



DIVISION OF VIOLENCE PREVENTION

Guidance for Analyzing 2021 ACEs & PCEs Data

YRBS

Youth Risk Behavior Survey

Table of Contents

| | |
|---|----|
| Introduction..... | 2 |
| Figure 1. DVP-developed Tiers of ACEs and PCEs Questions..... | 2 |
| Restricting Age..... | 3 |
| Coding ACEs and PCEs..... | 3 |
| Coding Core ACEs | 4 |
| Figure 2. Core ACEs constructs. | 4 |
| Table 1. Tier 1 Lifetime Prevalence Core ACEs Measures and Coding. | 5 |
| Table 2. Tier 2 Past-Year Incidence Core ACEs Measures and Coding. | 7 |
| Coding DVP-developed Expanded ACEs*..... | 9 |
| Table 3. Tier 2 DVP-developed Expanded ACEs* Measures and Coding. | 9 |
| Coding DVP-developed PCEs..... | 10 |
| Table 4. Tier 2 DVP-developed PCEs Measures and Coding. | 10 |
| Other Possible Expanded ACEs..... | 11 |
| Table 5. Other Possible YRBS Expanded ACEs Measures and Coding.*..... | 11 |
| Other Possible PCEs | 19 |
| Table 6. Other Possible YRBS PCEs Measures and Coding.* | 19 |
| Calculating Scores..... | 24 |
| Calculating ACE and PCE Scores: Technical Details | 25 |
| Categories of ACEs..... | 28 |
| Table 7. Coding for Common Categories of ACEs..... | 28 |

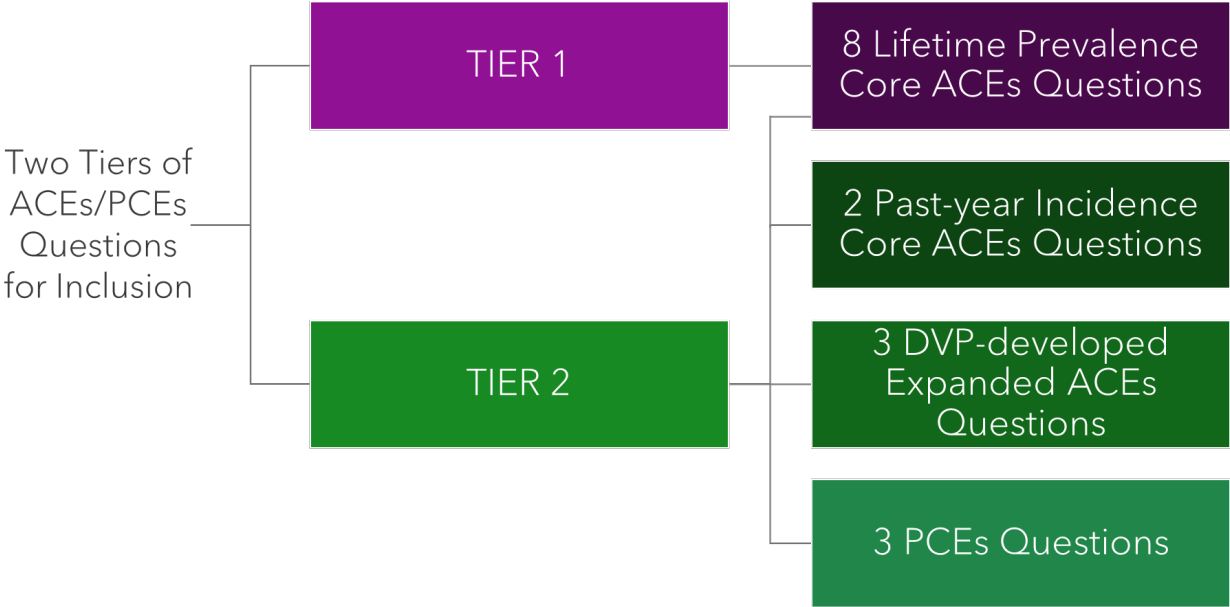
DVP Guidance for Analyzing YRBS ACE and PCE Data

Introduction

Adverse childhood experiences, or ACEs, are potentially traumatic events in childhood (0–17 years), such as neglect and experiencing or witnessing violence. Also included are aspects of a child’s environment that can undermine their sense of safety, stability, and bonding, such as living in a household with substance misuse or mental health problems. Advancing science has revealed that positive childhood experiences (PCEs) are also important in determining health outcomes because they can mitigate negative health effects, even for children who experience ACEs.¹

The Centers for Disease Control and Prevention’s (CDC) Division of Violence Prevention (DVP) and Division of Adolescent and School Health (DASH) developed several ACE and PCE questions for inclusion on the 2021 Youth Risk Behavior Survey (YRBS) optional question list. DVP funded sites to include one of two tiers of ACE/PCE questions: Tier 1 (containing eight core ACE questions) or Tier 2 (containing eight core ACE questions, two past-year core ACE incidence questions, three expanded ACE questions, and three PCE questions) (Figure 1). DVP-developed ACE/PCE questions complement the standard list of items traditionally included in YRBS. Some of these standard items, such as bullying, sexual violence, and peer violence, measure expanded ACEs.

Figure 1. DVP-developed Tiers of ACE and PCE Questions.



¹ Bethell C, Jones J, Gombojav N, Linkenbach J, Sege R. Positive Childhood Experiences and Adult Mental and Relational Health in a Statewide Sample: Associations Across Adverse Childhood Experiences Levels. *JAMA Pediatr.* 2019 Nov 1;173(11):e193007. doi: 10.1001/jamapediatrics.2019.3007.

Using YRBS, states and localities can monitor ACE and PCE prevalence and trends in their youth population. Leveraging YRBS infrastructure to expand ACE and PCE surveillance is valuable because it provides comparable estimates of the experiences, behaviors, and health outcomes of adolescents at national, state, and local levels. YRBS results facilitate understanding of demographic differences and provide comparable estimates on experiences, behaviors, and health outcomes over time. Results can also help states and localities understand the relationship between ACEs, PCEs, and other concerning public health problems monitored with YRBS, such as youth mental health, substance use, and sexual risk behaviors.

