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Prevalence of Adverse Childhood Experiences From the 2011-2014 Behavioral Risk Factor Surveillance System in 23 States

Melissa T. Merrick, PhD; Derek C. Ford, PhD; Katie A. Ports, PhD; Angie S. Guinn, MPH

IMPORTANCE Early adversity is associated with leading causes of adult morbidity and mortality and effects on life opportunities.

OBJECTIVE To provide an updated prevalence estimate of adverse childhood experiences (ACEs) in the United States using a large, diverse, and representative sample of adults in 23 states.

DESIGN, SETTING, AND PARTICIPANTS Data were collected through the Behavioral Risk Factor Surveillance System (BRFSS), an annual, nationally representative telephone survey on health-related behaviors, health conditions, and use of preventive services, from January 1, 2011, through December 31, 2014. Twenty-three states included the ACE assessment in their BRFSS. Respondents included 248 934 noninstitutionalized adults older than 18 years. Data were analyzed from March 15 to April 25, 2017.

MAIN OUTCOMES AND MEASURES The ACE module consists of 11 questions collapsed into the following 8 categories: physical abuse, emotional abuse, sexual abuse, household mental illness, household substance use, household domestic violence, incarcerated household member, and parental separation or divorce. Lifetime ACE prevalence estimates within each subdomain were calculated (range, 1.00-8.00, with higher scores indicating greater exposure) and stratified by sex, age group, race/ethnicity, annual household income, educational attainment, employment status, sexual orientation, and geographic region.

RESULTS Of the 214 157 respondents included in the sample (51.51% female), 61.55% had at least 1 and 24.64% reported 3 or more ACEs. Significantly higher ACE exposures were reported by participants who identified as black (mean score, 1.69; 95% CI, 1.62-1.76), Hispanic (mean score, 1.80; 95% CI, 1.70-1.91), or multiracial (mean score, 2.52; 95% CI, 2.36-2.67), those with less than a high school education (mean score, 1.97; 95% CI, 1.88-2.05), those with income of less than $15 000 per year (mean score, 2.16; 95% CI, 2.09-2.23), those who were unemployed (mean score, 2.30; 95% CI, 2.21-2.38) or unable to work (mean score, 2.33; 95% CI, 2.25-2.42), and those identifying as gay/lesbian (mean score 2.19; 95% CI, 1.95-2.43) or bisexual (mean score, 3.14; 95% CI, 2.82-3.46) compared with those identifying as white, those completing high school or more education, those in all other income brackets, those who were employed, and those identifying as straight, respectively. Emotional abuse was the most prevalent ACE (34.42%; 95% CI, 33.81%-35.03%), followed by parental separation or divorce (27.63%; 95% CI, 27.02%-28.24%) and household substance abuse (27.56%; 95% CI, 27.00%-28.14%).

CONCLUSIONS AND RELEVANCE This report demonstrates the burden of ACEs among the US adult population using the largest and most diverse sample to date. These findings highlight that childhood adversity is common across sociodemographic characteristics, but some individuals are at higher risk of experiencing ACEs than others. Although identifying and treating ACE exposure is important, prioritizing primary prevention of ACEs is critical to improve health and life outcomes throughout the lifespan and across generations.

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Author Affiliations: Division of Violence Prevention, Centers for Disease Control and Prevention, Atlanta, Georgia.

Corresponding Author: Melissa T. Merrick, PhD, Division of Violence Prevention, Centers for Disease Control and Prevention, 4770 Buford Hwy NE, Mailstop F63, Atlanta, GA 30341 (mmerrick@cdc.gov).

