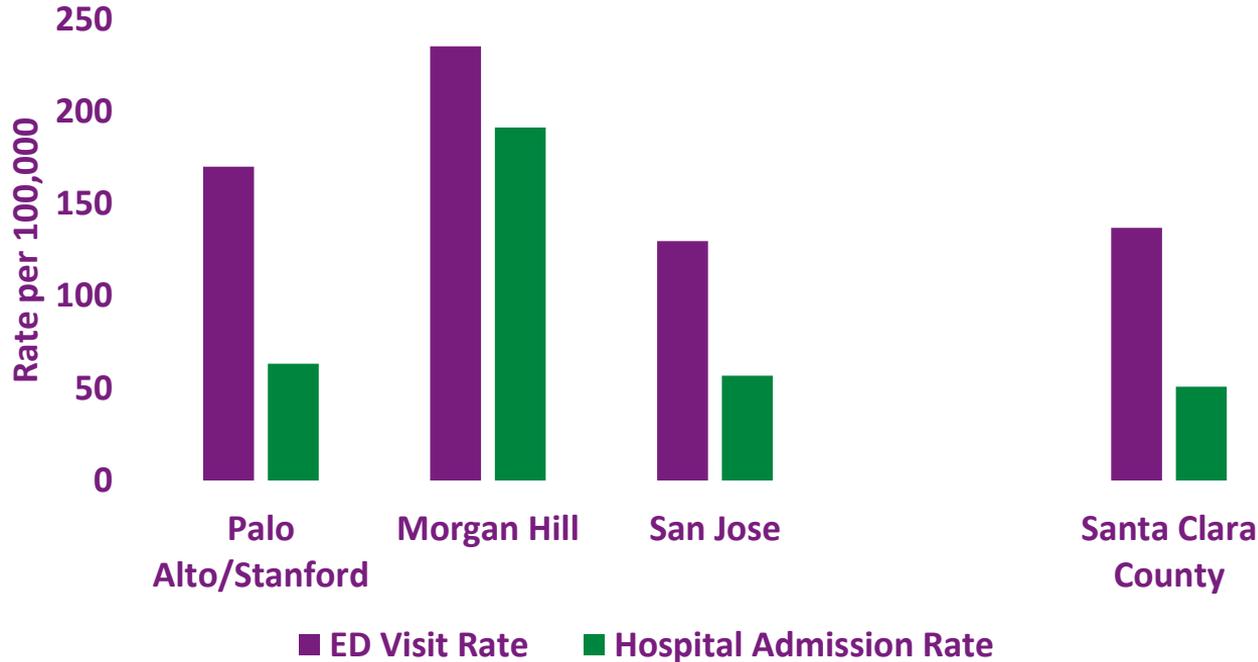


Data Source: Patient Discharge Data (2004-2014) **Population:** (1) Patient was 10 to 24 years of age, (2) Patient was a resident of Santa Clara County, and (3) Hospitalization was for suicide attempt/self-injury. Suicide attempt/self-injury was defined based on ICD-9 external cause of injury codes (E-codes)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

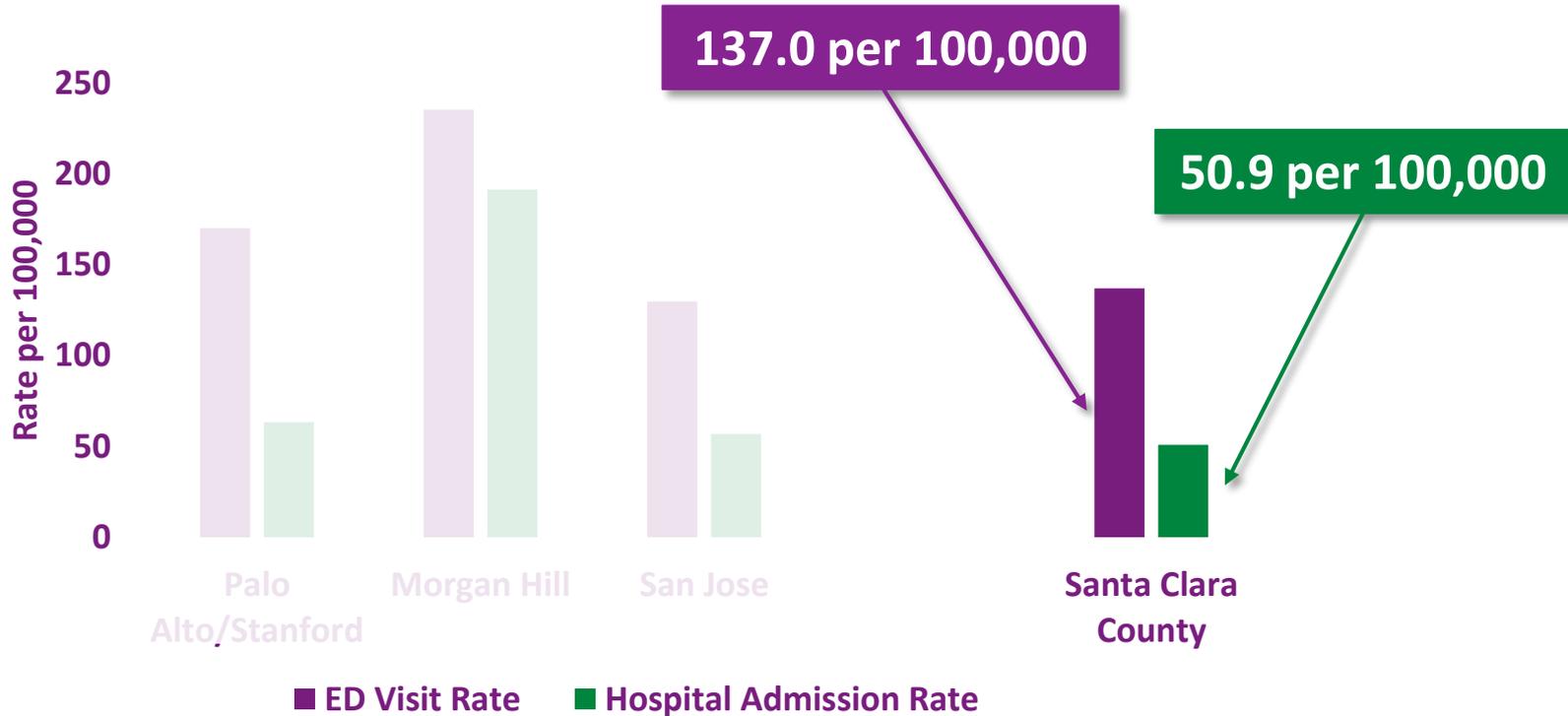


[†] suicide attempt without suicidal ideation

Data Source: Emergency Department Data (2005-2014), 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) Visit/hospitalization 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.

Crude Emergency Department (ED) visit and hospitalization rate for suicide attempt/self injury[†]

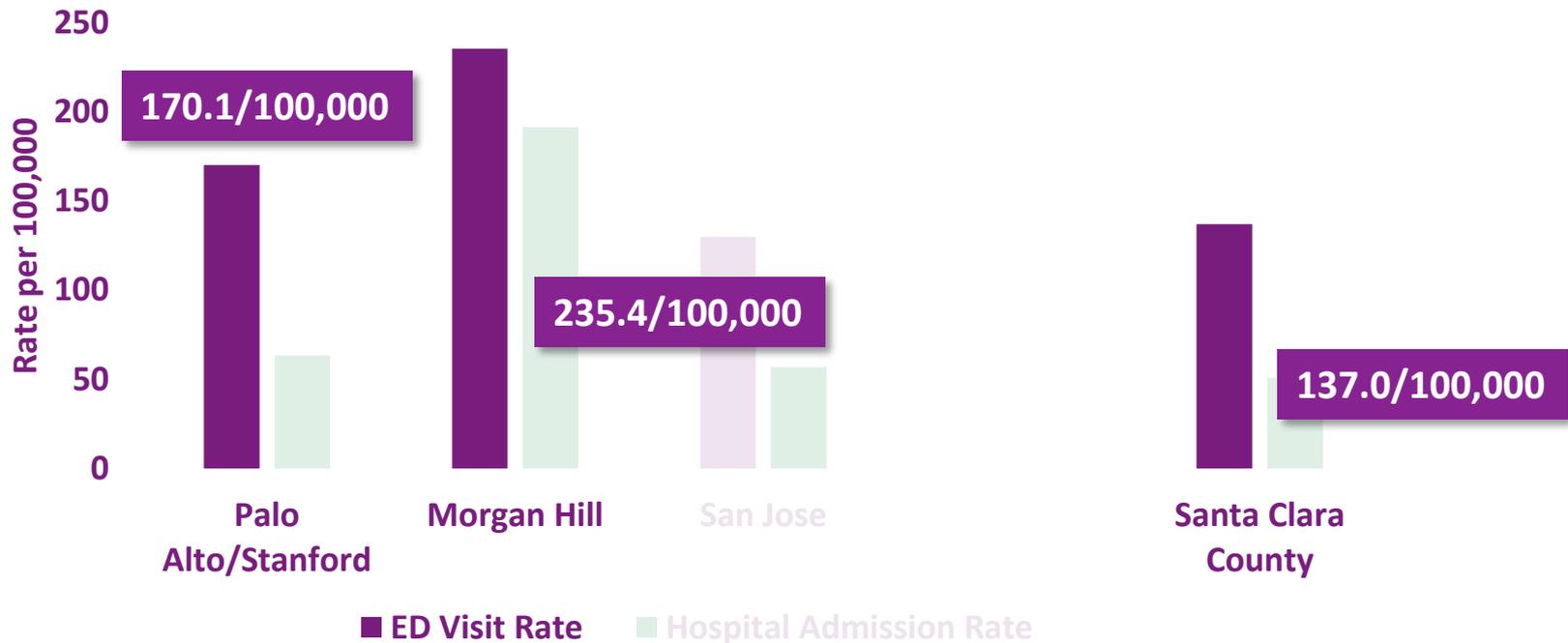


[†] suicide attempt without suicidal ideation

Data Source: Emergency Department Data (2005-2014), 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) Visit/hospitalization 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.