While these measures of ACEs and PCEs provide valuable information on young people's experiences, each site should consider the following information when analyzing these data. YRBS data belong to the sites that collected the data; as such, sites should analyze data in the way that best serves their population of interest. DVP subject matter experts and statisticians developed the following guidance as principles that DVP will follow when analyzing YRBS data. If sites desire reproducibility of results with DVP, following this guidance is strongly encouraged.

Restricting Age

We encourage restricting the analytic sample to participants aged less than 18 years to exclusively capture experiences that occurred in childhood.

Coding ACEs and PCEs

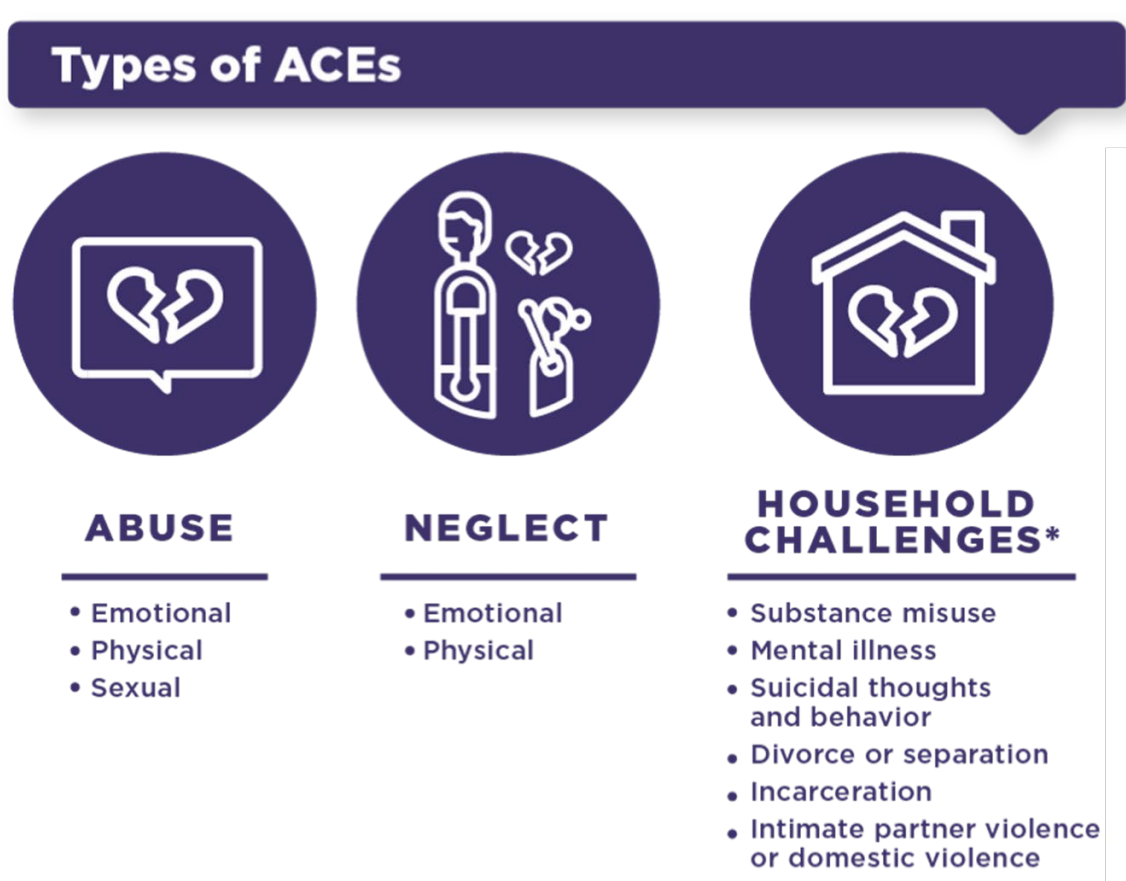
Definitions in YRBS site reports provided by DASH may differ from the coding guidance below for certain constructs. These instances are indicated with footnotes in the tables below. DASH's guidance on coding decisions align ACE and PCE variable coding with standard coding practices for other YRBS metrics.

Based on literature on ACE and PCE impacts on youth health, DVP strongly encourages the following coding decisions for creating variables representing core ACEs, expanded ACEs, and PCEs. The coding procedures outlined below align with practices used for ACEs and PCEs in other major surveillance systems (e.g., Behavioral Risk Factor Surveillance Survey [BRFSS], Pregnancy Risk Assessment Monitoring System [PRAMS]).

Coding Core ACEs

The original “core” ACEs were identified during the original CDC-Kaiser Permanente ACEs Study in the late 1990s.² Exposure to these ACEs can contribute to a toxic stress response in children and is associated with an increased risk for lifelong adverse health and poor life outcomes. These 10 core ACEs (Figure 2) fall into three broader categories: abuse of a child by a parent or caregiver, physical and emotional neglect, and selected household challenges. These core ACEs have been traditionally included in many population-level ACEs surveillance efforts.

Figure 2. Core ACE constructs.



* The child lives with a parent, caregiver, or other adult who experiences one or more of these challenges.

² Felitti, V. J., Anda, R. F., Nordenberg, D., Williamson, D. F., Spitz, A. M., Edwards, V., Koss, M. P., & Marks, J. S. (1998). Relationship of childhood abuse and household dysfunction to many of the leading causes of death in adults. The Adverse Childhood Experiences (ACE) Study. *American journal of preventive medicine*, 14(4), 245–258. [https://doi.org/10.1016/s0749-3797\(98\)00017-8](https://doi.org/10.1016/s0749-3797(98)00017-8)

Coding guidance for core ACE questions is in Tables 1 and 2 below. Table 1 provides measure wording and coding guidance for Tier 1 lifetime prevalence measures of core ACEs. Table 2 provides measure wording and coding guidance for Tier 2 past-year incidence measures of core ACEs, as well as guidance for creating combined lifetime measures for core emotional and physical abuse ACEs (using both lifetime [Tier 1] and past-year [Tier 2] prevalence).