The foundation for lifelong health, well-being, and even prosperity is built in childhood. Positive experiences strengthen developing biological systems, whereas childhood adversity can increase morbidity and mortality and have an effect on access to life opportunities.[1-4] From 1995 through 1997, Kaiser Permanente and the Centers for Disease Control and Prevention conducted an investigation of the prevalence and effect of childhood abuse and neglect and household challenges among more than 17 000 health maintenance organization members. Results revealed that almost two-thirds of study participants reported at least 1 adverse childhood experience (ACE) before the age of 18 years.[1] Replications of the ACE Study have found similar prevalence rates across settings and populations.[2,5] However, demographic diversity within these investigations has been limited. The present study provides updated prevalence estimates of ACEs in what is to our knowledge the largest (N = 248 934), most diverse sample of US adults to date. This investigation highlights the burden of early adversity that interferes with achieving our country's goals for optimal health, well-being, and equity.

Methods

Data Collection

The Behavioral Risk Factor Surveillance System (BRFSS) is an annual, nationally representative telephone survey that collects data from noninstitutionalized adults regarding their health-related risk behaviors, chronic health conditions, and use of preventive services. The BRFSS has 3 overall components: core modules (sets of questions consistently administered to all states and territories to establish national estimates), optional modules (Centers for Disease Control and Prevention–developed questions that states can include in their BRFSS survey depending on their priorities), and state-added questions (state-customized items). ACE questions were included as an optional module in the BRFSS from 2009 through 2012 and as state-added questions thereafter. States that used ACE items in their surveys were contacted to establish data use agreements to share ACE data. Individual state BRFSS data sets and publicly available ACE modules were merged, resulting in a combined data set from 23 states from January 1, 2011, through December 31, 2014 (Box). A few states included the ACE items on their BRFSS during multiple years. The survey weights were adjusted to reflect the mean population totals during the period for which these data were collected. All data used in this study are deidentified public health surveillance data and, therefore, not subject to institutional review board approval. The ACE module consists of 11 questions adapted from the Centers for Disease Control and Prevention–Kaiser ACE Study[3] on exposure to adversity experienced before 18 years of age. Each question is collapsed into 1 of 8 ACE categories: physical abuse, emotional abuse, sexual abuse, household mental illness, household substance use, incarcerated household member, parental separation or divorce, and household domestic violence. The responses were dichotomized to indicate exposure and summed to create an ACE score (range,

Key Points

Question What is the prevalence of adverse childhood experiences across 23 states stratified by demographic characteristics?

Findings In this cross-sectional survey of 214 157 respondents, participants who identified as black, Hispanic, or multiracial, those with less than a high school education, those with annual income less than $15 000, those who were unemployed or unable to work, and those identifying as gay/lesbian or bisexual reported significantly higher exposure to adverse childhood experiences than comparison groups.

Meanings These findings highlight the importance of understanding why some individuals are at higher risk of experiencing adverse childhood experiences than others, including how this increased risk may exacerbate health inequities across the lifespan and future generations.

1.00-8.00, with higher scores indicating greater exposure). Ford et al[6] provide a full description of the BRFSS ACE module and calculated ACE score.

ACE prevalence estimates within each ACE type were calculated and stratified by demographic variables that included sex, age group, race/ethnicity, annual household income, educational attainment, employment status, sexual orientation, and geographic region. Employment status responses were categorized into the 4 categories of employed (employed for wages, self-employed), unemployed (out of work for any period), not in the workforce (homemakers, students, and retirees), and unable to work. States with ACE data during the 2011-2014 data collection period were categorized using the following census geographic delineations: Midwest (Iowa, Kansas, Michigan, Minnesota, Nebraska, and Wisconsin), Northeast (Connecticut, Maine, Pennsylvania, and Vermont), South (Florida, North Carolina, Oklahoma, South Carolina, and Tennessee), and West (Alaska, Arizona, California, Montana, Nevada, Oregon, Utah, and Washington).

Statistical Analysis

Data were analyzed from March 15 through April 25, 2017. Descriptive statistics for the overall sample, stratified by sex, were estimated across several key sociodemographic variables, including age group, race/ethnicity, annual household income, educational attainment, employment status, sexual orientation, and geographical region. Next, a frequency analysis was conducted to obtain an overall distribution of the ACE exposure for each respondent in the sample using 0, 1, 2, 3, and 4 or more ACE exposure categories. Prevalence of each of the 8 ACE types assessed in the sample was subsequently computed along with their corresponding 95% CIs stratified by each of the aforementioned sociodemographic characteristics. Mean ACE scores and 95% CIs were also estimated within each of the sociodemographic groups. Survey weights were used throughout analysis to reduce bias due to nonresponse and noncoverage. Data analyses were conducted using R software (version 3.32; R Core Team).