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



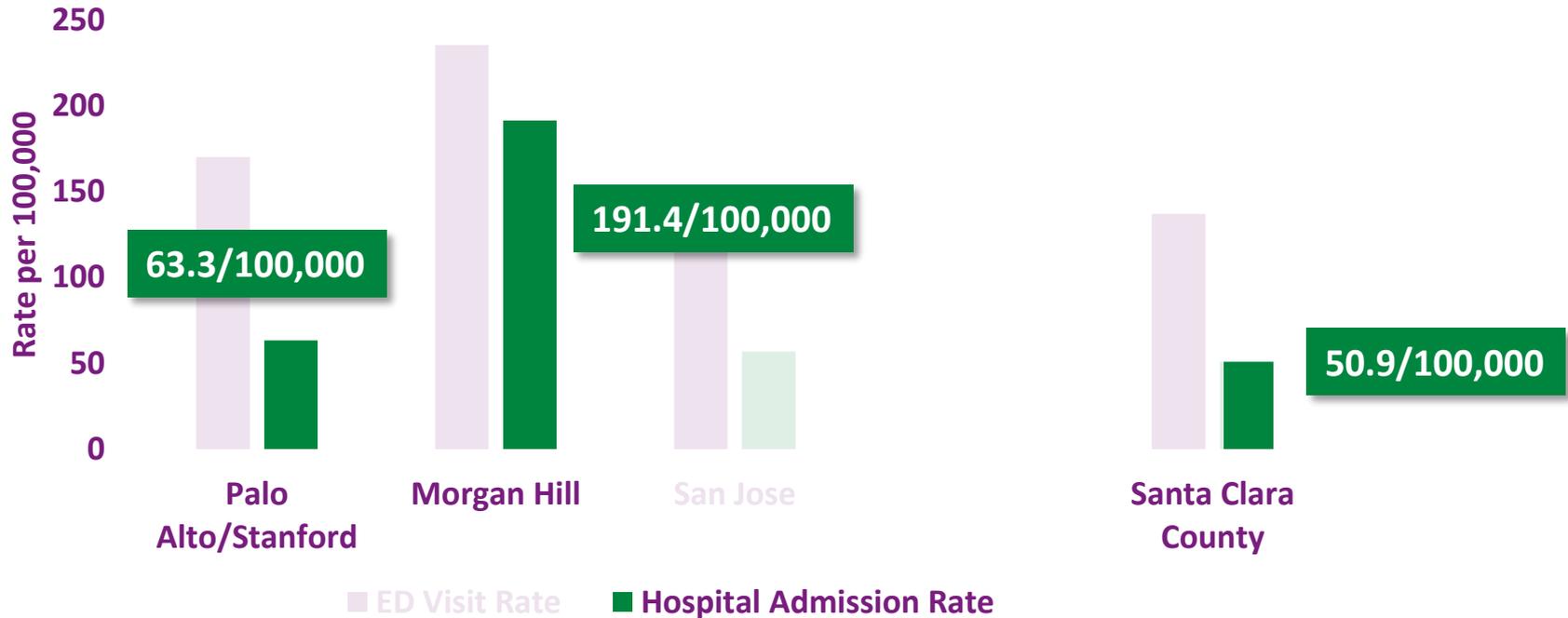
† suicide attempt without suicidal ideation

Data Source: Emergency Department Data (2005-2014), 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) Visit/hospitalization 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.

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

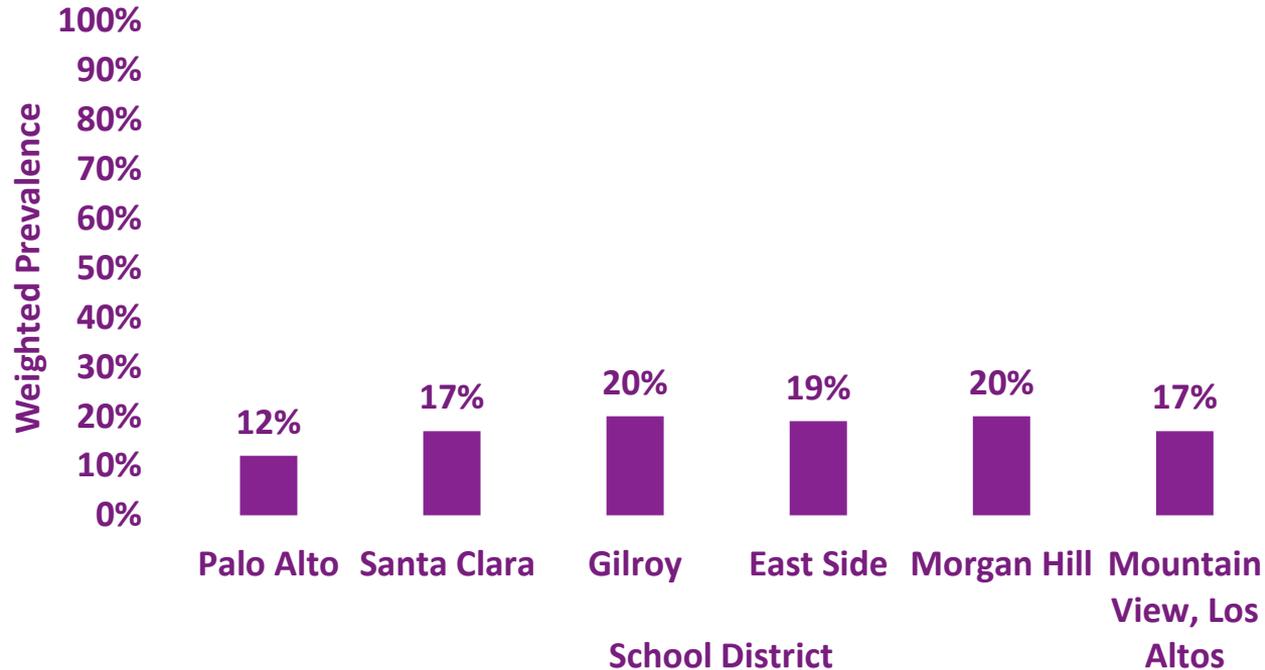


† suicide attempt without suicidal ideation

Data Source: Emergency Department Data (2005-2014), 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) Visit/hospitalization 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.

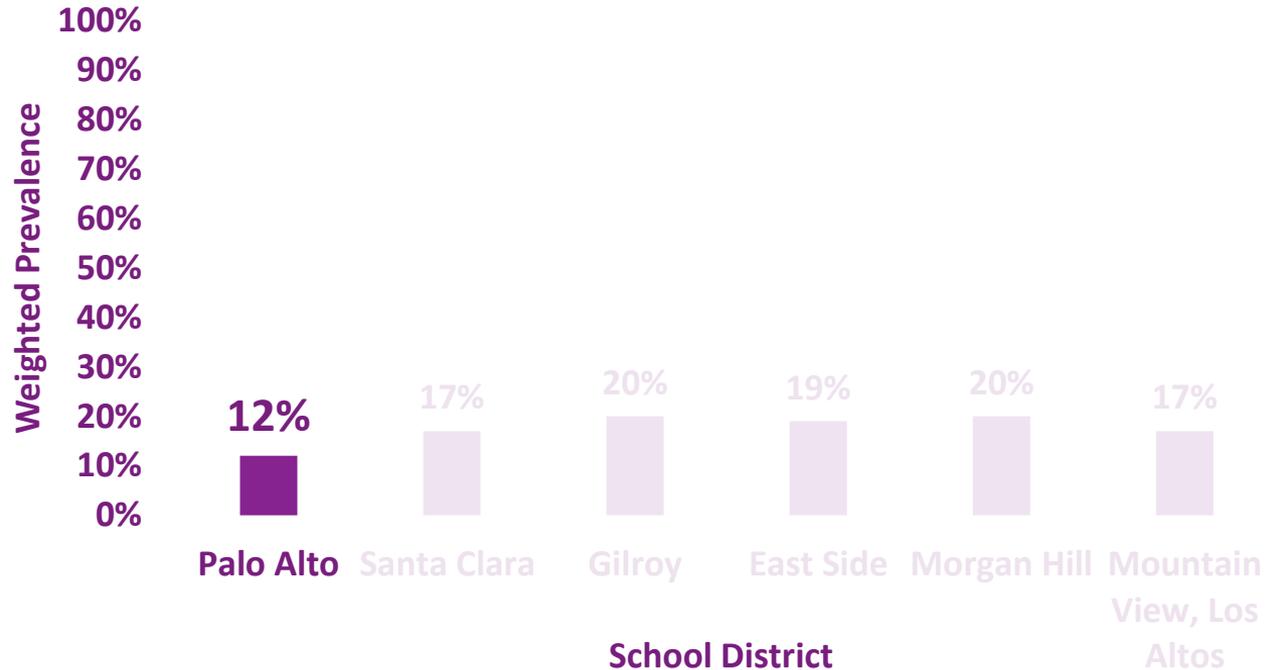
Weighted prevalence of past year suicidal ideation among public high school students, 2013–2014



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

Population: Public high school students from Santa Clara County

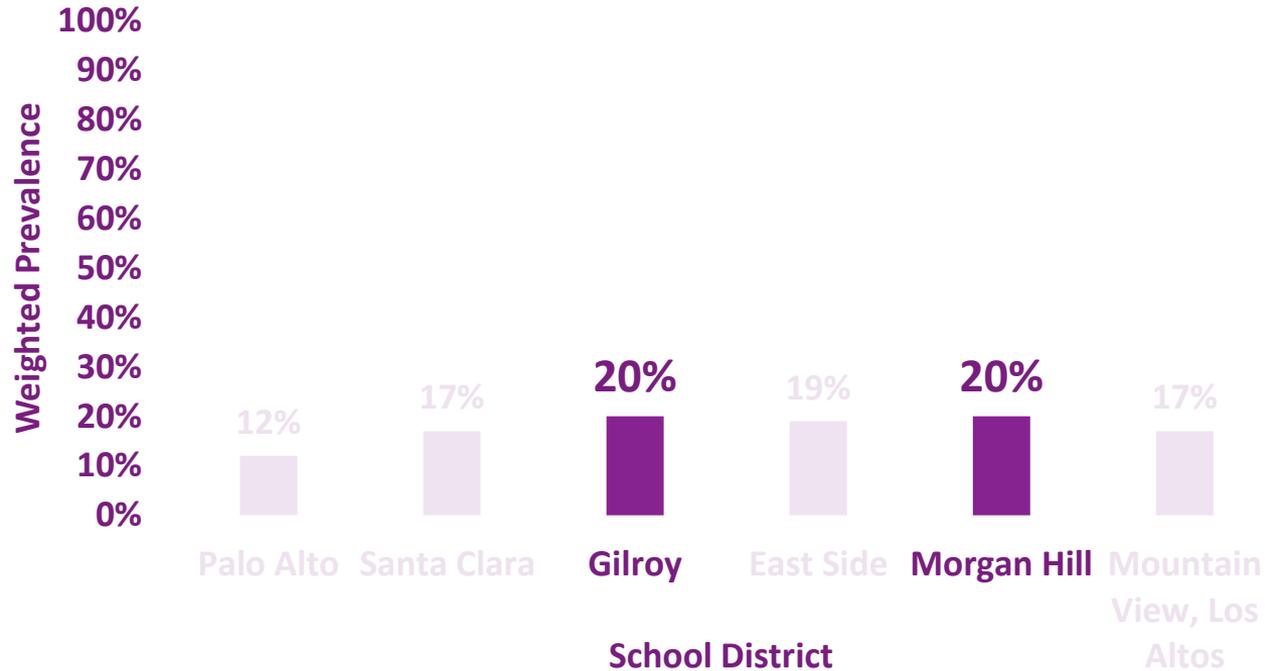
Weighted prevalence of past year suicidal ideation among public high school students, 2013–2014