Table 1. Tier 1 Lifetime Prevalence Core ACE Measures and Coding.

| Question Type | Construct | Question | Coding |
|----------------------|--|---|--|
| Core ACE | <i>Lifetime prevalence of emotional abuse</i> | During your life, how often has a parent or other adult in your home sworn at you, insulted you, or put you down? A. Never B. Rarely C. Sometimes D. Most of the time E. Always | Exposure to ACE is defined* as a response of “Rarely,” “Sometimes,” “Most of the time,” or “Always.” |
| Core ACE | <i>Lifetime prevalence of physical abuse</i> | During your life, how often has a parent or other adult in your home hit, beat, kicked, or physically hurt you in any way? A. Never B. Rarely C. Sometimes D. Most of the time E. Always | Exposure to ACE is defined* as a response of “Rarely,” “Sometimes,” “Most of the time,” or “Always.” |
| Core ACE | <i>Lifetime prevalence of sexual abuse</i> | Has an adult or person at least 5 years older than you ever forced you to do sexual things that you did not want to do? (Count such things as kissing, touching, or being physically forced to have sexual intercourse.) A. Yes B. No | Exposure to ACE is defined as a response of “Yes.” |
| Core ACE | <i>Lifetime prevalence of physical neglect</i> | During your life, how often has there been an adult in your household who tried hard to make sure your basic needs were met, such as looking after your safety and making sure you had clean clothes and enough to eat?* A. Never B. Rarely C. Sometimes D. Most of the time E. Always | Exposure to ACE is defined as a response of “Never” or “Rarely.” |

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| Core ACE | <i>Lifetime prevalence of witnessed intimate partner violence</i> | During your life, how often have your parents or other adults in your home slapped, hit, kicked, punched, or beat each other up? A. Never B. Rarely C. Sometimes D. Most of the time E. Always | Exposure to ACE is defined* as a response of “Rarely,” “Sometimes,” “Most of the time,” or “Always.” |
| Core ACE | <i>Lifetime prevalence of household substance abuse</i> | Have you ever lived with someone who was having a problem with alcohol or drug use? A. Yes B. No | Exposure to ACE is defined as a response of “Yes.” |
| Core ACE | <i>Lifetime prevalence of household mental illness</i> | Have you ever lived with someone who was depressed, mentally ill, or suicidal? A. Yes B. No | Exposure to ACE is defined as a response of “Yes.” |
| Core ACE | <i>Lifetime prevalence of incarcerated relative</i> | Have you ever been separated from a parent or guardian because they went to jail or prison? A. Yes B. No | Exposure to ACE is defined as a response of “Yes.” |

*DVP coding differs from DASH coding for this item. DASH codes responses of “Never” or “Rarely” as not exposed to the ACE, in contrast with DVP, which only codes responses of “Never” as not exposed to the ACE.

Sites that opted to include Tier 2 questions added the two past-year *incidence* core ACEs questions (Table 2). These questions measured the past-year incidence of emotional and physical abuse. Incidence questions can be used to rapidly track trends over time. If sites included these Tier 2 questions, we suggest carefully incorporating these Tier 2 core ACE incidence questions into your calculations for the lifetime prevalence of core ACEs following the advice in Table 2 below:

Table 2. Tier 2 Past-Year Incidence Core ACE Measures and Coding.

| Question Type | Construct | Question | Coding |
|---------------|--|---|---|
| Core ACE | <i>Past 12-month incidence of emotional abuse</i> | During the past 12 months, how many times has a parent or other adult in your home sworn at you, insulted you, or put you down? A. 0 times B. 1 time C. 2 or 3 times D. 4 or 5 times E. 6 or more times | Exposure to ACE is defined as a response of "1 time," "2 or 3 times," "4 or 5 times," or "6 or more times." |
| Core ACE | <i>Combined lifetime prevalence of emotional abuse</i> | Tier 1 Lifetime Prevalence (Question A): During your life, how often has a parent or other adult in your home sworn at you, insulted you, or put you down?* | For combined lifetime prevalence using both Tier 1 and Tier 2 core ACEs questions, exposure to ACE is defined as a response of "Rarely," "Sometimes," "Most of the time," or "Always" on Question A AND/OR Response of "1 time," "2 or 3 times," "4 or 5 times," or "6 or more times" on Question B. |
| Core ACE | <i>Past 12-month incidence of physical abuse</i> | During the past 12 months, how many times has a parent or other adult in your home hit, beat, kicked, or physically hurt you in any way? A. 0 times B. 1 time C. 2 or 3 times D. 4 or 5 times E. 6 or more times | Exposure to ACE is defined as a response of "1 time," "2 or 3 times," "4 or 5 times," or "6 or more times." |

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|----------|---|--|--|
| Core ACE | <i>Combined lifetime prevalence of physical abuse</i> | <p>Tier 1 Lifetime Prevalence (Question A): During your life, how often has a parent or other adult in your home hit, beat, kicked, or physically hurt you in any way?*</p> <ul style="list-style-type: none"> a. Never b. Rarely c. Sometimes d. Most of the time e. Always <p>Tier 2 Past-Year Incidence (Question B): During the past 12 months, how many times has a parent or other adult in your home hit, beat, kicked, or physically hurt you in any way?</p> <ul style="list-style-type: none"> a. 0 times b. 1 time c. 2 or 3 times d. 4 or 5 times e. 6 or more times | <p>For combined lifetime prevalence using both Tier 1 and Tier 2 core ACEs questions, exposure to ACE is defined* as a response of “Rarely,” “Sometimes,” “Most of the time,” or “Always” on Question A <u>AND/OR</u> Response of “1 time,” “2 or 3 times,” “4 or 5 times,” or “6 or more times” on Question B.</p> |
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*DVP coding differs from DASH coding for this item. DASH codes responses of “Never” or “Rarely” as not exposed to the ACE, in contrast with DVP, which only codes responses of “Never” as not exposed to the ACE.