2011 (n = 10)
California
Maine
Minnesota
Montana
Nebraska
Nevada
Oregon
Vermont
Washington
Wisconsin

2012 (n = 6)
Connecticut
Iowa
North Carolina
Oklahoma
Tennessee
Wisconsin

2013 (n = 7)
Alaska
Iowa
Maine
Michigan
Oregon
Utah
Wisconsin

2014 (n = 13)
Alaska
Arizona
Colorado
Florida
Iowa
Kansas
Nevada
North Carolina
Oklahoma
Oregon
Pennsylvania
South Carolina
Wisconsin

Abbreviation: ACE, adverse childhood experience.

[a] Data are obtained from the Behavioral Risk Factor Surveillance System, 2011-2014.

Results

Table 1 provides a summary of weighted estimates on demographic and census region statistics for the 214 157 respondents included in the sample (51.51% female; 48.49% male). All age groups were generally represented. Respondents were predominantly white (68.08%; 95% CI, 67.40%-68.76%), identified as straight (96.02%; 95% CI, 95.85%-96.33%), had at least a high school diploma (86.16%; 95% CI, 85.65-86.67), were employed (54.15%; 95% CI, 53.53%-54.78%), and earned more than $50 000 a year (43.54%; 95% CI, 42.89%-44.19%). In addition, 30.44% (95% CI, 29.89%-30.98%) of respondents resided in the South and 39.53 (95% CI, 39.08%-39.99%) resided in the West.

Overall, 38.45% (95% CI, 38.00%-38.89%) of the respondents reported experiencing 0 ACEs; 23.53% (95% CI, 23.12%-23.94%), 1 ACE; 13.38% (95% CI, 13.05%-13.71%), 2 ACEs; 8.83% (95% CI, 8.56%-9.10%), 3 ACEs; and 15.81% (95% CI, 15.45%-16.18%), 4 or more ACEs. Mean ACE scores were higher among women and younger adults. Respondents identifying as multiracial reported the highest level of overall ACE exposure (mean score, 2.52; 95% CI, 2.36-2.67) compared with the other race/ethnicity categories. Significantly higher mean ACE exposures were reported by participants with less than a high school education (mean score, 1.97; 95% CI, 1.88-2.05), those with income less than $15 000 per year (mean score, 2.16; 95% CI, 2.09-2.23), and those identifying as gay/lesbian (mean score, 2.19; 95% CI, 1.95-2.43) and bisexual (mean score, 3.14; 95% CI, 2.82-3.46) compared with those completing high school or more education, those in all other income brackets, and those identifying as straight, respectively. Respondents with lower ACE scores were more likely to be employed (mean score, 1.58; 95% CI, 1.56-1.61) than those with higher ACE scores, who were more likely to report being unemployed (mean score, 2.30; 95% CI, 2.21-2.38) or unable to work (mean score, 2.33; 95% CI, 2.25-2.42). Among the individual ACE types, emotional abuse was the most commonly reported (34.42%; 95% CI, 33.81%-35.03%), followed by parental separation or divorce (27.63%; 95% CI, 27.02%-28.24%) and household substance abuse (27.56%; 95% CI, 27.00%-28.14%) (**Table 2**). The percentage experiencing specific ACE types varied across each demographic subgroup. For example, compared with male respondents, female respondents reported a greater prevalence of child sexual abuse (16.33% [95% CI, 15.82%-16.85%] vs 6.70% [95% CI, 6.27%-7.13%]), household substance abuse (28.72% [95% CI, 27.99%-29.46%] vs 26.33% [95% CI, 25.45%-27.21%]), and household mental illness (19.19% [95% CI, 18.52%-19.85%] vs 13.71% [95% CI, 12.96%-14.47%]).