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

Population: Public high school students from Santa Clara County

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

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

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

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

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

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

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

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

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

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

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**

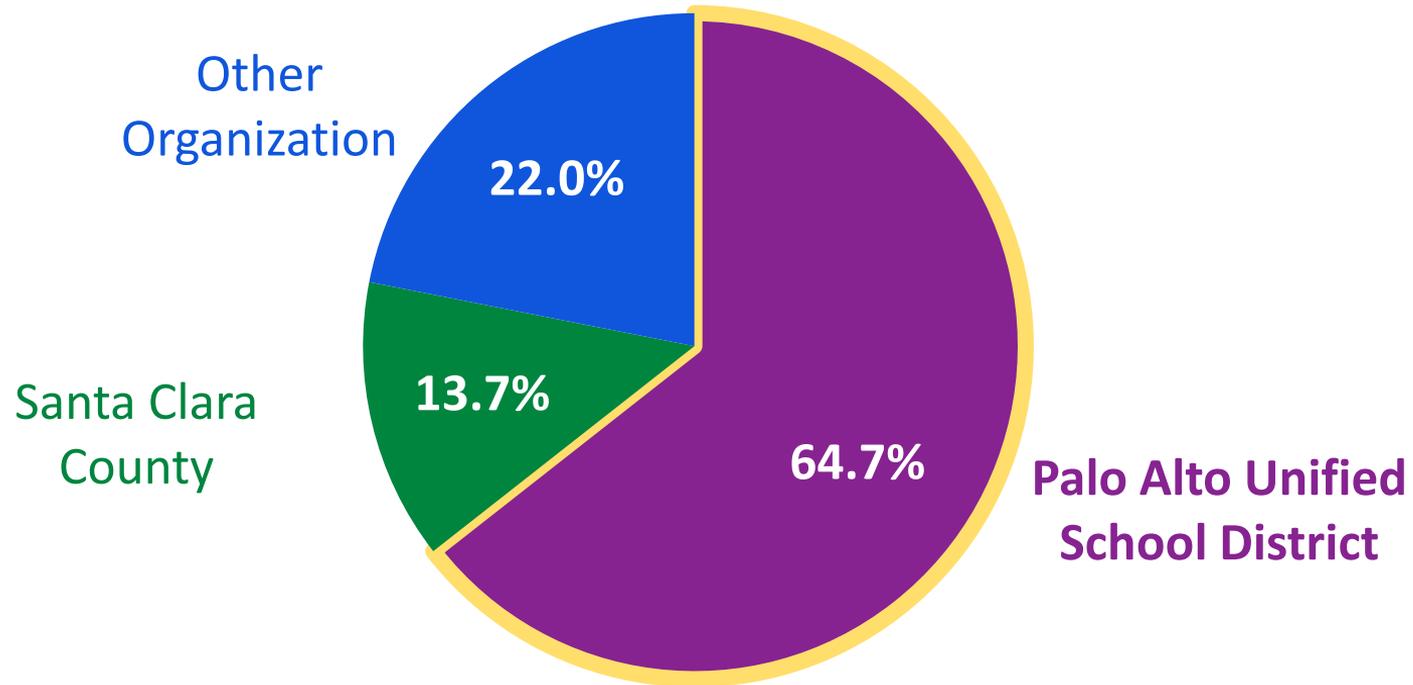
4% describe suicide as complex

Selected Results: Objective 3

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

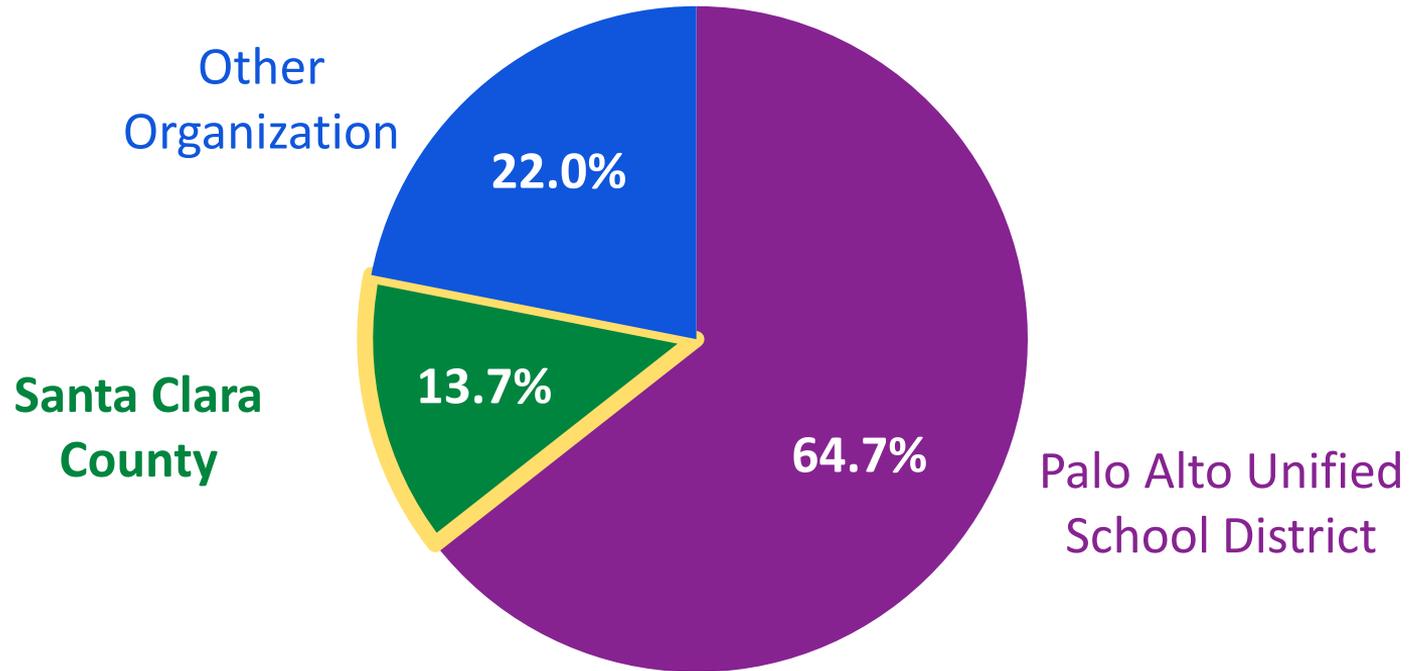
51 programs and policies were identified that were being used in Santa Clara County that were specifically related to suicide prevention

Prevention activities, programs, policies



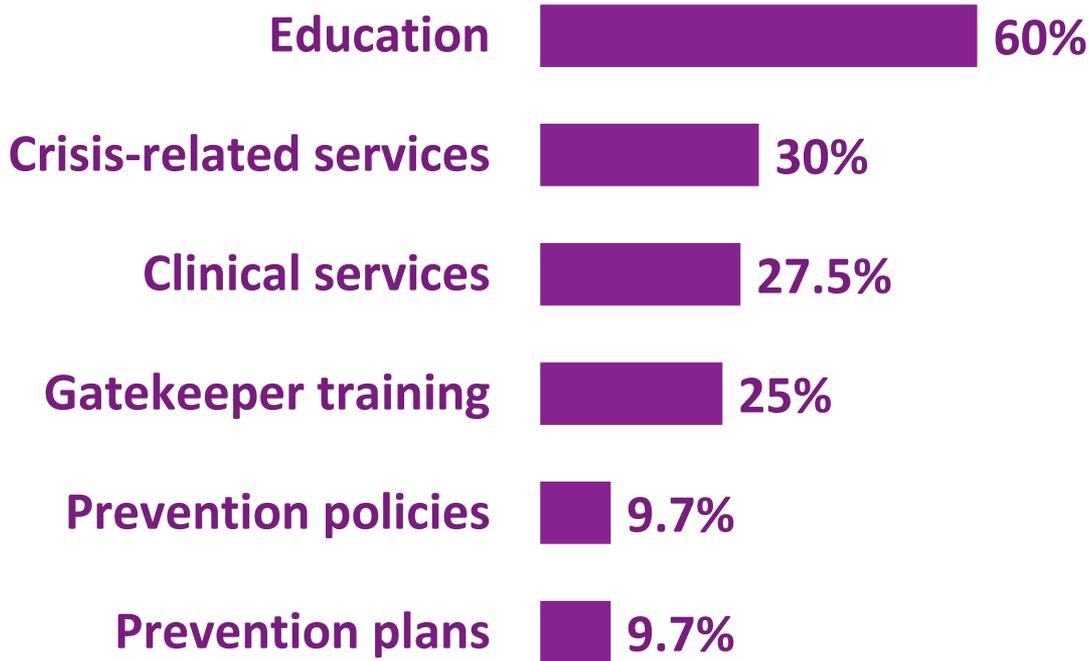
Data Sources: Materials related to programs, policies, and activities being utilized as part of suicide prevention efforts in Santa Clara County that were shared with the Epi-Aid team and were specifically focused on suicide prevention.

Prevention activities, programs, policies

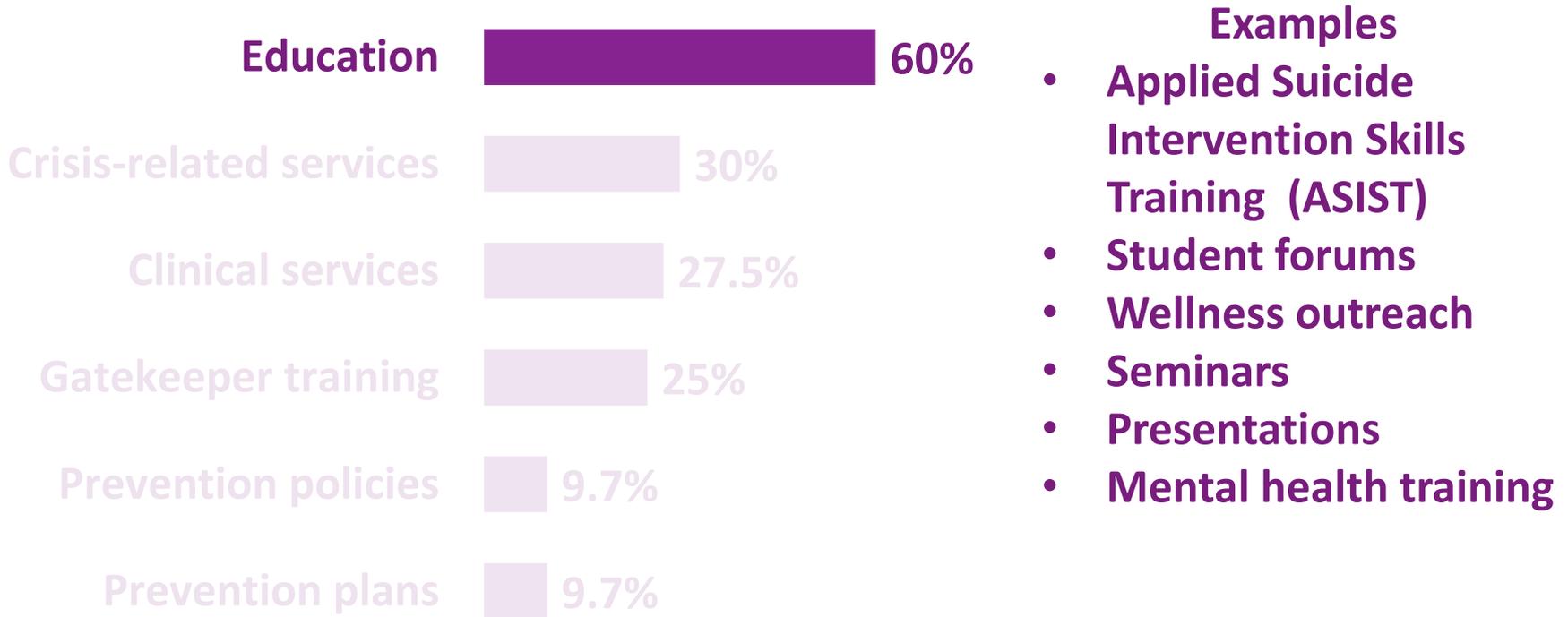


Data Sources: Materials related to programs, policies, and activities being utilized as part of suicide prevention efforts in Santa Clara County that were shared with the Epi-Aid team and were specifically focused on suicide prevention.