Coding DVP-developed Expanded ACEs*

There is growing recognition that several “expanded” ACEs may also negatively impact children and contribute to toxic stress responses that can impact lifelong health, opportunity, and well-being.³ DVP incentivized the inclusion of three expanded ACEs on YRBS experiences of: 1) racial/ethnic discrimination, 2) sexual minority discrimination, and 3) community violence (Table 3). These do not represent the full breadth of expanded ACEs that may be measured on YRBS. For additional YRBS items qualifying as expanded ACEs and considerations on analyzing expanded ACEs, please see [Table 5](#) and [Calculating Scores](#).

Table 3. Tier 2 DVP-developed Expanded ACE* Measures and Coding.

| Question Type | Construct | Question | Coding |
|----------------------------|--|--|--|
| DVP-developed Expanded ACE | <i>Lifetime prevalence of racial/ethnic discrimination</i> | During your life, how often have you felt that you were treated badly or unfairly because of your race or ethnicity? A. Never B. Rarely C. Sometimes D. Most of the time E. Always | Exposure to ACE is defined as a response of “Rarely”, “Sometimes”, “Most of the time”, or “Always”.† |
| DVP-developed Expanded ACE | <i>Lifetime prevalence of sexual minority discrimination</i> | During your life, how often have you felt that you were treated badly or unfairly because of your sexual orientation? A. Never B. Rarely C. Sometimes D. Most of the time E. Always | Exposure to ACE is defined as a response of “Rarely”, “Sometimes”, “Most of the time”, or “Always”.† |
| DVP-developed Expanded ACE | <i>Lifetime prevalence of exposure to community violence</i> | Have you ever seen or heard someone get physically attacked, beaten, stabbed, or shot in your neighborhood in real life? A. Yes B. No | Exposure to ACE is defined as a response of “Yes”. |

*The expanded ACEs in this section are in the ACEs questions DVP incentivized. Many additional expanded ACEs included on local, state, and national YRBS are outlined in [Table 5](#).

†*DVP coding differs from DASH coding for this item. DASH codes responses of “Never” or “Rarely” as not exposed to the ACE, in contrast with DVP, which only codes responses of “Never” as not exposed to the ACE.

³ Finkelhor, D., Shattuck, A., Turner, H., & Hamby, S. (2013). Improving the adverse childhood experiences study scale. *JAMA pediatrics*, 167(1), 70–75. <https://doi.org/10.1001/jamapediatrics.2013.420>

Coding DVP-developed PCEs

Positive childhood experiences (PCEs) can substantially impact children’s health, well-being, and opportunity now and across their lifespan.⁴ DVP encouraged inclusion of 3 PCEs on YRBS: 1) the presence of a supportive adult, 2) the presence of peer support, and 3) a sense of belonging at school (Table 4). However, these items do not represent the full breadth of PCEs that may be measured on YRBS. For additional considerations on analyzing PCEs, please see [Calculating Scores](#).

Table 4. Tier 2 DVP-developed PCE Measures and Coding.

| Question Type | Construct | Question | Coding |
|---------------|---|---|---|
| PCE | <i>Lifetime prevalence of feeling able to talk to adults about feelings/ presence of a supportive adult</i> | During your life, how often have you felt that you were able to talk to an adult in your family or another caring adult about your feelings? A. Never B. Rarely C. Sometimes D. Most of the time E. Always | Exposure to PCE is defined as a response of “Most of the time” or “Always.” |
| PCE | <i>Lifetime prevalence of feeling supported by friends/ presence of peer support</i> | During your life, how often have you felt that you were able to talk to a friend about your feelings? A. Never B. Rarely C. Sometimes D. Most of the time E. Always | Exposure to PCE is defined as a response of “Most of the time” or “Always.” |
| PCE | <i>Incidence of feeling a sense of belonging at school</i> | Do you agree or disagree that you feel close to people at your school? A. Strongly agree B. Agree C. Not sure D. Disagree E. Strongly disagree | Exposure to PCE is defined as a response of “Agree” or “Strongly agree.” |

⁴ Bethell, C., Jones, J., Gombojav, N., Linkenbach, J., & Sege, R. (2019). Positive childhood experiences and adult mental and relational health in a statewide sample: Associations across adverse childhood experiences levels. *JAMA pediatrics*, 173(11), e193007-e193007.

Other Possible Expanded ACEs

In addition to the core ACEs added beginning in 2021, YRBS has many measures that qualify as possible “expanded ACEs.” Below is a list of measures from national, state, and local YRBS questionnaires that qualify as possible “expanded ACEs.” Because YRBS content changes over time, check the YRBS website and the *Handbook for Conducting YRBS* to access each survey questionnaire for the most up-to-date information.

CDC is rigorously examining the relative importance of possible expanded ACEs and will formally update the list of ACEs routinely monitored as part of the core set of ACEs. In the interim, use this list, plus any expanded ACEs that your jurisdiction is monitoring, to measure ACEs and their associated harms. For additional analytic considerations, please see [Calculating Scores](#).

Table 5. Other Possible YRBS Expanded ACE Measures and Coding.*

| Question Type | Construct | Question | Coding |
|-----------------------------|------------------------------|--|---|
| Other Possible Expanded ACE | Racial/ethnic discrimination | <p>During your life, how often have you felt that you were treated badly or unfairly in school because of your race or ethnicity?</p> <p>A. Never B. Rarely C. Sometimes D. Most of the time E. Always</p> <p>During your life, how often have you felt that you were watched closely or followed around by security guards or store clerks at a store or mall because of your race or ethnicity?</p> <p>A. Never B. Rarely C. Sometimes D. Most of the time E. Always</p> <p>During your life, how often have you felt that you were watched closely or followed around by security guards, police, or school resource officers at school because of your race or ethnicity?</p> <p>A. Never B. Rarely C. Sometimes D. Most of the time E. Always</p> | <p>For all items, exposure to ACE is defined as a response of “Rarely,” “Sometimes,” “Most of the time,” or “Always.”†</p> <p>If more than one item included on survey, exposure to ACE is defined as a response of “Rarely,” “Sometimes,” “Most of the time,” or “Always” to <u>one or more</u> items.</p> |

