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Firearms and Suicide Risk: Implications for Preventing Mortality and Morbidity Among California's Youth

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SUMMARY

KEY TAKEAWAYS

- > Almost 1 in 4 adolescents ages 15–17 in California report having had thoughts of suicide in their lifetime.
- > Almost 1 in 3 young adults ages 18–24 in California report having had thoughts of suicide in their lifetime.
- > California youth who report any concerns about firearm victimization were more likely to report suicidal ideation and psychological distress compared with youth with no concerns about firearm victimization.

Summary: Suicide is a leading cause of death among adolescents ages 15–17 and young adults ages 18–24 (collectively referred to as “youth”). There are important subpopulations about whom little is known concerning possible risks for firearm injury, including youth. In this policy brief, we use data from the 2021 and 2022 California Health Interview Surveys (CHIS) to report population-level estimates for associations between firearm proximity and psychological distress, as well as lifetime history of suicidal ideation and suicide attempts among California youth.

Suicide is a **leading cause of death** among adolescents ages 15–17 and young adults ages 18–24.

INTRODUCTION

Suicide is a leading cause of death among adolescents ages 15–17 and young adults ages 18–24 (collectively referred to as “youth”). Three important correlates of death by suicide are psychological distress, suicidal ideation, and suicide attempts.^{1–4} Access to potentially deadly means of suicide is a known risk factor for suicide deaths. Research has shown that restricting access to suicide methods with high lethality (e.g., using firearms, jumping from high places, or ingesting large quantities of poisons and/or medications) can be effective for reducing deaths, leading to an emphasis on means restriction in suicide prevention strategies and treatments.^{5,6}

Suicide attempts by firearm have a high fatality rate, with 89.6% of suicidal behaviors involving a firearm resulting in death.⁷ A recent review highlighted the association between firearm proximity (i.e., firearm access

and concerns about firearm victimization, defined as any worries about being a victim of firearm violence) and suicide risk, primarily in individual-level and ecological studies.^{8,9} Extending these findings, a state-by-state analysis suggested that states with higher rates of household firearm ownership experience higher rates of overall youth suicide.¹⁰

Importantly, both reviews noted that the relationship between firearm proximity and suicide risk varies across demographic subsets of the population. Currently, there are important subpopulations, including youth, about whom little is known in terms of possible risks for firearm injury. More research is needed to bolster the effectiveness of individual and system-level interventions to prevent the loss of life among youth by suicide.

Nearly

1 in 4 (24.6%)

California adolescents (ages 15–17) reported having had thoughts of suicide in their lifetime, and nearly

1 in 3 (32.9%)

adolescents who had had thoughts of suicide reported having made a suicide attempt.

Using the 2021 and 2022 California Health Interview Surveys (CHIS),¹¹ we assessed youth sociodemographic information (e.g., race, sex, poverty level) and its association with firearm access, concerns about firearm victimization, and clinical characteristics. Clinical characteristics included psychological distress as well as any lifetime history of suicidal ideation or suicide attempt. In this policy brief, we report population-level estimates for associations between firearm proximity and psychological distress as well as lifetime history of suicidal ideation and suicide attempts among California youth.

First, we detail sociodemographic and clinical characteristics for adolescents (ages 15–17) and young adults (ages 18–24) separately, based on 2021 and 2022 pooled data. Given the rise of firearm purchases across the U.S. since the onset of the COVID-19 pandemic,¹²

we then examine rates of firearm access from 2021 to 2022 stratified by age group (adolescents versus young adults). Last, we examine relationships between three correlates of death by suicide (psychological distress, suicidal ideation, and suicide attempt) and firearm proximity, while simultaneously accounting for several variables among all youth (ages 15–24) that might also have an influence on these relationships (i.e., covariates). These variables include federal poverty level (FPL), age, sex, race, ethnicity, frequency of marijuana/alcohol use in the past month, and legal involvement. We used multivariate regression modeling to evaluate the relationship between suicide risk and firearm exposure using 2022 CHIS data, and we then conducted replication analysis by utilizing 2021 CHIS data to verify whether the results were reliable and generalizable (see [Appendix](#)).

Almost One-Quarter of California Adolescents and One-Third of Young Adults Have Thought About Suicide in Their Lifetime

Exhibit 1 provides an overview of sociodemographic and clinical characteristics of California adolescents and young adults using data pooled across 2021 and 2022. Notably, among adolescents (ages 15–17), 24.6% reported having had thoughts of suicide in their lifetime, and 32.9% of adolescents who had had thoughts of suicide reported having made a suicide attempt. Among young adults (18–24), 30.8% reported having had thoughts of suicide in their lifetime, and 32.4% of young adults who reported having thoughts of suicide also reported having made a suicide attempt.