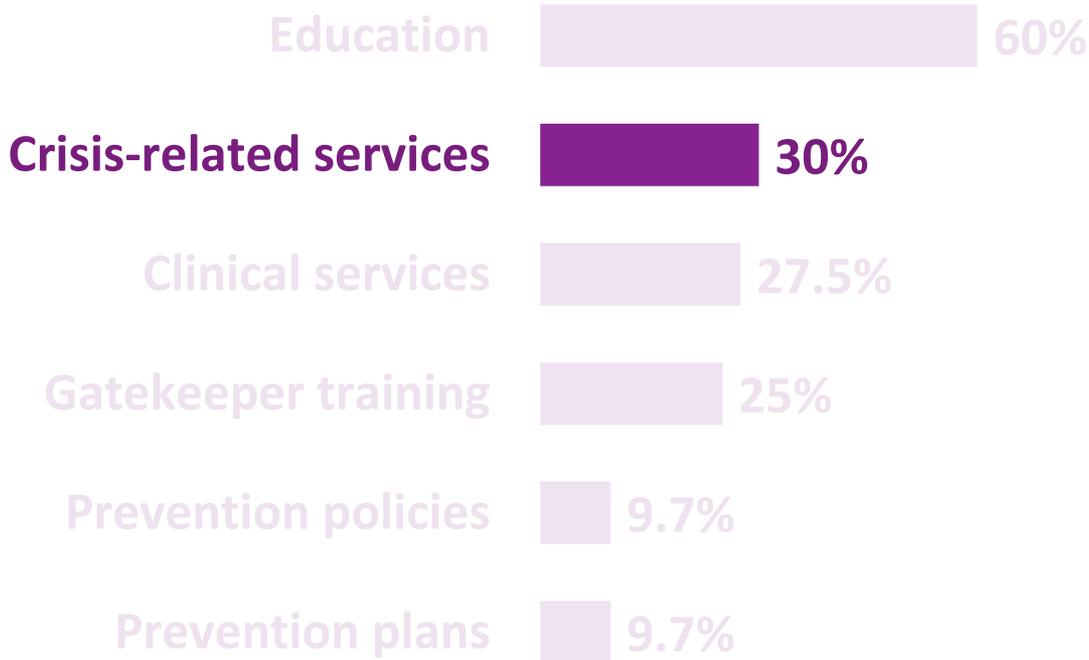
Prevention activities, programs, policies



Prevention activities, programs, policies



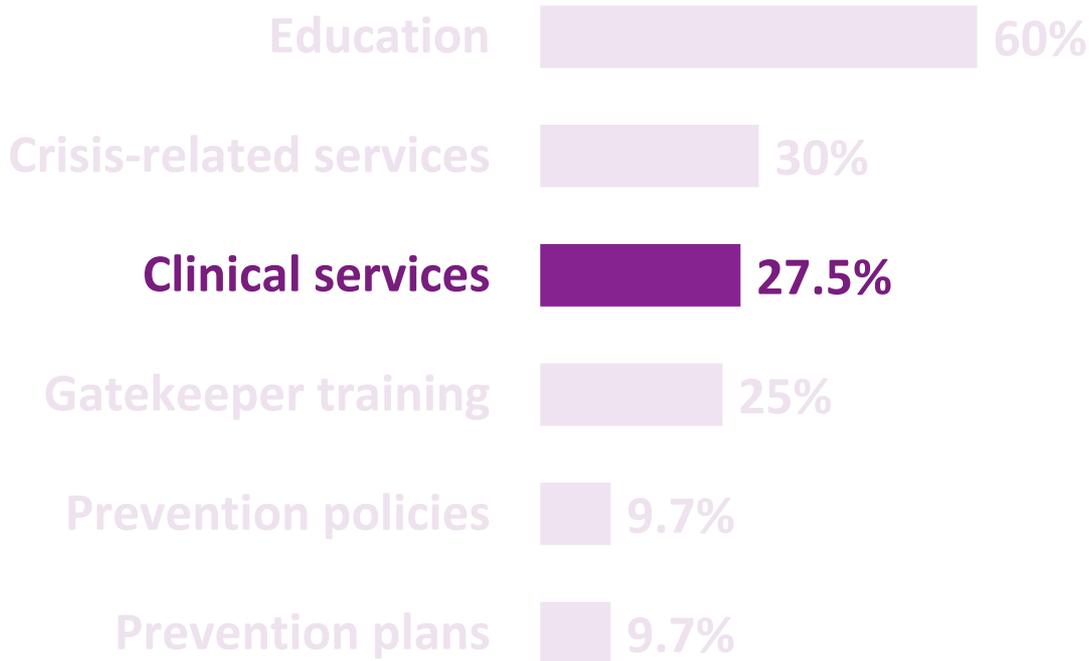
Prevention activities, programs, policies



Examples

- **Crisis line**
- **Crisis stabilization units**
- **Hospitalization assistance**
- **Parent education**
- **Safety plans**

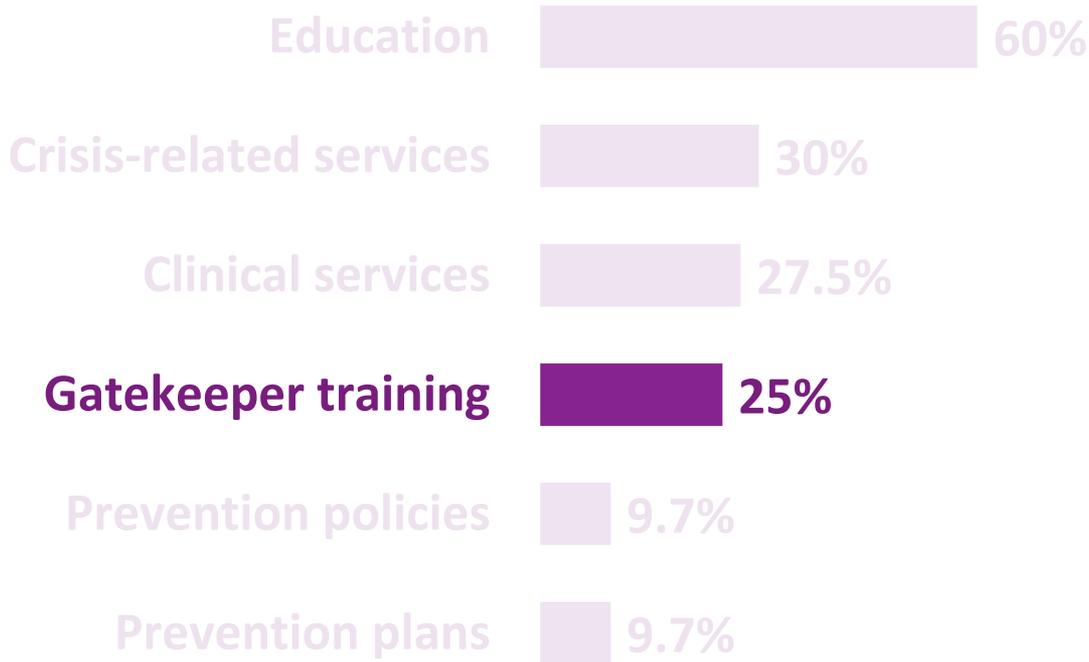
Prevention activities, programs, policies



Examples

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

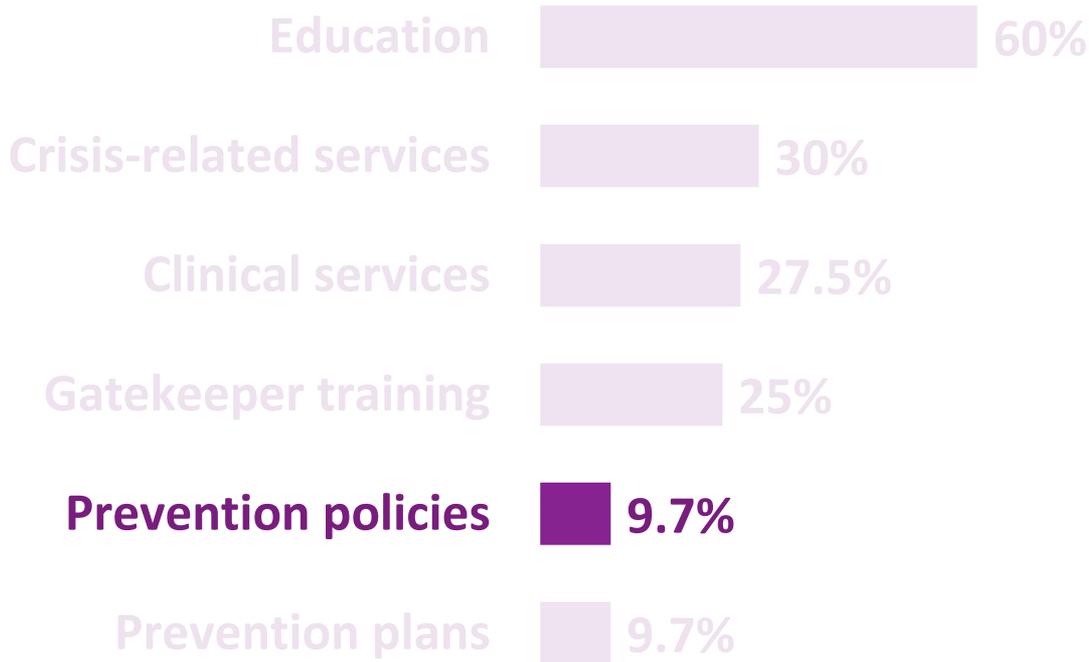
Prevention activities, programs, policies



Examples

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

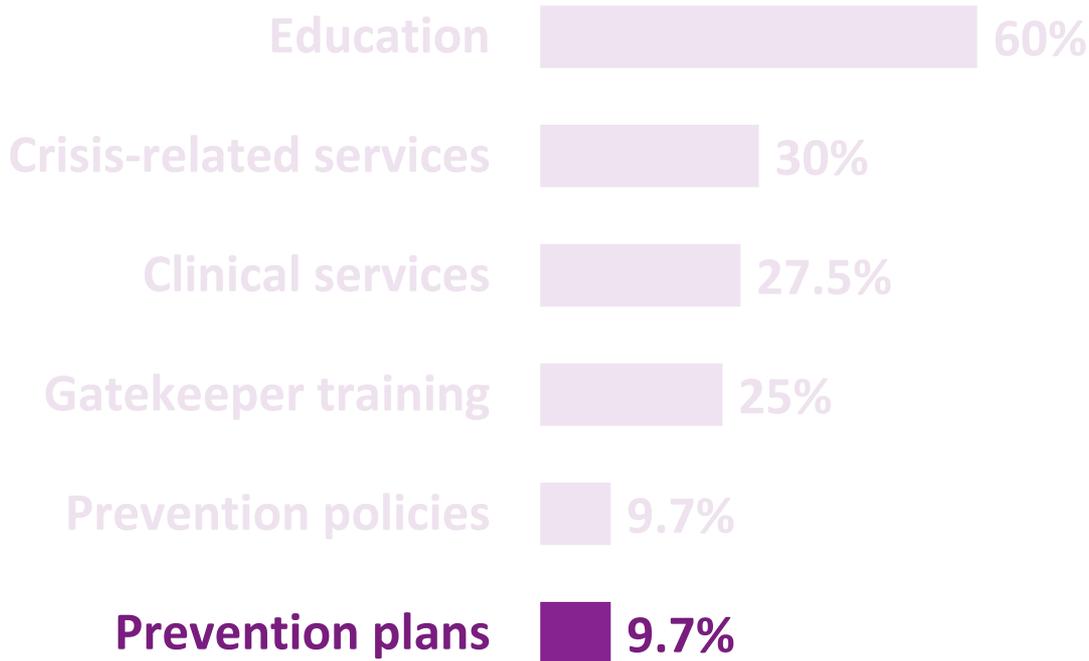
Prevention activities, programs, policies