Discussion

This study is, to our knowledge, the largest and most diverse collection of ACE data from the BRFSS to date and provides an expanded investigation of ACE exposure across 23 states. Findings reveal that ACEs are prevalent across all demographic characteristics, yet some populations experience a greater, unequal burden of such exposure. Identifying such inequities provides important information about the conditions in which children of adults with high ACEs are growing up and the subsequent effects of ACE exposure, including opioid use and misuse, on future generations. The variation of ACEs across demo-

Table 1. Demographic Characteristics of the 2011-2014 BRFSS Sample[a]

Characteristic	Male Respondents		Female Respondents		All	
	No.	Weighted % (95% CI)	No.	Weighted % (95% CI)	No.	Weighted % (95% CI)
Age group, y						
18-24	4894	13.04 (12.19-13.89)	4703	11.60 (10.87-12.32)	9597	12.30 (11.74-12.85)
25-34	8192	17.98 (16.96-19.00)	10 635	16.61 (15.82-17.39)	18 827	17.27 (16.63-17.91)
35-44	10 717	16.89 (16.17-17.60)	14 930	16.15 (15.58-16.72)	25 647	16.51 (16.05-16.96)
45-54	15 544	18.44 (17.77-19.11)	21 532	18.19 (17.63-18.74)	37 076	18.31 (17.88-18.74)
55-64	20 688	16.19 (15.64-16.74)	28 403	16.03 (15.88-16.76)	49 091	16.26 (15.91-16.60)
≥65	26 996	17.47 (16.95-17.99)	45 280	21.14 (20.69-21.60)	72 276	19.37 (19.01-19.70)
Race/ethnicity						
White	73 343	67.48 (66.40-68.55)	106 062	68.64 (67.77-69.52)	179 405	68.08 (67.40-68.76)
Black	3939	7.71 (7.12-8.30)	7163	8.97 (8.43-9.51)	11 102	8.36 (7.96-8.75)
Other	3357	7.07 (6.41-7.72)	4411	5.60 (5.14-6.06)	7768	6.31 (5.91-6.71)
Multiracial	1757	1.75 (1.56-1.95)	2316	1.56 (1.41-1.71)	4073	1.65 (1.53-1.78)
Hispanic	3972	16.00 (15.02-16.97)	5522	15.22 (14.42-16.03)	9494	15.60 (14.98-16.22)
Household income, $						
<15 000	6430	10.97 (10.23-11.70)	12 886	14.58 (13.95-15.20)	19 316	12.79 (12.31-13.27)
15 000-24 999	11 669	15.76 (14.98-16.54)	20 822	19.21 (18.47-19.95)	32 491	17.50 (16.96-18.04)
25 000-34 999	9176	11.44 (10.79-12.09)	13 794	12.12 (11.54-12.69)	22 970	11.78 (11.35-12.21)
35 000-49 999	12 757	14.70 (13.95-15.46)	16 736	14.09 (13.49-14.68)	29 493	14.39 (13.91-14.87)
≥50 000	39 272	47.13 (46.11-48.16)	43 951	40.01 (39.21-40.81)	83 223	43.54 (42.89-44.19)
Educational attainment						
Less than high school	6396	13.93 (13.17-14.70)	8678	13.75 (13.07-14.44)	15 074	13.84 (13.33-14.35)
High school diploma/GED	25 093	28.61 (27.72-29.50)	36 196	27.58 (26.84-28.33)	61 289	28.08 (27.50-28.66)
Some college	23 003	31.14 (30.17-32.10)	37 576	33.91 (33.17-34.65)	60 579	32.56 (31.96-33.17)
College degree	31 569	26.32 (25.52-27.13)	41 998	24.76 (24.16-25.36)	73 567	25.52 (25.02-26.01)
Employment status						
Employed	49 406	60.99 (60.03-61.95)	57 141	47.73 (46.94-48.53)	106 547	54.15 (53.53-54.78)
Unemployed	4837	8.50 (7.86-9.13)	5812	7.06 (6.60-7.51)	10 649	7.75 (7.37-8.14)
Unable to work	5170	6.91 (6.38-7.44)	8996	7.33 (6.89-7.77)	14 166	7.13 (6.78-7.47)
Other	27 830	23.61 (22.83-24.39)	54 219	37.88 (37.12-38.64)	82 049	30.97 (30.41-31.52)
Sexual orientation						
Straight	36 577	96.30 (95.96-96.64)	50 216	95.90 (95.56-96.24)	86 793	96.02 (95.85-96.33)
Gay/lesbian	610	1.89 (1.63-2.16)	548	1.14 (0.96-1.32)	1158	1.50 (1.35-1.66)
Bisexual	363	0.95 (0.77-1.13)	691	1.84 (1.59-2.08)	1054	1.41 (1.25-1.56)
Other	527	0.86 (0.74-0.98)	909	1.12 (0.95-1.30)	1436	1.00 (0.96-1.10)
Census region						
Midwest	33 607	19.62 (19.15-20.08)	47 093	19.55 (19.16-19.94)	80 700	19.58 (19.34-19.82)
Northeast	9151	10.22 (9.89-10.55)	13 689	10.66 (10.38-10.94)	22 840	10.45 (10.28-10.61)
South	15 827	29.72 (28.71-30.73)	24 563	31.12 (30.37-31.87)	40 390	30.44 (29.89-30.98)
West	28 955	40.44 (39.58-41.31)	41 272	38.68 (38.03-39.33)	70 227	39.53 (39.08-39.99)

