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

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Palo Alto Briefing

March 13, 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
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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 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

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

Data Sources, Analyses → Selected Results: Objective 1 → Selected Results: Objective 2 → Selected Results: Objective 3 → Objective 4, Recommendations
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
Youth

Adolescents
Age 10 to 19

Young Adults
Age 20 to 24
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
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

Data Source: CDC WONDER
Case Definition: Youth suicide decedent, age 10-24, that died in the United States 2003-2014
Crude youth suicide rate by two year periods

Crude suicide rate in Santa Clara County is similar to the suicide rate in California

Data Source: CDC WONDER
Case Definition: Youth suicide decedent, age 10-24, that died in the United States 2003-2014
Crude youth suicide rate by two year periods

Crude suicide rate in Santa Clara County was lower than the suicide rate in the United States

Data Source: CDC WONDER Case Definition: Youth suicide decedent, age 10-24, that died in the United States 2003-2014
Predicted crude youth suicide rates by city of residence, 2003–2015

<table>
<thead>
<tr>
<th>City</th>
<th>Predicted Crude Suicide Rate per 100,000</th>
<th>95% Confidence Interval</th>
</tr>
</thead>
<tbody>
<tr>
<td>San Jose</td>
<td>4.6</td>
<td>3.8</td>
</tr>
<tr>
<td>Morgan Hill</td>
<td>12.7</td>
<td>7.3</td>
</tr>
<tr>
<td>Palo Alto</td>
<td>14.1</td>
<td>9.0</td>
</tr>
<tr>
<td>Sunnyvale</td>
<td>6.4</td>
<td>4.0</td>
</tr>
<tr>
<td>Santa Clara</td>
<td>5.1</td>
<td>3.0</td>
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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.
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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.

Predicted youth suicide rate in Palo Alto significantly higher than San Jose, Sunnyvale, Santa Clara
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<td>12.7</td>
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<td>14.1</td>
<td>9.0 - 22.2</td>
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<td>Sunnyvale</td>
<td>6.4</td>
<td>4.0 - 10.3</td>
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<tr>
<td>Santa Clara</td>
<td>5.1</td>
<td>3.0 - 8.5</td>
</tr>
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Predicted youth suicide rate in Palo Alto not significantly different than Morgan Hill.
# Predicted crude youth suicide rates, 2003–2014

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<td>Santa Clara County‡</td>
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<td>4.7</td>
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**Data Source:** † Vital statistics, combined years 2003-2014, ‡ CDC WONDER data 2003-2014

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Temporal cluster analysis

- One significant temporal cluster of six suicide-related injuries

- 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

Data Source: Vital statistics, combined years 2003-2015
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Spatial cluster analysis

Data Source: Vital statistics, combined years 2003-2015
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Cluster 2
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.
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

- **Male:** 75.1%
- **Female:** 24.9%

**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

- **20 to 24 years old**: 66.4%
- **10 to 19 years old**: 33.6%

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

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<table>
<thead>
<tr>
<th>Race/Ethnicity</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>White, Non-Hispanic</td>
<td>38.9%</td>
</tr>
<tr>
<td>Hispanic, any race</td>
<td>27.1%</td>
</tr>
<tr>
<td>Asian or Pacific Islander, Non-Hispanic</td>
<td>27.1%</td>
</tr>
<tr>
<td>Black, Non-Hispanic</td>
<td>4.4%</td>
</tr>
</tbody>
</table>

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

- **House, apartment, garage**: 65.2%
- **Railroad tracks**: 10.5%
- **Other**: 10%
- **Roadway or parking area**: 7.1%
- **Outdoor area**: 7.1%

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

<table>
<thead>
<tr>
<th>Situation</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recent crisis</td>
<td>52.6%</td>
</tr>
<tr>
<td>Current mental health problem</td>
<td>47.4%</td>
</tr>
<tr>
<td>Ever treated for mental health problem</td>
<td>42.8%</td>
</tr>
<tr>
<td>Suicide note</td>
<td>42.3%</td>
</tr>
<tr>
<td>Suicide thought history</td>
<td>37.1%</td>
</tr>
<tr>
<td>Current depressed mood</td>
<td>32.5%</td>
</tr>
<tr>
<td>Current treatment for mental illness</td>
<td>30.4%</td>
</tr>
<tr>
<td>Suicide intent disclosed</td>
<td>29.4%</td>
</tr>
<tr>
<td>Suicide attempt history</td>
<td>29.9%</td>
</tr>
</tbody>
</table>