Examples

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

Prevention activities, programs, policies

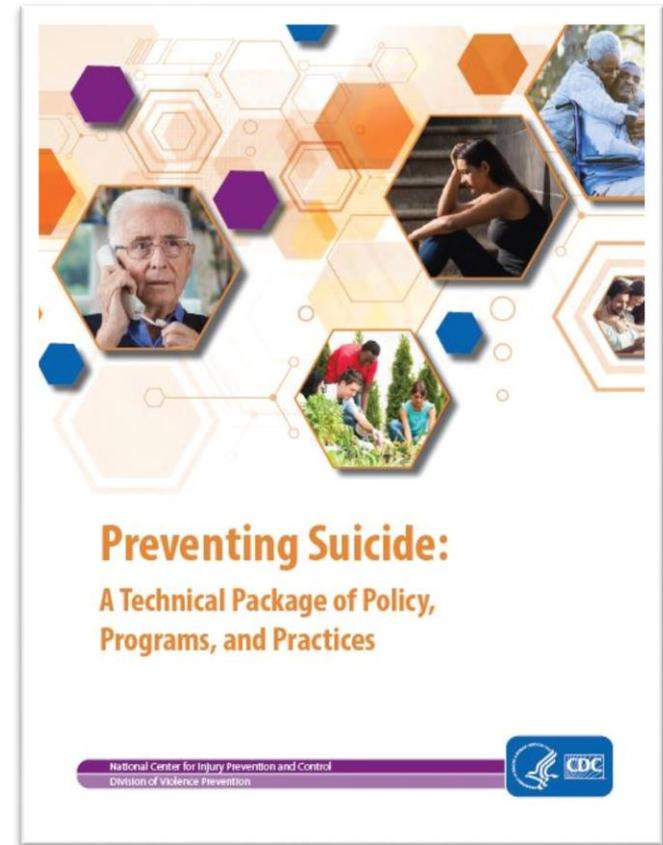


Examples

- **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 |
|---|--|
| Strengthen access and delivery of suicide care | <ul style="list-style-type: none">• School based mental health therapists• School based mental health services for special education youth• School based mental health and wellness coordinators |
| Identify and support people at risk | <ul style="list-style-type: none">• School based program Sources of Strength• County crisis line• County crisis line ASIST training |

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

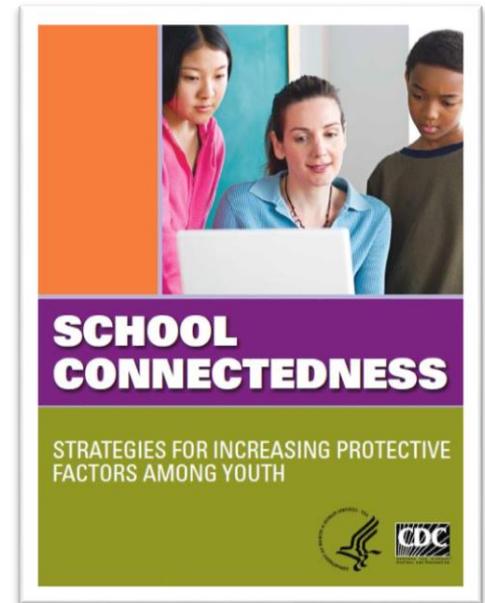
Connection to, and positive relationships with school, and teachers, were identified as a protective factor in Santa Clara County

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

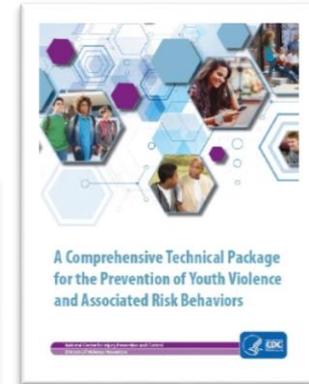
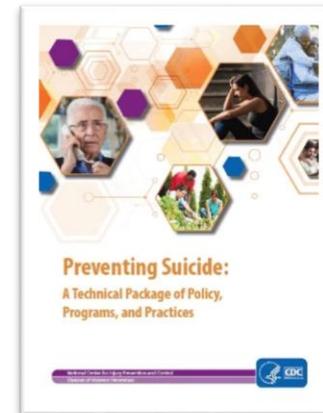
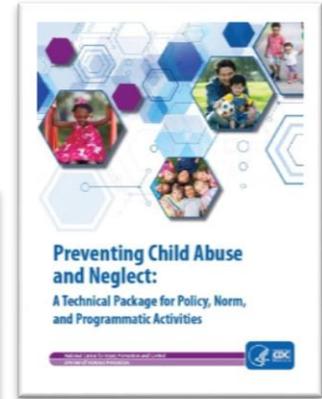
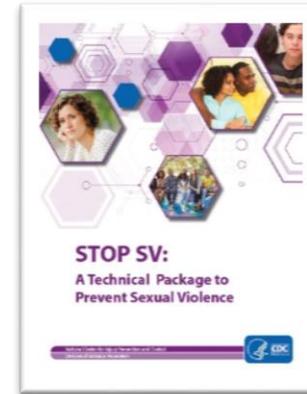
Other forms of violence (e.g., bullying and family violence) were identified as risk factors of nonfatal suicidal behavior among youth in Santa Clara County

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
 - 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

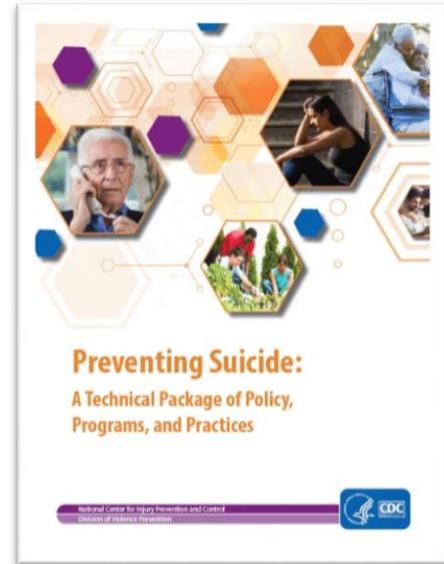
Continuous program evaluation

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

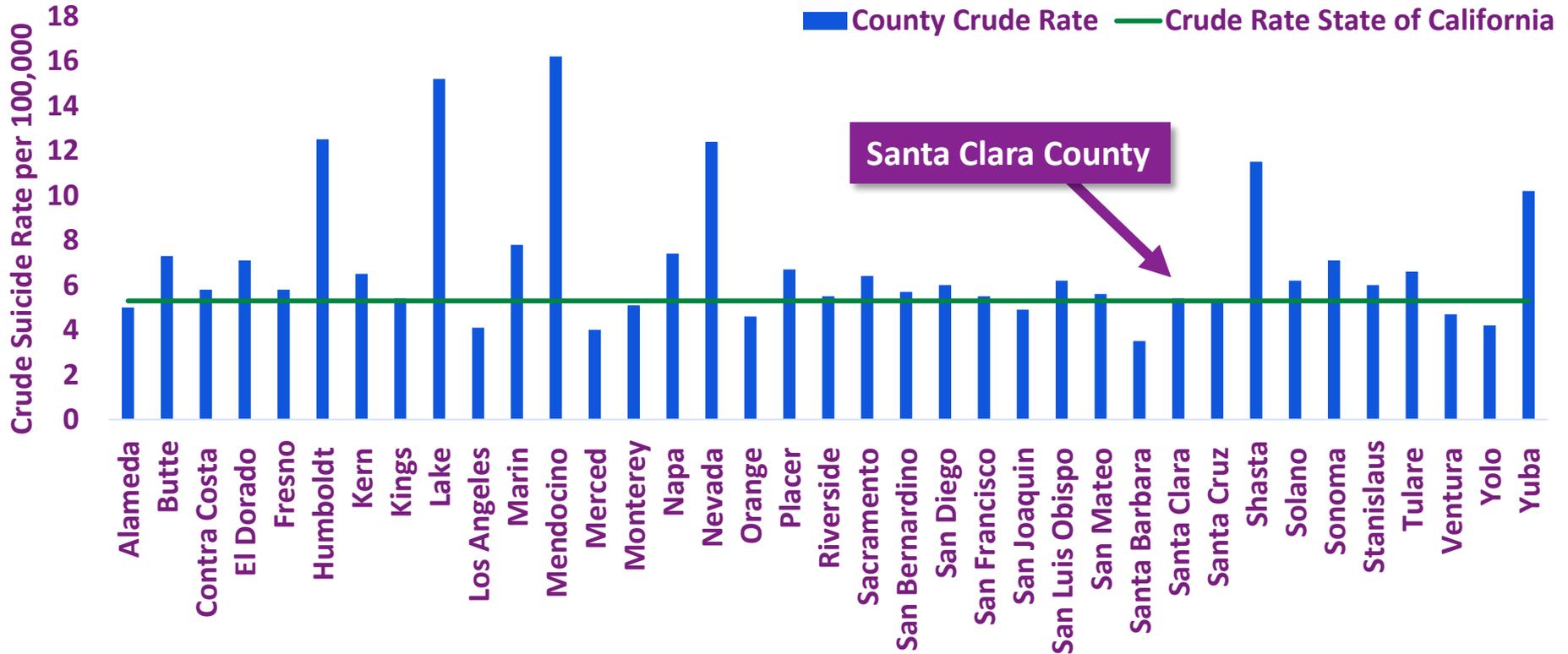
Acknowledgements

- **CDC**
 - Erica Spies
 - Xinjian Zhang
 - Randall Young
 - Kevin Vagi
 - Cory Ferdon
 - Alex Crosby
 - Deborah Stone
- **SAMHSA**
 - Alejandro Azofeifa
- **Santa Clara County Public Health Department**
 - Sara Cody
 - Pam Stoddard
 - Anandi Sujeer
- Mandeep Baath
- Pamela Amparo
- Joy Alexiou
- Johanna Silverthorne
- Phil Espejo
- **Santa Clara County Medical Examiner's Office**
 - Dr. Michelle Jordan
 - Captain William Oberst
 - Karin Wells
- **SCC Behavioral Health Services Department**
 - Toni Tullys
 - Evelyn Tirumalai
- **Project Safety Net**