Abbreviations: ACE, adverse childhood experiences; BRFSS, Behavioral Risk Factor Surveillance System; GED, General Education Development.

[a] This sample consists of the 23 states that included the ACE module at least once from 2011 to 2014 in the BRFSS. Sample sizes are unweighted; percentages are weighted to the state population totals.

graphic groups supports literature showing that social and structural conditions contribute to the risk of exposure to childhood adversity[7] and that exposure to ACEs may exacerbate inequities in health, social, and economic outcomes across generations.[4,8]

Limitations

This study has several limitations. The BRFSS data are cross-sectional and therefore cannot establish causality. The BRFSS relies on self-reported health information and retrospective reporting of ACEs, which may be susceptible to memory and response biases.[9] However, previous studies establish the general validity of self-reported childhood adversity.[10] In addition, ACEs measured on the BRFSS do not represent the entire spectrum of early adversities that exist, nor do they measure critical dimensions of exposure, such as severity or the age at onset, which can also significantly affect health and well-being.[11,12] In addition, not all gender identifications, races,

Table 2. Prevalence of Measured ACE Types and Mean ACE Score by Sociodemographic Characteristics[a]

Characteristics	ACE Category, Weighted % (95% CI)			Intimate Partner Violence	Household Substance Abuse	Household Mental Illness	Parental Separation or Divorce	Incarcerated Household Member	ACE Score, Mean (95% CI)[b]
	Abuse								
	Emotional	Physical	Sexual						
Total	34.42 (33.81-35.03)	17.94 (17.42-18.47)	11.60 (11.26-11.94)	17.51 (17.02-18.02)	27.56 (27.00-28.14)	16.53 (16.04-17.04)	27.63 (27.02-28.24)	7.90 (7.44-8.38)	1.57 (1.55-1.59)
Sex									
Male	34.92 (33.95-35.89)	18.38 (17.52-19.24)	6.70 (6.27-7.13)	16.79 (16.00-17.58)	26.33 (25.45-27.21)	13.71 (12.96-14.47)	27.45 (26.50-28.40)	8.58 (7.78-9.38)	1.46 (1.44-1.49)
Female	33.94 (33.19-34.70)	17.53 (16.92-18.14)	16.33 (15.82-16.85)	18.19 (17.57-18.81)	28.72 (27.99-29.46)	19.19 (18.52-19.85)	27.80 (27.02-28.57)	7.26 (6.75-7.78)	1.68 (1.65-1.70)
Age group, y									
18-24	40.53 (38.07-43.00)	18.61 (16.46-20.77)	9.02 (7.81-10.22)	17.06 (15.13-18.99)	29.12 (26.86-31.38)	25.01 (22.80-27.22)	35.74 (33.42-38.07)	16.65 (14.40-18.89)	1.87 (1.80-1.95)
25-34	39.12 (37.03-41.21)	21.36 (19.49-23.24)	11.23 (10.20-12.26)	20.46 (18.72-22.20)	32.15 (30.16-34.15)	23.35 (21.49-25.21)	39.46 (37.30-41.61)	13.58 (11.72-15.44)	1.95 (1.89-2.00)