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| | | <p>During your life, how often have you felt that people assumed you are less intelligent because of your race or ethnicity?</p> <p>A. Never B. Rarely C. Sometimes D. Most of the time E. Always</p> <p>During your life, how often have you felt that you have gotten poor or slow service at a restaurant or store because of your race or ethnicity?</p> <p>A. Never B. Rarely C. Sometimes D. Most of the time E. Always</p> <p>During your life, how often have you seen your parents or other family members treated badly or unfairly because of the color of their skin, language, accent, or because they are from a different country or culture?</p> <p>A. Never B. Rarely C. Sometimes D. Most of the time E. Always</p> | |
| Other Possible Expanded ACE | Bullying or harassment | <p>During the past 12 months, have you ever been bullied when you were not on school property, such as on your way to or from school or wherever you spend your free time?</p> <p>A. Yes B. No</p> <p>During the past 12 months, have you ever been bullied on school property?</p> <p>A. Yes B. No</p> | <p>For all items, exposure to ACE is defined as a response of "Yes."</p> <p>If more than one item included on survey, exposure to ACE is defined as a response of "Yes" to <u>one or more</u> items.</p> |

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| | | <p>During the past 12 months, have you ever been electronically bullied? (Count being bullied through texting, Instagram, Facebook, or other social media).</p> <p>A. Yes B. No</p> <p>During the past 12 months, have you ever been the victim of teasing or name calling because of your race or ethnic background?</p> <p>A. Yes B. No</p> <p>During the past 12 months, have you ever been the victim of teasing or name calling because of your weight, size, or physical appearance?</p> <p>A. Yes B. No</p> <p>During the past 12 months, have you ever been the victim of teasing or name calling because you have a health problem, such as epilepsy or a seizure disorder?</p> <p>A. Yes B. No</p> <p>During the past 12 months, have you ever been the victim of teasing or name calling because of your gender?</p> <p>A. Yes B. No</p> <p>During the past 12 months, have you ever been the victim of teasing or name calling because someone thought you were gay, lesbian, or bisexual?</p> <p>A. Yes B. No</p> | |
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| <p>Other Possible Expanded ACE</p> | <p>Teen dating violence</p> | <p>During the past 12 months, how many times did someone you were dating or going out with purposely try to control you or emotionally hurt you? Count such things as being told who you could or could not spend time with, being humiliated in front of others, or being threatened if you did not do what they wanted.</p> <p>A. I did not date or go out with anyone during the past 12 months B. 0 times C. 1 time D. 2 or 3 times E. 4 or 5 times F. 6 or more times</p> <p>During the past 12 months, how many times did someone you were dating or going out with force you to do sexual things that you did not want to do? (Count such things as kissing, touching, or being physically forced to have sexual intercourse).</p> <p>A. I did not date or go out with anyone during the past 12 months B. 0 times C. 1 time D. 2 or 3 times E. 4 or 5 times F. 6 or more times</p> <p>During the past 12 months, how many times did someone you were dating or going out with physically hurt you on purpose? (Count such things as being hit, slammed into something, or injured with an object or weapon).</p> <p>A. I did not date or go out with anyone during the past 12 months B. 0 times C. 1 time D. 2 or 3 times E. 4 or 5 times F. 6 or more times</p> | <p>For all items, exposure to ACE is defined as a response of "1 time," "2 or 3 times," "4 or 5 times," or "6 or more times."</p> <p>Note: Retain those who did not date in the denominator, as they were not exposed to the ACE.</p> <p>If more than one item included on survey, exposure to ACE is defined as a response of "1 time," "2 or 3 times," "4 or 5 times," or "6 or more times" to <u>any</u> of the items.</p> <p>Note: Retain those who did not date in the denominator, as they were not exposed to the ACE.</p> |
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| Other Possible Expanded ACE | Other forms of sexual violence | <p>A. Have you ever been physically forced to have sexual intercourse when you did not want to? a) Yes b) No</p> <p>B. During the past 12 months, have you ever been physically forced to have sexual intercourse when you did not want to? a) Yes b) No</p> <p>C. During the past 12 months, how many times did anyone force you to do sexual things that you did not want to do? (Count such things as kissing, touching, or being physically forced to have sexual intercourse). a) 0 times b) 1 time c) 2 or 3 times d) 4 or 5 times e) 6 or more times</p> <p>D. During the past 12 months, how many times did someone do sexual things to you that you did not want to do by pressuring you, lying to you, making promises about the future, threatening to end your relationship, or threatening to spread rumors about you? a) 0 times b) 1 time c) 2 or 3 times d) 4 or 5 times e) 6 or more times</p> <p>E. During the past 30 days, has a revealing or sexual photo of you been texted, e-mailed, or posted electronically without your permission? a) Yes b) No c) Not sure</p> | <p>For item A, exposure to ACE is defined as a “Yes” response.</p> <p>For item B, exposure to ACE is defined as a “Yes” response.</p> <p>For item C, exposure to ACE is defined as a response of “1 time,” “2 or 3 times,” “4 or 5 times,” or “6 or more times.”</p> <p>For item D, exposure to ACE is defined as a response of “1 time,” “2 or 3 times,” “4 or 5 times,” or “6 or more times.”</p> <p>For item E, exposure to ACE is defined as a “Yes” response.</p> |
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| | | <p>F. Have you ever been given money, a place to stay, food, or something else of value in exchange for sex?</p> <p>a) Yes b) No</p> | <p>For item F, exposure to ACE is defined as a “Yes” response.</p> <p>If more than one sexual violence question is included on the survey, the “exposure to sexual violence composite ACE” is defined as exposure to <u>any</u> individual sexual violence ACE, including the sexual abuse ACE measure in “Core ACEs”, the teen sexual dating violence item above in “Other Expanded ACEs”, or any of the sexual violence questions in this table.</p> |
| Other Possible Expanded ACE | Other violence victimization | <p>During the past 12 months, how many times has someone threatened or injured you with a weapon such as a gun, knife, or club on school property?</p> <p>A. 0 times B. 1 time C. 2 or 3 times D. 4 or 5 times E. 6 or 7 times F. 8 or 9 times G. 10 or 11 times H. 12 or more times</p> | <p>Exposure to ACE is defined as a response of “1 time,” “2 or 3 times,” “4 or 5 times,” “6 or 7 times,” “8 or 9 times,” “10 or 11 times,” or “12 or more times.”</p> |