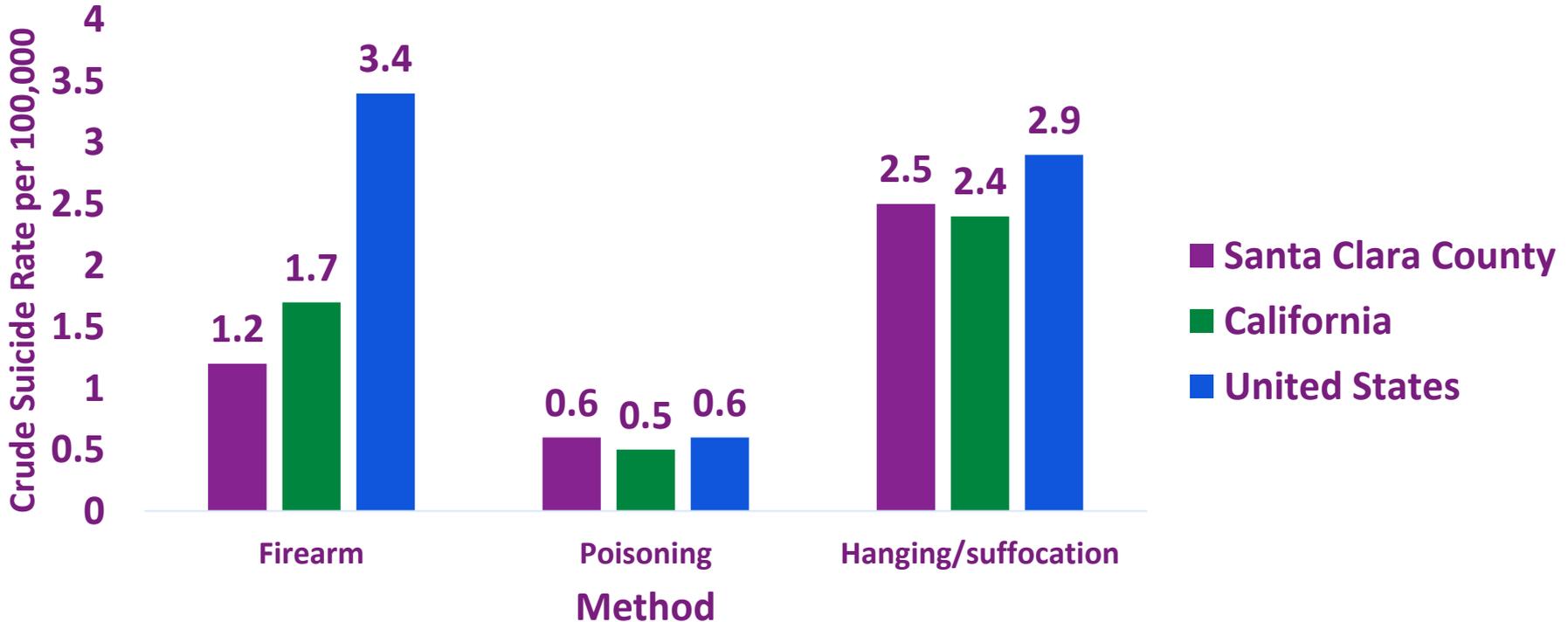
Questions

Extra Slides

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



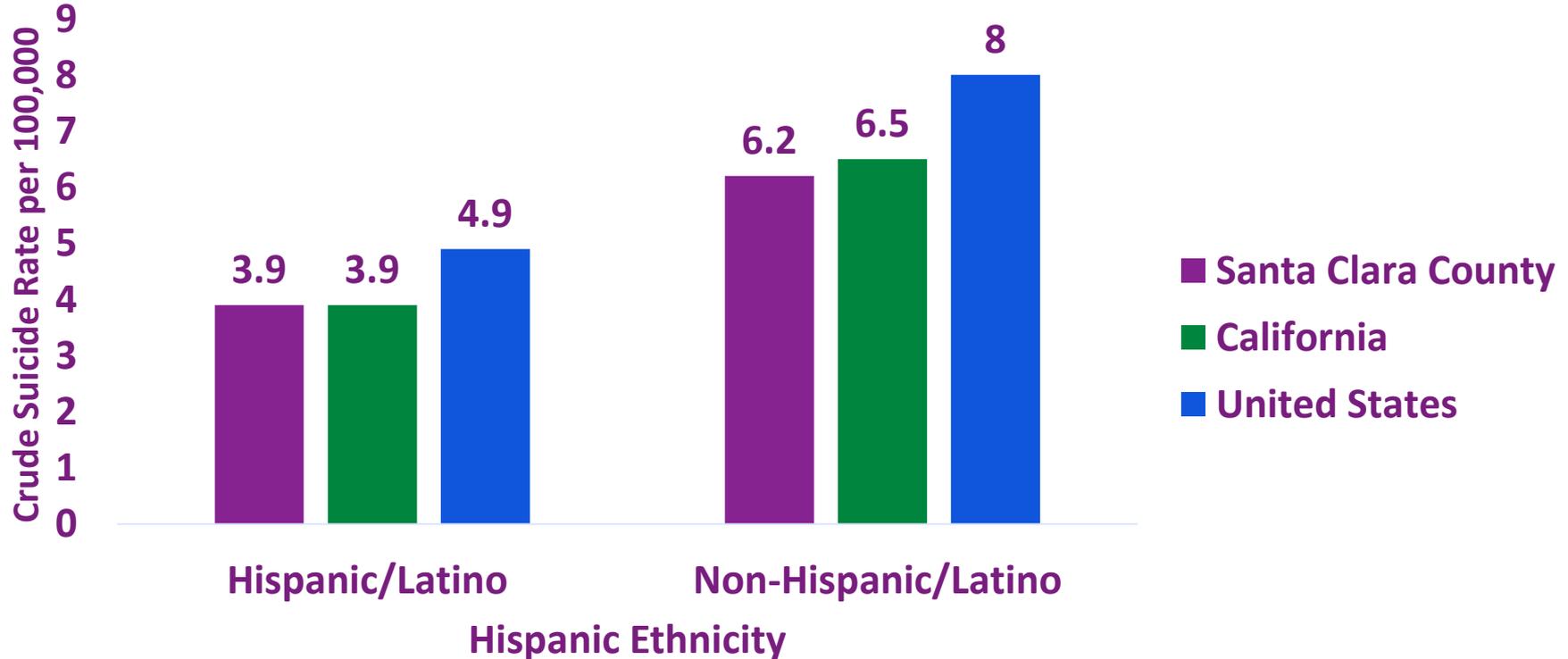
Crude suicide rate among youth, by method, 2003–2014



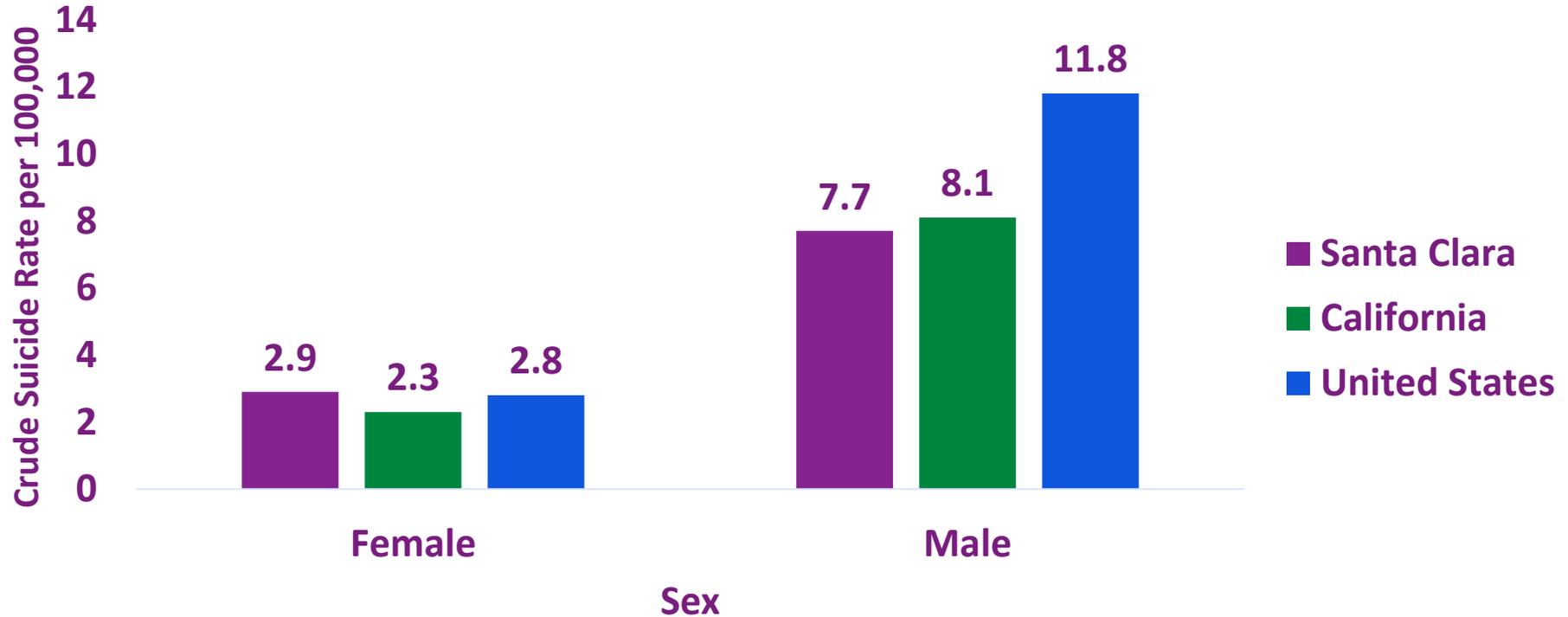
Crude suicide rate among youth, by race, 2003–2014



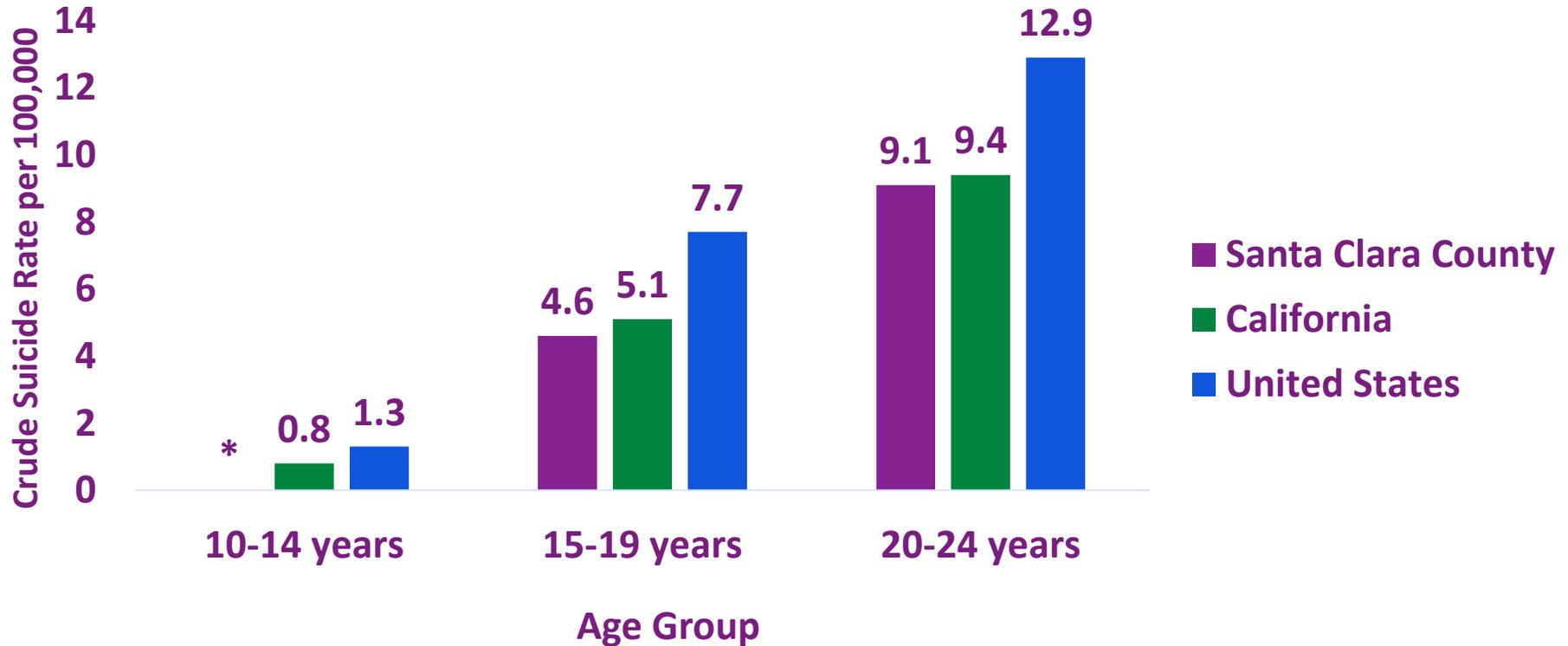
Crude suicide rate among youth, by ethnicity, 2003–2014