35-44	38.49 (37.05-39.94)	20.59 (19.35-21.83)	13.87 (12.97-14.76)	20.69 (19.43-21.95)	29.04 (27.73-30.35)	18.10 (17.04-19.16)	33.61 (32.17-35.05)	7.97 (7.19-8.76)	1.84 (1.79-1.90)
45-54	37.84 (36.63-39.05)	19.61 (18.65-20.57)	13.76 (13.01-14.52)	20.02 (19.03-21.02)	30.95 (29.78-32.12)	15.56 (14.75-16.37)	27.30 (26.12-28.47)	6.46 (5.76-7.16)	1.68 (1.64-1.72)
55-64	33.61 (32.64-34.57)	17.47 (16.69-18.24)	13.21 (12.54-13.89)	17.16 (16.39-17.93)	27.84 (26.90-28.79)	13.82 (13.18-14.45)	19.59 (18.69-20.48)	4.69 (4.13-5.25)	1.43 (1.40-1.46)
≥ 65	20.57 (19.92-21.21)	11.22 (10.68-11.76)	8.19 (7.76-8.61)	10.64 (10.08-11.19)	18.19 (17.57-18.82)	7.19 (6.82-7.55)	14.21 (13.61-14.81)	2.24 (1.98-2.51)	0.87 (0.85-0.88)
Race/ethnicity									
White	34.95 (34.33-35.56)	16.67 (16.16-17.18)	11.43 (11.08-11.77)	15.73 (15.23-16.23)	28.21 (27.62-28.81)	18.38 (17.83-18.92)	25.77 (25.17-26.37)	6.59 (6.13-7.06)	1.52 (1.50-1.54)
Black	28.22 (26.17-30.28)	13.93 (12.09-15.77)	13.28 (11.89-14.67)	19.71 (17.97-21.46)	25.82 (23.75-27.89)	11.14 (9.36-12.92)	42.50 (39.96-45.04)	13.25 (11.64-14.86)	1.69 (1.62-1.76)
Other	29.97 (26.93-33.02)	14.94 (12.65-17.24)	7.97 (6.54-9.40)	17.52 (15.01-20.02)	17.46 (15.15-19.78)	11.37 (9.09-13.66)	19.14 (16.48-21.80)	8.89 (7.37-10.41)	1.51 (1.42-1.59)
Multiracial	49.11 (45.33-52.89)	26.52 (23.30-29.74)	19.09 (16.55-21.64)	25.63 (22.56-28.70)	40.54 (36.83-44.25)	26.87 (23.41-30.33)	38.72 (35.16-42.29)	16.11 (13.25-18.97)	2.52 (2.36-2.67)
Hispanic	35.83 (33.59-38.07)	26.18 (24.10-28.27)	12.43 (11.17-13.69)	23.48 (21.57-25.40)	28.16 (26.11-30.21)	12.53 (10.83-14.22)	30.03 (27.79-32.27)	10.29 (7.70-12.88)	1.80 (1.70-1.91)
Household income, $									
<15 000	38.38 (36.44-40.32)	26.25 (24.44-28.05)	17.35 (15.97-18.73)	25.45 (23.68-27.23)	33.31 (31.43-35.2)	17.77 (16.44-19.10)	35.40 (33.41-37.39)	12.72 (11.47-13.98)	2.16 (2.09-2.23)
15 000-24 999	36.76 (35.08-38.44)	21.60 (20.15-23.05)	13.24 (12.32-14.16)	22.50 (21.02-23.99)	31.51 (29.89-33.12)	16.70 (15.40-18.00)	32.36 (30.64-34.08)	10.97 (9.69-12.25)	1.89 (1.83-1.95)
25 000-34 999	35.54 (33.57-37.51)	19.17 (17.49-20.85)	12.51 (11.38-13.64)	18.68 (17.01-20.36)	29.53 (27.64-31.41)	16.98 (15.39-18.57)	29.82 (27.82-31.81)	9.14 (7.38-10.90)	1.66 (1.60-1.72)
35 000-49 999	34.52 (32.79-36.26)	18.59 (16.86-20.31)	11.56 (10.61-12.51)	17.51 (16.20-18.82)	27.99 (26.35-29.64)	16.88 (15.36-18.41)	29.10 (27.26-30.94)	7.92 (6.41-9.42)	1.52 (1.48-1.57)
≥50 000	33.67 (32.79-34.55)	14.55 (13.87-15.23)	9.86 (9.38-10.35)	14.38 (13.69-15.07)	24.67 (23.88-25.45)	16.47 (15.70-17.25)	22.83 (22.02-23.65)	4.83 (4.25-5.42)	1.39 (1.36-1.41)