**Exhibit 1 / Sociodemographic and Clinical Characteristics of Adolescents Ages 15–17
and Young Adults Ages 18–24, California**

Characteristic	Adolescents (15–17)		Young Adults (18–24)	
	Prevalence Estimate	95% CI	Prevalence Estimate	95% CI
Male	51.4%	51.4–51.4	51.1%	51.1–51.1
Female	48.6%	48.6–48.6	48.9%	48.9–48.9
Race and ethnicity				
White	28.1%	26.1–30.1	23.5%	22.0–25.1
Black or African American	5.9%	4.5–7.3	4.4%	3.5–5.3
American Indian or Alaska Native	N/A	N/A	0.6%	0.3–0.9
Asian	10.9%	9.6–12.2	13.8%	12.3–15.2
Native Hawaiian or Pacific Islander	N/A	N/A	0.3%(!)	0.0–.05
Bi/Multiracial	6.3%	4.9–7.7	3.4%	2.8–4.0
Latino/a/x or Hispanic	48.4%	45.9–50.8	54.1%	51.9–56.3
Federal Poverty Level (FPL)				
0%–99% FPL	12.3%	9.5–15.2	22.4%	20.4–24.3
100%–199% FPL	20.9%	17.4–24.5	22.3%	20.7–24.0
200%–299% FPL	11.3%	8.3–14.4	15.5%	13.8–17.1
≥300% FPL	55.4%	51.9–58.9	39.9%	37.5–42.2
Legal problems				
Yes	1.8%	0.8–2.8	4.2%	3.1–5.2
No	98.2%	97.2–99.2	95.8%	94.8–96.9
Marijuana use in the past 30 days				
Yes	7.4%	5.1–9.6	21.1%	19.4–22.8
No	92.6%	90.4–94.9	78.9%	77.2–80.6
Binge drinking^a in the past 30 days				
Yes	5.7%	3.7–7.6	19.2%	17.6–20.9
No	94.4%	92.4–96.3	80.8%	79.1–82.4
Access to a firearm				
Yes	1.5%	0.8–2.3	14.2%	12.5–15.9
No	98.5%	97.7–99.2	85.8%	84.1–87.5
Lifetime suicidal ideation				
Yes	24.6%	21.3–28.0	30.8%	28.7–33.0
No	75.4%	72.0–78.7	69.2%	67.1–71.3
Life suicide attempt^b				
Yes	32.9%	25.5–40.4	32.4%	28.9–35.8
No	67.1%	59.6–74.5	67.6%	64.2–71.1

N/A = not applicable

(!) = estimate is unstable

^a For males assigned at birth, “binge drinking” is defined as 5+ drinks on an occasion; for females, it is defined as 4+ drinks.

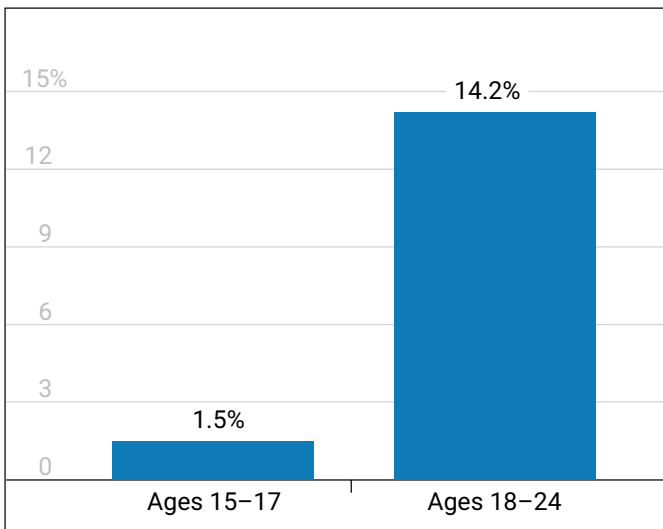
^b Lifetime history of suicide attempts was assessed only among participants who reported having experienced suicidal ideation in their lifetime.