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

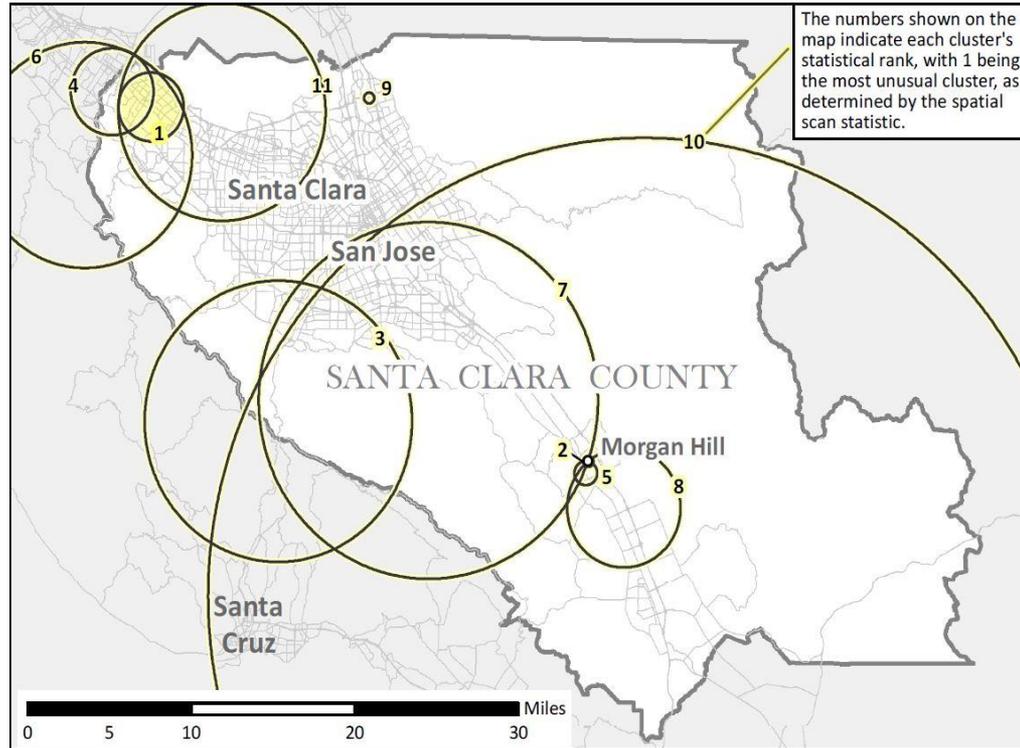
- One significant temporal cluster of six suicide-related injuries
 - 1/3/2011 through 1/17/2011
- Vital statistics data on method of suicide, city of residence, city of suicide-related injury, age, and biological sex do not show a connection between these suicides

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

- 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

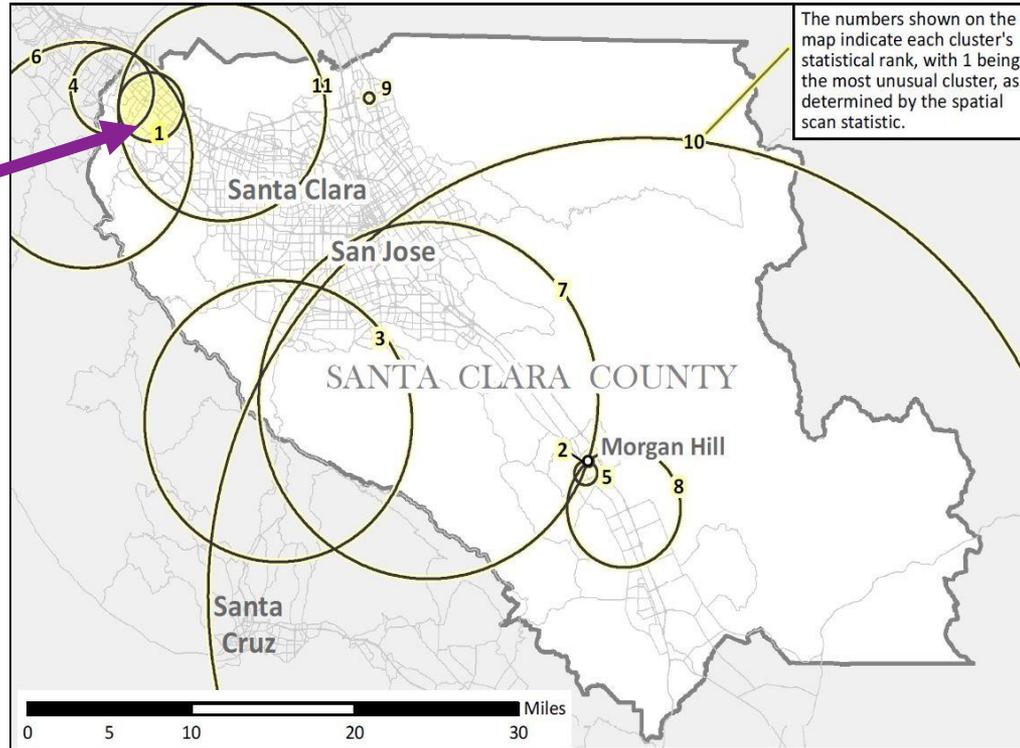


Data Source: Vital statistics, combined years 2003-2015

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

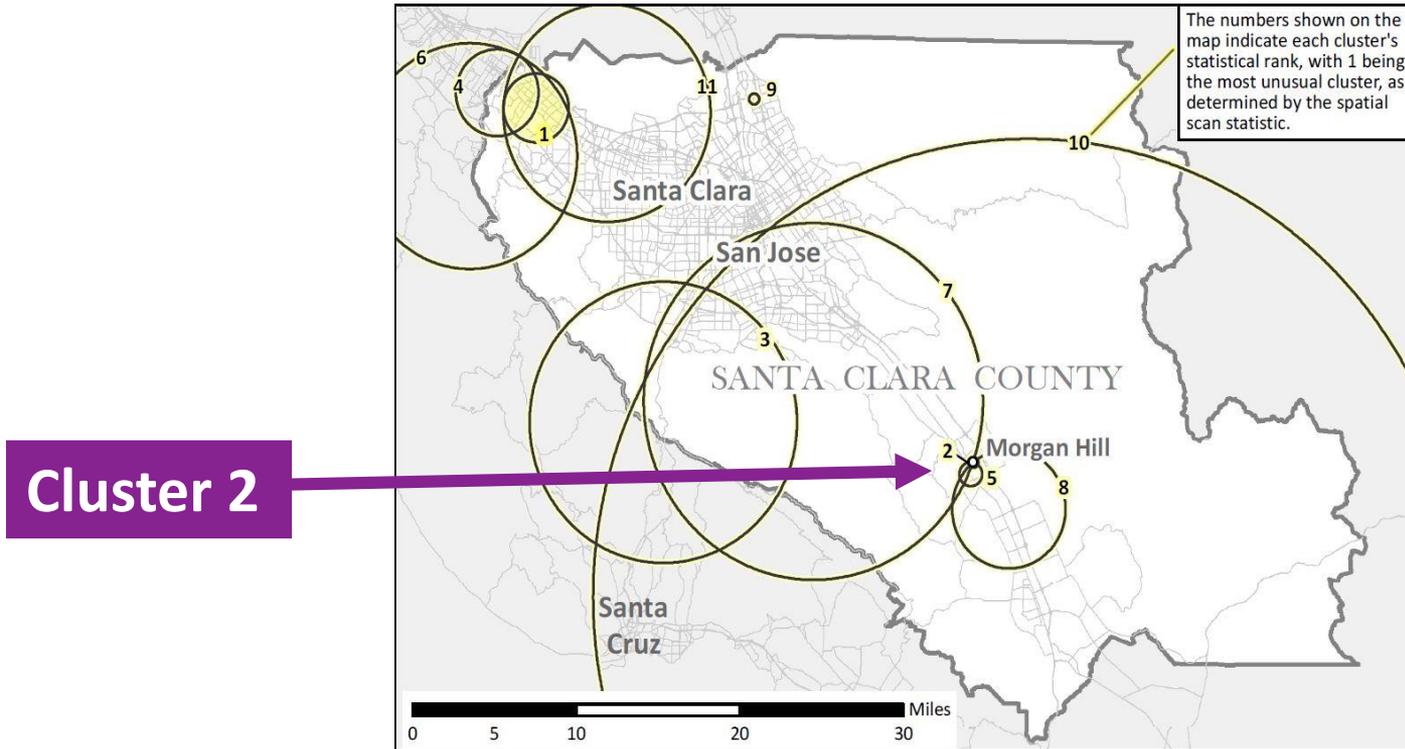
Cluster 1



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.