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| Other Possible Expanded ACE | Experiencing homelessness or housing instability | <p>A. During the past 30 days, did you ever sleep away from your parents or guardians because you were kicked out, ran away, or were abandoned?</p> <p>a) Yes b) No</p> <p>B. During the past 30 days, where did you usually sleep?*</p> <p>a) In my parent's or guardian's home b) In the home of a friend, family member, or other person because I had to leave my home or my parent or guardian cannot afford housing c) In a shelter or emergency housing d) In a motel or hotel e) In a car, park, campground, or other public place f) I do not have a usual place to sleep g) Somewhere else</p> | <p>For item A, exposure to ACE is defined as a response of "Yes."</p> <p>For item B, exposure to ACE is defined as a response of "in the home of a friend, family member, or other person because I had to leave my home or my parent or guardian cannot afford housing;" "in a shelter or emergency housing;" "in a motel or hotel;" "in a car, park, campground, or other public place;" "I do not have a usual place to sleep;" or "somewhere else."</p> <p>If both items are included, exposure to ACE is defined as a response of "Yes" to item A OR a response of "in the home of a friend, family member, or other person because I had to leave my home or my parent or guardian cannot afford housing;" "in a shelter or emergency housing;" "in a motel or hotel;" "in a car, park, campground, or other public place;" "I do not have a usual place to sleep;" or "somewhere else" to item B.</p> |
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| Other Possible Expanded ACE | Experiencing food insecurity | <p>During the past 30 days, how often did you go hungry because there was not enough food in your home?</p> <p>A. Never B. Rarely C. Sometimes D. Most of the time E. Always</p> | Exposure to ACE is defined as a response of “Rarely,” “Sometimes,” “Most of the time,” or “Always.” |
|-----------------------------|------------------------------|--|---|

*Because YRBS content changes over time, check the YRBS website and the *Handbook for Conducting YRBS* to access each survey questionnaire for the most up-to-date information.

†*DVP coding differs from DASH coding for this item. DASH codes responses of “Never” or “Rarely” as not exposed to the ACE, in contrast with DVP, which only codes responses of “Never” as not exposed to the ACE.

Other Possible PCEs

In addition to the DVP-developed PCEs added beginning in 2021, YRBS has many measures that qualify as possible PCEs. Below is a list of measures from national, state, and local YRBS questionnaires that qualify as possible PCEs (Table 6). Because YRBS content changes over time, check the YRBS website and the *Handbook for Conducting YRBS* to access each survey questionnaire for the most up-to-date information.

CDC is rigorously examining the relative importance of possible PCEs and will formally update the list of PCEs routinely monitored as part of surveillance. In the interim, use this list, plus any additional PCEs that your jurisdiction is monitoring to study safe, stable, nurturing, and equitable relationships and environments. For additional analytic considerations, please see [Calculating Scores](#).

Table 6. Other Possible YRBS PCE Measures and Coding.*

| Question Type | Construct | Question | Coding |
|---------------|--|---|--|
| Other PCE | Presence of a supportive adult in life | <p>A. Besides your parents, how many adults would you feel comfortable seeking help from if you had an important question affecting your life?</p> <ul style="list-style-type: none"> a) 0 adults b) 1 adult c) 2 adults d) 3 adults e) 4 adults f) 5 or more adults <p>B. Is there at least one teacher or other adult in your school that you can talk to if you have a problem?</p> <ul style="list-style-type: none"> a) Yes b) No <p>C. Do you agree or disagree that your teachers really care about you and give you a lot of encouragement?</p> <ul style="list-style-type: none"> a) Strongly agree b) Agree c) Not sure d) Disagree e) Strongly disagree | <p>For item A, exposure to PCE is defined as a response of “1 adult,” “2 adults,” “3 adults,” “4 adults,” or “5 or more adults.”</p> <p>For item B, exposure to PCE is defined as a response of “Yes.”</p> <p>For item C, exposure to PCE is defined as a response of “Strongly agree” or “Agree.”</p> |

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| | | <p>D. During the past 12 months, did you talk to a teacher or other adult in your school about a personal problem you had?</p> <ul style="list-style-type: none"> a) Yes b) No | <p>For item D, exposure to PCP is defined as a response of “Yes.”</p> <p>If more than one item included on survey, exposure to composite “presence of a supportive adult in life” PCE construct is defined as exposure to <u>any</u> individual supportive adult PCE question, including “feeling able to talk to adults about feelings/ presence of a supportive adult” question from DVP-developed PCE questions (Table 4).</p> |
| Other PCE | Parental monitoring and structure | <p>A. Do you agree or disagree that your parents or other adults in your family have clear rules and consequences for your behavior?</p> <ul style="list-style-type: none"> a) Strongly agree b) Agree c) Not sure d) Disagree e) Strongly disagree <p>B. How often do your parents or other adults in your family know where you are going or with whom you will be?</p> <ul style="list-style-type: none"> a) Never b) Rarely c) Sometimes d) Most of the time e) Always <p>C. During the past 7 days, on how many days did you eat dinner at home with at least one of your parents?</p> <ul style="list-style-type: none"> a) 0 days b) 1 day c) 2 days d) 3 days e) 4 days f) 5 days g) 6 days h) 7 days | <p>For item A, exposure to PCE is defined as a response of “Strongly agree” or “Agree.”</p> <p>For item B, exposure to PCE is defined as a response of “Most of the time” or “Always.”</p> <p>For item C, exposure to PCE is defined as a response of “1 day,” “2 days,” “3 days,” “4 days,” “5 days,” “6 days,” or “7 days.”</p> <p>If more than one item included on survey, exposure to composite “parental monitoring and structure” PCE construct is defined as exposure to <u>any</u> individual parental monitoring/structure PCE question.</p> |