Source: 2021 and 2022 California Health Interview Surveys

Some Adolescents Reported Having Access to a Firearm, Although Access Is Restricted Before Age 18

Across the pooled 2021 to 2022 period, firearm access was greater among young adults (ages 18–24) than adolescents (ages 15–17). Specifically, 14.2% of young adults in California – more than half a million – reported access to at least one firearm. Across the same period, 1.5% of adolescents in California, or more than 20,000, reported having firearm access (see Exhibit 2). Changes in rates of firearm access between 2021 and 2022 were also examined for young adults and adolescents. Among young adults, there was a slight but not statistically significant decline in the rate of firearm access from 2021 (14.7%) to 2022 (13.7%). Changes in the rate of firearm access for adolescents could not be reliably estimated due to small sample sizes.

Exhibit 2 / Percentage of Youth Ages 15–24 With Firearm Access, California



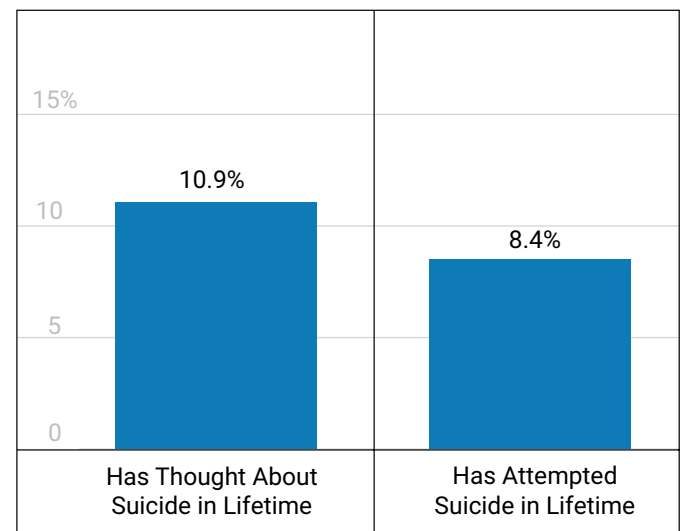
Source: 2021 and 2022 California Health Interview Survey data

Worries About Firearm Victimization Are Related to Suicidal Ideation Among Youth

Across the pooled 2021 to 2022 period, 10.9% of youth who reported having had suicidal ideation in their lifetime also reported access to firearms (Exhibit 3).

Furthermore, results from our analyses using 2022 CHIS data showed that concerns about firearm victimization were associated with youth suicidal ideation. Specifically, youth reporting any concerns about firearm victimization were more than twice as likely as those not reporting these concerns to say they had had suicidal thoughts in their lifetime.

Exhibit 3 / Percentage of Youth Ages 15–24 With Access to Firearms by Lifetime History of Suicidal Ideation or Suicide Attempt, California



Notes: Lifetime history of suicide attempts was assessed only among participants who reported having experienced suicidal ideation in their lifetime.

Percentages may not total 100% because of rounding. Source: Pooled 2021 and 2022 California Health Interview Surveys



Any access to firearms (versus none) was not significantly related to lifetime suicidal ideation. When this analysis was conducted using 2021 CHIS data, a similar pattern of results was found: Youth reporting any (versus no) concerns about firearm victimization were approximately 1.58 times as likely to report having experienced suicidal thoughts in their lifetime. Access to firearms was also not significantly related to lifetime suicidal ideation (see Results Tables in Appendix).

Firearm Proximity Is Related to Psychological Distress Among Youth

Our analysis using 2022 CHIS data suggested a significant relationship between firearm proximity and psychological distress. Specifically, youth reporting any concerns about firearm victimization (versus no concerns) reported greater psychological distress. Access to firearms was also significantly related to greater psychological distress. When this analysis was conducted

using 2021 CHIS data, a similar pattern of results was found: Any concerns about firearm victimization were associated with greater youth-reported psychological distress. Access to firearms was also associated with greater youth-reported psychological distress.

Youth Suicide Attempt History May Be Related to Firearm Access

Across the pooled 2021 to 2022 period, 8.4% of youth who reported having made a suicide attempt in their lifetime also reported access to a firearm (Exhibit 3) in the past month. Our analysis using 2022 CHIS data alone demonstrated that youth who reported having access to a firearm were almost twice as likely to report having made a suicide attempt in their lifetime. While consistent with the need to monitor firearm access and ownership in youths with suicide attempt histories, this association could not be replicated using 2021 CHIS data.

Youth who expressed concerns about firearm victimization were approximately **twice as likely** to report suicidal thoughts in their lifetime compared to youths with no such concerns.