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<table>
<thead>
<tr>
<th>Precipitating Circumstances</th>
<th>Hanging</th>
<th>Firearm</th>
<th>Poisoning</th>
<th>Train</th>
<th>Fall</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current mental health problem</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Current depressed mood</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
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<td>Current treatment for mental illness</td>
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</tr>
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<td>Suicide intent disclosed</td>
<td></td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Suicide thought history</td>
<td>x</td>
<td>x</td>
<td>x</td>
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<td>x</td>
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<tr>
<td>Intimate partner problems</td>
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<tr>
<td>Argument</td>
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<tr>
<td>School problem</td>
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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.
# Known precipitating circumstances for youth suicide, by city of residence, 2003–2015

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Review of medical examiner narratives for Palo Alto youth suicides

- Several youth had severe mental health problems (e.g., schizophrenia, psychosis)

- Several youth had attempted suicide multiple times and/or been admitted multiple times to hospital for suicidal behaviors

- Several youth were living in residential mental health facilities or half-way houses at time of death

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

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Changes over time could result from changes in actual number of visits, changes in the use of suicide attempt/self-injury ICD-9 codes, or from a combination

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Hospitalization for suicide attempt by Santa Clara County youth residents

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

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

ED visit rate for Palo Alto/Stanford: 170.1/100,000
ED visit rate for Morgan Hill: 235.4/100,000
ED visit rate for Santa Clara County: 137.0/100,000

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

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† suicide attempt without suicidal ideation

Data Source: Emergency Department Data (2005-2014), Patient Discharge Data (2003-2014)

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

<table>
<thead>
<tr>
<th>School District</th>
<th>Weighted Prevalence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Palo Alto</td>
<td>12%</td>
</tr>
<tr>
<td>Santa Clara</td>
<td>17%</td>
</tr>
<tr>
<td>Gilroy</td>
<td>20%</td>
</tr>
<tr>
<td>East Side</td>
<td>19%</td>
</tr>
<tr>
<td>Morgan Hill</td>
<td>20%</td>
</tr>
<tr>
<td>Mountain View, Los Altos</td>
<td>17%</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Risk Factors</th>
<th>Protective Factors</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Characteristics that may put an individual at increased risk for suicide</td>
<td>• Characteristics that could help insulate or buffer an individual from suicide</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Risk Factors</th>
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<td>Self-efficacy for help-seeking</td>
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<td></td>
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**Data Sources:** Developmental Assets Survey (2010), California Healthy Kids Survey (2003-2016)

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### Data Sources

### Population
- Public high school students from Santa Clara County
## Individual level risk and protective factors for nonfatal suicidal behavior among public high school students

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**Population:** Public high school students from Santa Clara County
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<tr>
<th>Risk Factors</th>
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<td>Violence perpetration/victimization</td>
<td>• Close and positive relationship with parents and family</td>
</tr>
<tr>
<td>Family violence</td>
<td>• Parent involvement in youth’s life</td>
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<tr>
<td>Physical, emotional, cyber bullying</td>
<td>• Being encouraged by family to do one’s best</td>
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<tr>
<td></td>
<td>• Open communication with parents</td>
</tr>
<tr>
<td></td>
<td>• Engagement in outside activities</td>
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**Population:** Public high school students from Santa Clara County
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**Data Sources:** Developmental Assets Survey (2010), California Healthy Kids Survey (2003-2016)

**Population:** Public high school students from Santa Clara County
Community level risk and protective factors for nonfatal suicidal behavior among public high school students

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<thead>
<tr>
<th>Risk Factors</th>
<th>Protective Factors</th>
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<tr>
<td>• Feeling unsafe at school</td>
<td>• Caring relationships with teachers and adults at school</td>
</tr>
<tr>
<td>• Feeling unsafe in neighborhood</td>
<td>• School culture</td>
</tr>
<tr>
<td></td>
<td>• Connection to and encouragement from school</td>
</tr>
<tr>
<td></td>
<td>• Being pushed by teachers to be best can be</td>
</tr>
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<td>• Positive relationship with neighborhood/community</td>
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Data Sources: Developmental Assets Survey (2010), California Healthy Kids Survey (2003-2016)
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</table>

**Data Sources:** Developmental Assets Survey (2010), California Healthy Kids Survey (2003-2016)

**Population:** Public high school students from Santa Clara County
Protective factors for past year suicidal ideation among public high school students, by school district, 2013–2014