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| Other PCE | Ability to talk with friends | <p>During your life, how often have you felt that you were able to talk to a friend about your feelings?</p> <p>A. Never B. Rarely C. Sometimes D. Most of the time E. Always</p> | <p>Exposure to PCE is defined as a response of “Most of the time” or “Always.”</p> <p>Exposure to composite “ability to talk with friends” PCE construct is defined as exposure to <u>any</u> individual “able to talk with friends” PCE question, including “feeling supported by friends/ presence of peer support” question from DVP-developed PCE questions (Table 4).</p> |
| Other PCE | School safety and structure at school | <p>A. How often do you feel safe and secure at school?</p> <p>a) Never b) Rarely c) Sometimes d) Most of the time e) Always</p> <p>B. Do you agree or disagree that your school has clear rules and consequences for your behavior?</p> <p>a) Strongly agree b) Agree c) Not sure d) Disagree e) Strongly disagree</p> | <p>For item A, exposure to PCE is defined as a response of “Most of the time” or “Always.”</p> <p>For item B, exposure to PCE is defined as a response of “Strongly agree” or “Agree.”</p> <p>If more than one item included on survey, exposure to composite “school safety and structure at school” PCE construct is defined as exposure to <u>any</u> individual school safety/structure PCE question.</p> |

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| Other PCE | Community safety and connectedness | <p>A. How often do you feel safe and secure in your neighborhood?</p> <ul style="list-style-type: none"> a) Never b) Rarely c) Sometimes d) Most of the time e) Always <p>B. Do you agree or disagree that in your community you feel like you matter to people?</p> <ul style="list-style-type: none"> a) Strongly agree b) Agree c) Not sure d) Disagree e) Strongly disagree | <p>For item A, exposure to PCE is defined as a response of “Most of the time” or “Always.”</p> <p>For item B, exposure to PCE is defined as a response of “Strongly Agree” or “Agree.”</p> <p>If more than one item included on survey, exposure to composite “community safety and connectedness” PCE construct defined as exposure to <u>any</u> individual community safety/connectedness PCE question.</p> |
| Other PCE | School and community engagement | <p>A. During an average week when you are in school, how many total hours do you participate in school activities such as sports, band, drama, or clubs?</p> <ul style="list-style-type: none"> a) 0 hours b) 1 to 4 hours c) 5 to 9 hours d) 10 to 19 hours e) 20 or more hours <p>B. During the past 30 days, how many times did you perform any organized community service as a non-paid volunteer, such as serving meals to the elderly, picking up litter, helping out at a hospital, or building homes for the poor?</p> <ul style="list-style-type: none"> a) 0 times b) 1 time c) 2 or 3 times d) 4 or 5 times e) 6 or more times | <p>For item A, exposure to PCE is defined as a response of “1 to 4 hours,” “5 to 9 hours,” “10 to 19 hours,” or “20 or more hours.”</p> <p>For item B, exposure to PCE is defined as a response of “1 time,” “2 or 3 times,” “4 or 5 times,” or “6 or more times.”</p> |

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| | | <p>C. During an average week when you are in school, how many total hours do you participate in activities run by community groups? Count time spent on activities run by 4-H, Boys and Girls Club, YMCA, sports clubs, or church groups.</p> <ul style="list-style-type: none"> a) 0 hours b) 1 to 4 hours c) 5 to 9 hours d) 10 to 19 hours e) 20 or more hours | <p>For item C, exposure to PCE is defined as a response of “1 to 4 hours,” “5 to 9 hours,” “10 to 19 hours,” or “20 or more hours.”</p> <p>If more than one item included on survey, exposure to composite “school and community engagement” PCE construct defined as exposure to <u>any</u> individual school/community engagement PCE question.</p> |
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*Because YRBS content changes over time, check the YRBS website and the *Handbook for Conducting YRBS* to access each survey questionnaire for the most up-to-date information.

Calculating Scores

Substantial research shows that the more ACEs a child goes through, the greater their risk for poor health and well-being across the lifespan.⁵ Research also says that children from historically marginalized populations, including some racial and ethnic groups, those who identify as sexual and gender minorities, and children with disabilities, may also have a disproportionate burden of ACEs.^{6,7} Calculating ACE scores can help us understand characteristics of children with multiple ACEs and identify inequities in cumulative ACE burden from structural and social conditions in which children live, work, and play. ACE scores can also be used to help us understand the cumulative impact that experiencing multiple ACEs can have on health, well-being, and other outcomes.

Many prevention, intervention, and response efforts are best served by examining the prevalence of specific types of ACEs. For example, understanding which ACEs are most common in your jurisdiction can help you plan for and implement specific prevention and intervention strategies that most effectively prevent or mitigate that ACE. Some populations of children may also disproportionately experience different types of ACEs due to structural and societal factors. Understanding which demographic subpopulations of children are most at risk for which ACE can help you more carefully tailor prevention efforts to meet specific populations with greatest need. Finally, to understand your prevention, intervention, and response efforts' impact, disaggregated data about specific ACEs—rather than a cumulative ACE score—may best demonstrate the impact of your efforts.

Carefully consider which approach (ACE scores versus examination of specific ACEs) meets your individual needs. Information about calculating ACE scores is below.

⁵ Merrick, M. T., Ford, D. C., Ports, K. A., Guinn, A. S., Chen, J., Klevens, J., Metzler, M., Jones, C. M., Simon, T. R., Daniel, V. M., Ottley, P., & Mercy, J. A. (2019). Vital Signs: Estimated Proportion of Adult Health Problems Attributable to Adverse Childhood Experiences and Implications for Prevention - 25 States, 2015-2017. *MMWR. Morbidity and mortality weekly report*, 68(44), 999–1005. <https://doi.org/10.15585/mmwr.mm6844e1>

⁶ Font, S. A., & Maguire-Jack, K. (2016). Pathways from childhood abuse and other adversities to adult health risks: The role of adult socioeconomic conditions. *Child abuse & neglect*, 51, 390–399. <https://doi.org/10.1016/j.chiabu.2015.05.013>

⁷ Bethell, C. D., Davis, M. B., Gombojav, N., Stumbo, S., & Powers, K. (2017). Issue brief: Adverse childhood experiences among US children. *Child and Adolescent Health Measurement Initiative*, Johns Hopkins Bloomberg School of Public Health.

Calculating ACE and PCE Scores: Technical Details

Sum the “Yes Exposure” responses for all constructs in parentheses for the total ACE score or PCE score.