IMPLICATIONS AND POLICY RECOMMENDATIONS

The current study aims to characterize suicide risk among California youth ages 15–24 and to clarify relationships between firearm proximity and three correlates of suicide risk: psychological distress, suicidal ideation, and suicide attempt. Several findings are notable.

First, about one-quarter or more of all California youth reported having had suicidal thoughts at least once in their lifetime, with almost one-third of those youth reporting having made a suicide attempt. Prevalence rates of lifetime suicide attempts among California youth are higher than estimates of national or worldwide averages.^{13, 14}

Second, pooled estimates from 2021 and 2022 suggest that more than half a million young adults in California have access to a firearm, as do more than 20,000 adolescents in California, despite strong state-level laws restricting firearm access to minors.¹⁵

Third, the results underscore the need to monitor firearm proximity among youth who are at increased risk for suicide. Specifically, in 2022, youth reporting access to firearms (relative to youth with no access to firearms) were approximately two times more likely to have made a suicide attempt in their lifetime. Moreover, youth who expressed concerns about firearm victimization were approximately twice as likely to report suicidal thoughts in their lifetime compared to youth with no such concerns. While these data do not clarify whether suicide risk preceded or followed firearm proximity, they do underscore the observation that youth at elevated risk of suicide (by virtue of having made a prior suicide attempt, experiencing suicidal ideation, and/or having psychological distress²) may also have greater access to firearms, a suicide attempt method associated with high lethality. These findings parallel prior work with adults suggesting that firearm access was positively associated with suicide attempts but not with suicidal ideation.¹⁶

8.4%

of youth who reported having made a suicide attempt in their lifetime also reported access to a firearm in the past month.

To reduce the likelihood of loss of young lives to suicide, policymakers may consider the following recommendations:

Enhance lethal means safety counseling.

Reducing access to potentially fatal items to lower a person's risk of suicide, homicide, and unintentional injury or death is currently a cornerstone of suicide prevention efforts; nevertheless, lethal means safety interventions can be enhanced.^{17–19}

Lethal means safety interventions with the support of digital aids and the use or distribution of lockboxes or other safe storage aids that limit access to lethal means (e.g., firearms, medications, etc.) may be an effective strategy for further reducing suicide risk among the most vulnerable youth.^{6, 20–22}

On a broader level, this could include implementing additional firearms laws (e.g., safe storage laws with greater enforcement), erecting barriers for bridges, instituting packaging limits to decrease access to lethal quantities of medicine and poisons, and increasing access to lifesaving agents for

reversing potentially deadly overdose effects (e.g., naloxone for reversing opioid effects).^{18, 19, 23, 24}

Promote community outreach. Outreach to schools and other community settings where youth have frequent contact may be a useful step for reducing access to potentially lethal means, reducing injuries and premature deaths, and addressing the needs of young people who are suffering from worries regarding firearms.^{3, 25} In such contexts, partnerships between suicide prevention stakeholders and firearm purveyors may help educate owners of firearms on the importance of safe storage practices.²⁶

Increase visibility and availability of suicide prevention, wellness, and mental health resources and services among California youth. Some examples of resources:

- Suicide Prevention Resource Center: <https://sprc.org>
- SAMHSA: <https://www.samhsa.gov/resource/dbhis/firearm-violence-prevention>

Create state-level policies for disseminating/ implementing information and prevention programs. As suicide attempts and self-harm are among the most established predictors of death by suicide,^{2, 24} results highlight the need for state-level policies that incentivize the dissemination and implementation of evidence-based suicide and self-harm prevention programs across California mental health providers.^{3, 4, 17, 19}

For example, for youths presenting with suicide attempts or self-harm behavior, dialectical behavior therapy (DBT); SAFETY, a DBT-informed cognitive-behavioral and family approach; and other interventions have shown promise for reducing suicide attempts.^{27–29}

Among general populations without prior risk indicators, school-based prevention programs have shown promise for reducing later suicide attempts.^{3, 25}

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The California Health Interview Survey covers a wide array of health-related topics, including health insurance coverage, health status and behaviors, and access to health care. It is based on interviews conducted continuously throughout the year with respondents from more than 20,000 California households. CHIS interviews were offered in English, Spanish, Chinese (both Mandarin and Cantonese), Vietnamese, Korean, and Tagalog. CHIS is designed with complex survey methods requiring analysts to use complex survey weights in order to provide accurate variance estimates and statistical testing. CHIS is a collaboration of the UCLA Center for Health Policy Research, the California Department of Public Health, the California Department of Health Care Services, and the Public Health Institute. For other information about CHIS, visit chis.ucla.edu.

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