<table>
<thead>
<tr>
<th>Factor</th>
<th>Palo Alto</th>
<th>Santa Clara</th>
<th>Morgan Hill</th>
<th>San Jose</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teacher-adult in school cares about me</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>High school connectedness</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>School provides meaningful opportunities</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Academic motivation</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>High school expectation</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Risk Factor</th>
<th>Palo Alto</th>
<th>Santa Clara</th>
<th>Morgan Hill</th>
<th>San Jose</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alcohol, substance, cigarette use, lifetime</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Sexual orientation (Lesbian, Gay, Bisexual)</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Mental distress, past year</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Violent victimization at school, past year</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Psychological or cyber bullying, past year</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Skipping school, past year</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>

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

### Population
Public high school students from Santa Clara County
89.1% of respondents perceived youth suicide as a problem in Palo Alto

*Project Safety Net Community Survey*
82.4% of respondents perceived suicide to be preventable

*Project Safety Net Community Survey*
71.0% of respondents reported they would know where to get help for a friend or family member thinking about suicide

*Project Safety Net Community Survey*
In several areas, current parents and students had differing knowledge, attitudes, and perceptions of suicide in Palo Alto.

Data Sources: Project Safety Net Survey (2016)
Population: (1) participant self-identified as a resident of Palo Alto; (2) participant completed Project Safety Net Survey
52% of current students vs. 80.6% of current parents agreed with the statement

“I would be comfortable telling a friend or family member if I felt I needed professional help for depression”

Data Sources: Project Safety Net Survey (2016)
Population: (1) participant self-identified as a resident of Palo Alto; (2) participant completed Project Safety Net Survey
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

22% had comments sections that included memorialization of decedent

Maximum # comments: 224
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

4% describe suicide as complex

Improved by 36% from 2009 to 2015

2015: only 40% of articles
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.

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

- Palo Alto Unified School District: 64.7%
- Santa Clara County: 13.7%
- Other Organization: 22.0%

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

- **Education**: 60%
- **Crisis-related services**: 30%
- **Clinical services**: 27.5%
- **Gatekeeper training**: 25%
- **Prevention policies**: 9.7%
- **Prevention plans**: 9.7%

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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Examples

- Applied Suicide Intervention Skills Training (ASIST)
- Student forums
- Wellness outreach
- Seminars
- Presentations
- Mental health 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.
Prevention activities, programs, policies

- Education: 60%
- Crisis-related services: 30%
- Clinical services: 27.5%
- Gatekeeper training: 25%
- Prevention policies: 9.7%
- Prevention plans: 9.7%

Examples:
- Crisis line
- Crisis stabilization units
- Hospitalization assistance
- Parent education
- Safety plans

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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Examples

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

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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**Examples**

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

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 policies** 9.7%
- **Prevention plans** 9.7%

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

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.
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”

<table>
<thead>
<tr>
<th>Example Strategies</th>
<th>Example program or policy from Santa Clara County</th>
</tr>
</thead>
</table>
| **Strengthen access and delivery of suicide care** | • 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**    | • School based program Sources of Strength  
• County crisis line  
• County crisis line ASIST training |
Evidence based programs

<table>
<thead>
<tr>
<th>Program</th>
<th>Where Listed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Applied Suicide Intervention Skills Training (ASIST)</td>
<td>• CDC Technical Package to Prevent Suicide</td>
</tr>
<tr>
<td></td>
<td>• Suicide Prevention Resource Center Programs and Practices database</td>
</tr>
<tr>
<td>Sources of Strength</td>
<td>• CDC Technical Package to Prevent Suicide</td>
</tr>
<tr>
<td></td>
<td>• Suicide Prevention Resource Center Programs and Practices database</td>
</tr>
<tr>
<td>QPR Gatekeeper Training</td>
<td>• Suicide Prevention Resource Center Programs and Practices database</td>
</tr>
</tbody>
</table>

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.
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

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.
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

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

**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

Technical Packages: https://www.cdc.gov/violenceprevention/pub/technical-packages.html
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 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

- Santa Clara County Medical Examiner’s Office
  - Dr. Michelle Jorden
  - Captain William Oberst
  - Karin Wells

- SCC Behavioral Health Services Department
  - Toni Tullys
  - Evelyn Tirumalai

- Project Safety Net
  - Mandeep Baath
  - Pamela Amparo
  - Joy Alexiou
  - Johanna Silverthorne
  - Phil Espejo
Questions
Extra Slides
Crude suicide rate among youth, by California County of residence, 2003–2014