(continued)

Table 2. Prevalence of Measured ACE Types and Mean ACE Score by Sociodemographic Characteristics[a] (continued)

Characteristics	ACE Category, Weighted % (95% CI)								ACE Score, Mean (95% CI)[b]
	Abuse			Intimate Partner Violence	Household Substance Abuse	Household Mental Illness	Parental Separation or Divorce	Incarcerated Household Member	
	Emotional	Physical	Sexual						
Educational attainment									
Less than high school	34.64 (32.65-36.63)	25.92 (24.02-27.82)	13.07 (11.91-14.24)	25.99 (24.13-27.85)	35.22 (33.18-37.25)	14.55 (13.01-16.09)	32.37 (30.33-34.42)	14.60 (12.70-16.50)	1.97 (1.88-2.05)
High school graduate/GED	33.88 (32.69-35.08)	17.88 (16.86-18.89)	11.03 (10.37-11.70)	18.54 (17.53-19.56)	28.67 (27.55-29.79)	14.63 (13.70-15.56)	31.25 (30.04-32.47)	8.85 (7.94-9.75)	1.59 (1.56-1.62)
Some college	36.90 (35.80-37.99)	18.39 (17.50-19.28)	13.23 (12.58-13.89)	17.35 (16.52-18.18)	29.27 (28.26-30.28)	19.26 (18.31-20.22)	29.15 (28.11-30.19)	7.81 (7.03-8.59)	1.67 (1.64-1.70)
College graduate	31.67 (30.69-32.64)	13.07 (12.27-13.88)	9.17 (8.74-9.61)	12.12 (11.44-12.80)	20.01 (19.26-20.77)	16.09 (15.24-16.94)	19.07 (18.09-20.06)	3.50 (2.86-4.15)	1.23 (1.21-1.25)
Employment status									
Employed	35.74 (34.90-36.58)	17.41 (16.69-18.14)	10.64 (10.20-11.09)	17.43 (16.74-18.13)	27.56 (26.78-28.33)	16.69 (16.00-17.37)	28.33 (27.50-29.16)	7.91 (7.27-8.55)	1.58 (1.56-1.61)
Unemployed	44.49 (41.83-47.16)	26.52 (24.08-28.96)	15.46 (13.77-17.14)	24.98 (22.74-27.22)	36.22 (33.64-38.79)	23.37 (20.99-25.75)	41.37 (38.63-44.12)	17.20 (14.29-20.11)	2.30 (2.21-2.38)
Unable to work	44.60 (42.06-47.14)	29.50 (27.15-31.84)	23.25 (21.61-24.90)	28.72 (26.37-31.07)	40.12 (37.69-42.55)	23.89 (21.83-25.95)	37.20 (34.69-39.72)	11.84 (9.98-13.70)	2.33 (2.25-2.42)
Other	27.26 (26.33-28.20)	14.10 (13.35-14.85)	9.78 (9.26-10.31)	13.25 (12.56-13.94)	22.45 (21.57-23.33)	12.85 (12.07-13.63)	20.76 (19.84-21.68)	4.84 (4.27-5.41)	1.22 (1.19-1.25)
Sexual orientation									
Straight	59.16 (53.81-64.51)	34.93 (29.58-40.28)	34.54 (28.91-40.16)	29.55 (24.31-34.79)	46.28 (40.75-51.80)	16.96 (16.46-17.46)	45.97 (40.43-51.50)	18.65 (13.97-23.33)	1.60 (1.57-1.63)
Gay/Lesbian	47.15 (41.89-52.40)	30.76 (25.65-35.87)	23.22 (18.93-27.52)	26.89 (22.03-31.75)	37.14 (31.85-42.43)	33.03 (27.83-38.24)	36.28 (30.90-41.66)	12.56 (8.66-16.46)	2.19 (1.95-2.43)