Core ACE Score is comprised of Tier 1 *lifetime prevalence* core questions (Table 1) and, if included, Tier 2 *past-year incidence* core questions (Table 2)*:

Core ACE Score = (Emotional abuse* + Physical abuse* + Sexual abuse + Physical neglect + Witnessed IPV + Household substance use + Household mental illness + Incarcerated parent/guardian)

- Total score possible is 8
- Suggested categorization for ACE scores: 0, 1, 2–3, 4+
- Missing data: Calculate scores *only* for participants with complete data on **at least five** score components. Though this may increase non-response bias in the results, it also increases the number of respondents included in analyses.
- Additional details:
 - *Emotional abuse and physical abuse core ACE construct questions were included in both Tier 1 (lifetime prevalence, Table 1) and Tier 2 (past-year incidence, Table 2). If both lifetime and past-year incidence core ACE questions were included on your survey, create a sum “combined lifetime prevalence” measure for these core ACEs constructs, and use this combined measure in Core ACE Score calculations.
 - *Example:* Emotional abuse is a combination of *lifetime prevalence of emotional abuse* (Tier 1, Table 1) and *past 12-month incidence of emotional abuse* (Tier 2, Table 2). If both questions are included on the survey, exposure to the Emotional Abuse core ACE is defined as a response of “Rarely, Sometimes, Most of the time, or Always” for the *Lifetime prevalence of emotional abuse* question OR a response of 1 time, 2 or 3 times, 4 or 5 times, or 6 or more times for the *Past 12-month incidence of emotional abuse* question.
 - For Sexual abuse, Physical neglect, Witnessed IPV, Household substance use, Household mental illness, and Incarcerated parent/guardian, use the *Lifetime prevalence* constructs from Table 1.
 - *Example:* For Witnessed IPV, use *Lifetime prevalence of witnessed intimate partner violence* from Table 1 and define exposure to ACE as a response of *Rarely, Sometimes, Most of the time, or Always* to this question.

Core + Expanded ACE Score is comprised of the Core ACE score (as outlined above), DVP-developed Expanded ACEs questions (Table 4), and Other Expanded ACE questions (Table 5, if included and desired).

Core + Expanded ACE Score includes Emotional abuse, Physical abuse, Sexual abuse, Physical neglect, Witnessed IPV, Household substance use, Household mental illness, Incarcerated parent/guardian, Racial/ethnic discrimination, Sexual minority discrimination, Community violence, and Other Possible YRBS Expanded ACE Constructs (Bullying, Basic Needs Instability, etc.).

Core + Expanded ACE Score = (Core ACE Score + Racial/ethnic discrimination + Sexual minority discrimination + Community violence + Other Possible YRBS Expanded ACE Constructs)

- Total score possible is total number of *constructs* (not questions) included in score
- Suggested categorization for Core + Expanded ACE scores: 0, 1, 2–3, 4+
- Missing data: Calculate Core + Expanded ACE scores *only* for participants with complete data for at least one more question than the top ACE score category. For example, if you decide to categorize Expanded ACEs as 0, 1, 2-3, **4+**, then only calculate ACE scores for adolescents who answered **5** or more questions.

PCE Score is comprised of the Tier 2 DVP-developed PCE questions (Table 4):

PCE Score = (Supportive Adult + Supportive Friend + Belonging)

- Total score possible is 3
- Categorization: 0, 1-2, 3
- Missing data: Calculate scores *only* for participants with complete data on all PCE questions.

Expanded PCE Score is comprised of the Tier 2 DVP-developed PCE questions (Table 4) and Other Possible PCE questions (Table 6, if included and desired).

Expanded PCE Score = (DVP PCE Score + Other Possible YRBS PCE Constructs)

- Total score possible is total number of *constructs* (not questions) included in score. For example, if you include four PCE questions on your survey but two of the included PCE questions fall under a common construct (e.g., “school and community engagement”) then your total possible PCE score would be **3** (reflecting the number of *constructs* assessed on the survey).
- Suggested categorization for Expanded PCE Score depends on the number of items included in the score. Look at data distribution and decide PCE categories using data distribution and associations with outcomes to identify category breakpoints.
- Missing data: After looking at the distribution of scores in your data and deciding how you will define Expanded PCE score categories, calculate Expanded PCE scores *only* for participants with complete data on at least one more question than the top PCE score category. For example, if you decide to categorize Expanded PCEs as 0, 1-3, 4-6, **7+** then only calculate PCE scores for adolescents who answered **8** or more questions.

Categories of ACEs

Beyond individual ACEs and cumulative ACE scores, organizations may choose to look at ACE experiences by experience category. For example, all participants who experienced emotional, physical or sexual abuse may be grouped together into a single abuse measure. Depending on your topic of interest, ACEs can be categorized in additional ways that are not listed below.

Table 7. Coding for Common Categories of ACEs

| Category | Individual Constructs Included in Category | Coding |
|-------------------------------|--|---|
| Abuse | Emotional abuse Physical abuse Sexual abuse | If more than one individual construct is included on the survey, exposure to category of ACEs is defined as exposure to any individual ACE within the category. |
| Neglect | Physical Neglect | |
| Household Challenges | Witnessed intimate partner violence Household substance abuse Household mental illness Incarcerated relative | |
| Experiences of Discrimination | Racial/ethnic discrimination Sexual minority discrimination | |
| Sexual Violence | Sexual Abuse Sexual Teen Dating Violence Experience of any sexual violence Forced Intercourse Nonconsensual sexting Transactional sex | |

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| Bullying | <p>Bullying on school property</p> <p>Bullying off school property</p> <p>Electronic bullying</p> <p>Bullying based on race/ethnicity</p> <p>Bullying based on weight, size, or appearance</p> <p>Bullying based on medical condition</p> <p>Bullying based on gender</p> <p>Bullying based on perceived sexual identity</p> <p>Bullying based on race/ethnicity</p> <p>Bullying based on perceived sexual identity</p> | |
| Basic Needs Instability | <p>Homelessness</p> <p>Housing insecurity</p> <p>Food insecurity</p> | |