Crude Suicide Rate per 100,000

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

Data Source: CDC WONDER
Case Definition: Youth suicide decedent, age 10-24, that died in the United States 2003-2014
Crude suicide rate among youth, by race, 2003–2014

Data Source: CDC WONDER
Case Definition: Youth suicide decedent, age 10-24, that died in the United States 2003-2014
Crude suicide rate among youth, by ethnicity, 2003–2014

<table>
<thead>
<tr>
<th>Hispanic Ethnicity</th>
<th>Santa Clara County</th>
<th>California</th>
<th>United States</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hispanic/Latino</td>
<td>3.9</td>
<td>3.9</td>
<td>4.9</td>
</tr>
<tr>
<td>Non-Hispanic/Latino</td>
<td>6.2</td>
<td>6.5</td>
<td>8</td>
</tr>
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</table>

Data Source: CDC WONDER
Case Definition: Youth suicide decedent, age 10-24, that died in the United States 2003-2014
Crude suicide rate among youth, by biological sex, 2003–2014

<table>
<thead>
<tr>
<th>Sex</th>
<th>Santa Clara</th>
<th>California</th>
<th>United States</th>
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<tbody>
<tr>
<td>Female</td>
<td>2.9</td>
<td>2.3</td>
<td>2.8</td>
</tr>
<tr>
<td>Male</td>
<td>7.7</td>
<td>8.1</td>
<td>11.8</td>
</tr>
</tbody>
</table>

Data Source: CDC WONDER
Case Definition: Youth suicide decedent, age 10-24, that died in the United States 2003-2014
Crude suicide rate among youth, by age category, 2003–2014

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Santa Clara County</th>
<th>California</th>
<th>United States</th>
</tr>
</thead>
<tbody>
<tr>
<td>10-14 years</td>
<td>* 0.8</td>
<td>4.6</td>
<td>12.9</td>
</tr>
<tr>
<td>15-19 years</td>
<td>1.3</td>
<td>5.1</td>
<td></td>
</tr>
<tr>
<td>20-24 years</td>
<td>9.1</td>
<td>9.4</td>
<td></td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>City</th>
<th>Crude Suicide Rate per 100,000</th>
<th>Predicted Crude Suicide Rate per 100,000</th>
</tr>
</thead>
<tbody>
<tr>
<td>San Jose</td>
<td>4.6</td>
<td>4.6</td>
</tr>
<tr>
<td>Morgan Hill</td>
<td>12.7</td>
<td>12.7</td>
</tr>
<tr>
<td>Palo Alto</td>
<td>14.1</td>
<td>14.1</td>
</tr>
<tr>
<td>Sunnyvale</td>
<td>6.4</td>
<td>6.4</td>
</tr>
<tr>
<td>Santa Clara</td>
<td>5.1</td>
<td>5.1</td>
</tr>
</tbody>
</table>

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 Santa Clara County youth residents seen for suicide attempt †

<table>
<thead>
<tr>
<th></th>
<th>Hospitalization‡</th>
<th>Emergency Department*</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Male</strong></td>
<td>31%</td>
<td>32%</td>
</tr>
<tr>
<td><strong>Female</strong></td>
<td>69%</td>
<td>68%</td>
</tr>
</tbody>
</table>

† 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 youth residents seen for suicide attempt *

Emergency Department*

<table>
<thead>
<tr>
<th>Age Category</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age 10 to 14</td>
<td>15%</td>
</tr>
<tr>
<td>Age 15 to 19</td>
<td>52%</td>
</tr>
<tr>
<td>Age 20 to 24</td>
<td>33%</td>
</tr>
</tbody>
</table>

Hospitalization‡

<table>
<thead>
<tr>
<th>Age Category</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age 10 to 14</td>
<td>11%</td>
</tr>
<tr>
<td>Age 15 to 19</td>
<td>48%</td>
</tr>
<tr>
<td>Age 20 to 24</td>
<td>41%</td>
</tr>
</tbody>
</table>

* 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.

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Race/Ethnicity of Santa Clara County youth residents seen for suicide attempt†

Emergency Department*

- Black, non-Hispanic: 11%
- Asian/Pacific Islander, non-Hispanic: 4%
- Other, non-Hispanic: 5%
- Hispanic: 36%
- White, non-Hispanic: 25%

Hospitalization‡

- Black, non-Hispanic: 16%
- Asian/Pacific Islander, non-Hispanic: 4%
- Other, non-Hispanic: 4%
- Hispanic: 40%
- White, non-Hispanic: 25%

† 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