Bisexual	35.49 (30.16-40.81)	24.11 (19.41-28.80)	10.85 (7.82-13.89)	20.59 (16.21-24.97)	23.18 (18.65-27.71)	39.78 (34.34-45.22)	21.98 (17.69-26.26)	7.45 (4.65-10.25)	3.14 (2.82-3.46)
Other	34.48 (33.87-35.10)	16.60 (16.12-17.07)	12.09 (11.63-12.54)	16.17 (15.68-16.67)	26.38 (25.81-26.96)	19.05 (14.10-23.99)	26.58 (25.97-27.18)	7.10 (6.73-7.46)	1.55 (1.35-1.76)
Census region									
Midwest	35.27 (34.46-36.09)	16.36 (15.71-17.01)	9.86 (9.36-10.36)	15.54 (14.92-16.17)	26.61 (25.85-27.36)	16.08 (15.44-16.72)	23.99 (23.21-24.77)	7.16 (6.65-7.67)	1.47 (1.44-1.50)
Northeast	32.22 (31.09-33.36)	15.10 (14.24-15.97)	10.84 (10.02-11.67)	15.02 (14.12-15.91)	24.49 (23.46-25.52)	15.34 (14.44-16.23)	24.50 (23.43-25.56)	6.35 (5.69-7.02)	1.56 (1.5-1.61)
South	29.83 (28.40-31.26)	15.51 (14.26-16.77)	11.48 (10.94-12.02)	17.19 (16.00-18.37)	27.75 (26.38-29.12)	16.20 (14.94-17.46)	31.13 (29.61-32.65)	8.60 (7.53-9.66)	1.55 (1.51-1.58)
West	38.08 (37.14-39.03)	21.33 (20.51-22.15)	12.54 (11.96-13.12)	19.39 (18.61-20.17)	28.71 (27.84-29.57)	17.33 (16.61-18.05)	27.58 (26.72-28.43)	8.46 (7.94-8.98)	1.73 (1.69-1.76)

Abbreviations: ACE, adverse childhood experiences; GED, General Education Development.

a Data are obtained from the Behavioral Risk Factor Surveillance System, 2011-2014.

b Scores range from 0 to 8, with higher scores indicating higher exposure.

and sexual orientations are assessed on the BRFSS, which limits our understanding of the prevalence of ACEs in some populations, including those with multiple minority identities.

Conclusions

Despite these limitations, this study has potentially significant implications for population health. Notably, these findings highlight the importance of understanding why some groups are at greater risk than others of experiencing ACEs, including how this risk may exacerbate health inequities across the lifespan and across generations. Although identifying and treating ACE exposure is important, the primary prevention of ACEs is critical if we are to prevent the associated negative health and life outcomes. By ensuring that all children have access to safe, stable, nurturing relationships and environments,[13-15] we can prevent or alleviate the effects of ACEs, thereby achieving multiple public health goals.

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