Spatial cluster analysis

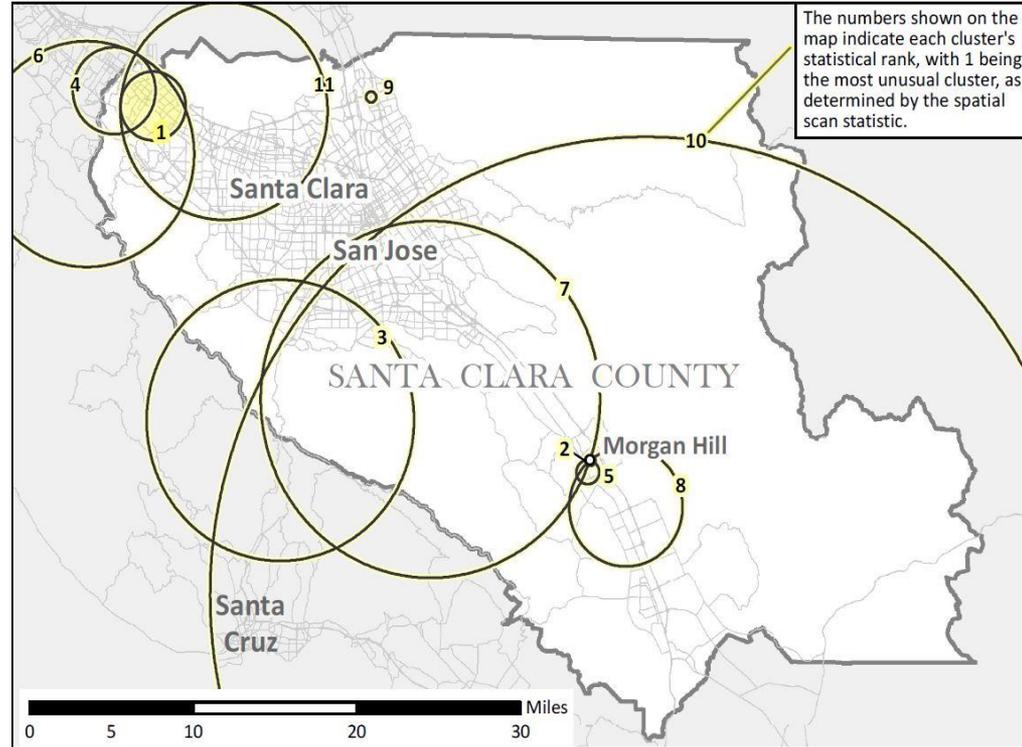


Data Source: Vital statistics, combined years 2003-2015

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

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

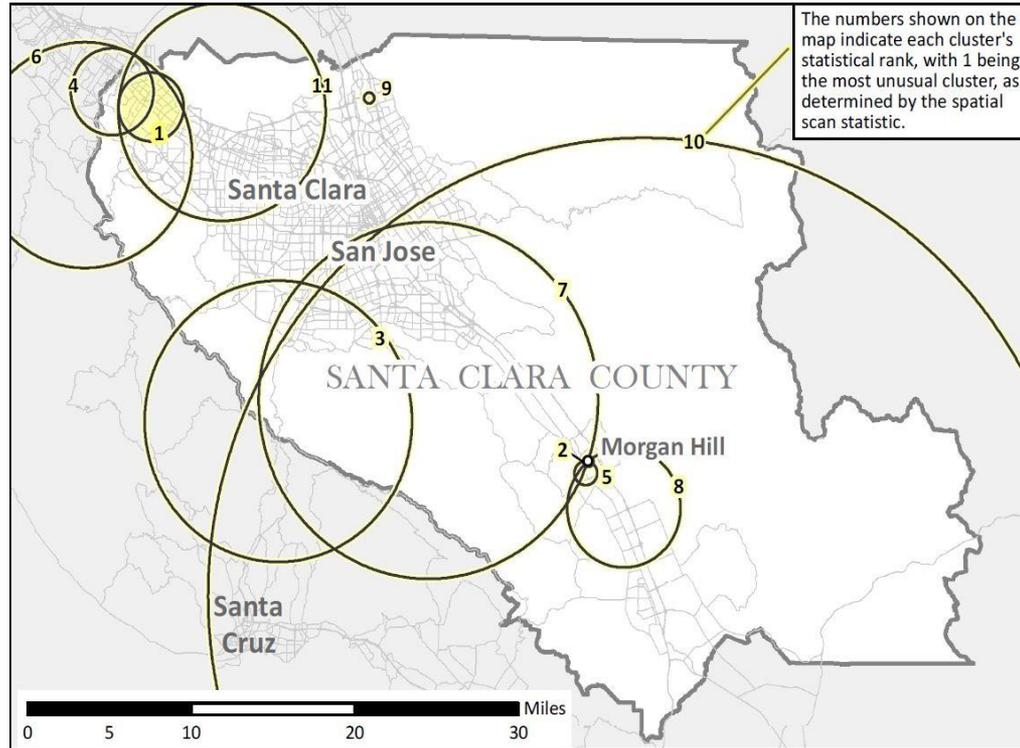


Data Source: Vital statistics, combined years 2003-2015

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

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.

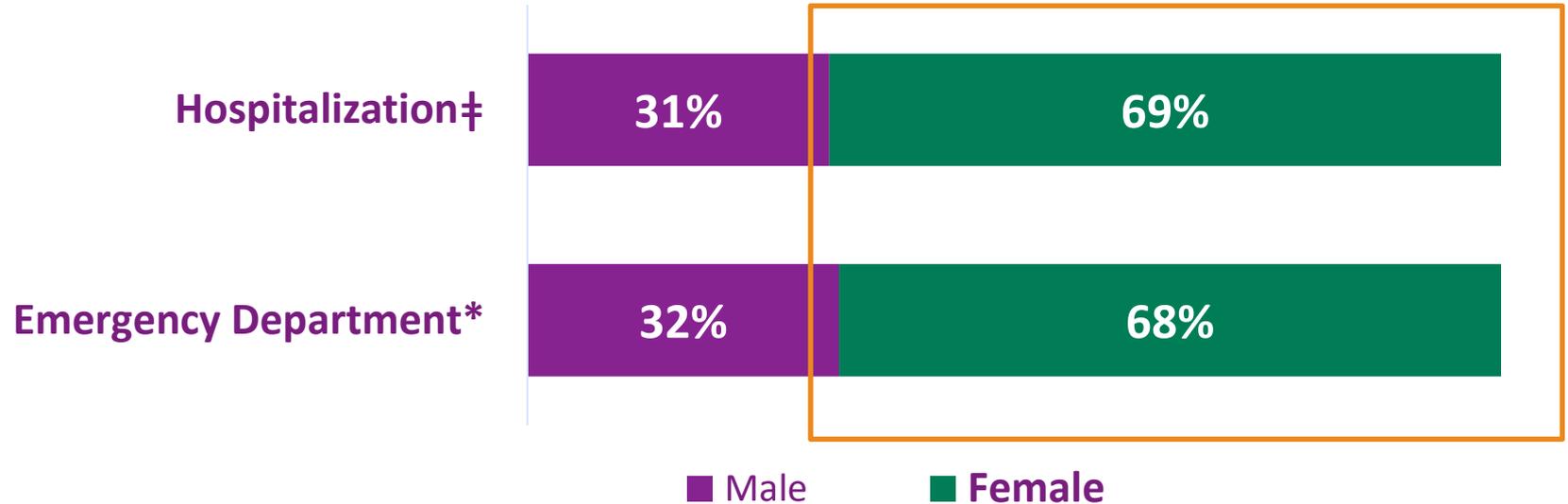
Precipitating circumstances for youth suicide by method of suicide, 2003–2015

| | 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[†]

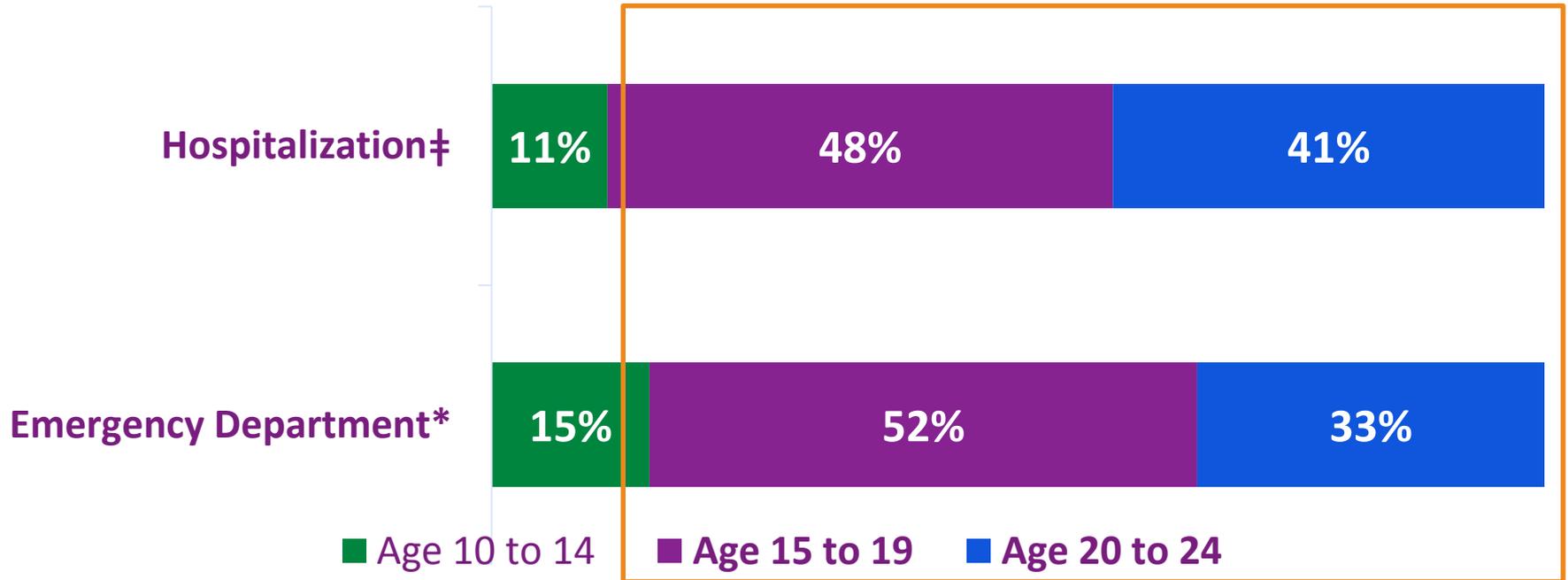


[†] suicide attempt without suicidal ideation

* **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.

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

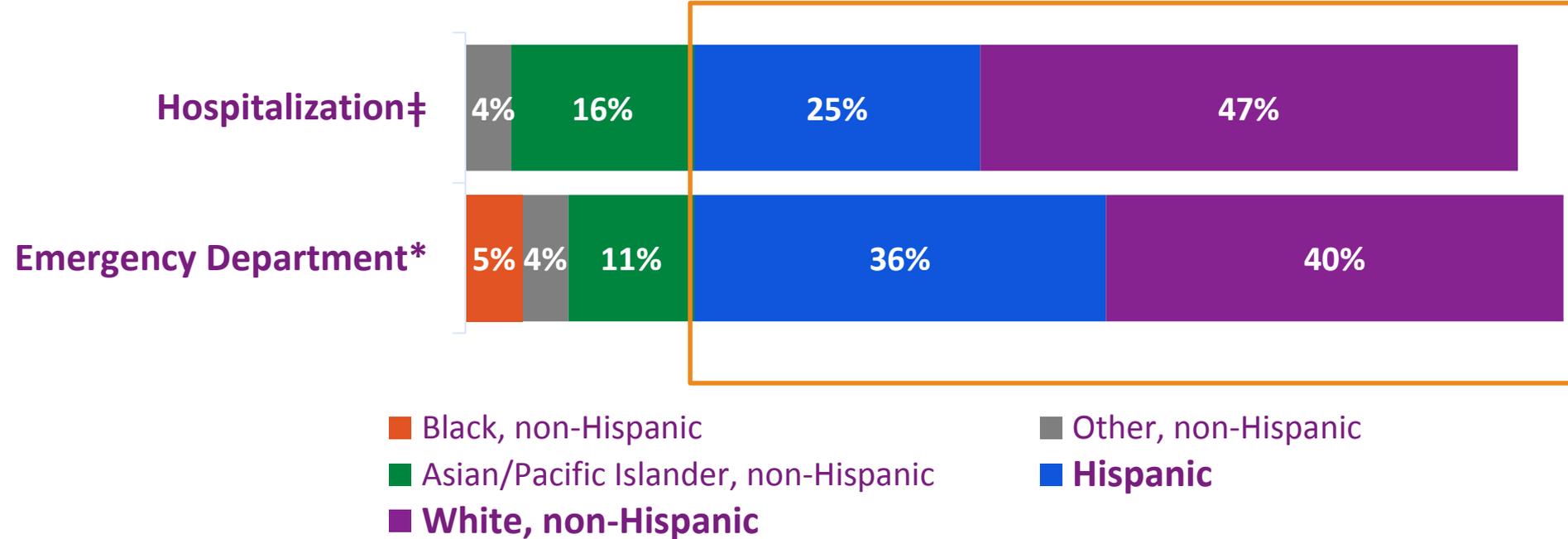


† suicide attempt without suicidal ideation

* **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[†]



[†] 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.

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