Life Course Indicators Tip Sheet: ACEs (LC-01 & LC-02)

About AMCHP

The Association of Maternal & Child Health Programs (AMCHP) is a national resource, partner and advocate for state public health leaders and others working to improve the health of women, children, youth and families, including those with special health care needs.

Life Course Indicators

AMCHP launched a project designed to identify and promote a set of indicators that can be used to measure progress using the life course approach to improve maternal and child health. This project was funded with support from the W.K. Kellogg Foundation.

To find more tools and resources to help you use the life course indicators, visit:

Life Course Metrics Project:
amchp.org/programsandtopics/data-assessment/Pages/LifeCourseMetricsProject.aspx

Life Course Indicators Online Tool:
amchp.org/programsandtopics/data-assessment/Pages/LifeCourseIndicators.aspx

Data availability for life course ACEs indicators

Two of the life course indicators are measures of adverse childhood experiences (ACEs), LC-01 ACEs among Adults Prevalence of ACEs among Children and LC-02 Prevalence of ACEs among Children. LC-01 (adults) uses the Behavioral Risk Factor Surveillance System (BRFSS) as a data source, while LC-02 (children) uses the National Survey of Children's Health (NSCH). BRFSS does not include the 11 question ACE module as part of the core survey but instead as an optional module that states must choose to fund as a part of their surveillance. In 2011/2012, the NSCH included a standard adverse family experiences (AFE) module. NSCH AFE data from the 2011/2012 survey year is available for each state to analyze. Point-in-time estimates for AFEs with optional subpopulation stratification are accessible through the Data Resource Center for Child Health at http://childhealthdata.org/browse/survey.

Are NSCH's AFEs different than BRFSS' ACEs?

Yes, some of the questions are different. In 2008, the Centers for Disease Control and Prevention (CDC) developed an optional 11 question module that covers eight domains of childhood abuse and household dysfunction for states to collect ACE data through BRFSS. Three domains of child abuse are covered by the BRFSS module and include physical abuse, psychological abuse, and sexual abuse. The five domains of household dysfunction covered are substance abuse, household member imprisonment, mental illness, adult violence, and parental separation or divorce. In 2011/2012, NSCH included a nine question AFE module based on the BRFSS ACE module. NSCH removed questions from the childhood abuse category on physical, psychological and sexual abuse and added four additional questions based on an expert panel review of life course stressors in children's lives. The added questions covered perceived discrimination, death of a parent, neighborhood violence, and socioeconomic hardship. Due to the removal of direct physical, sexual, and psychological abuse against a child and the addition of other family stressors, the NSCH module is called an AFE module instead of an ACE module. Figure 1 on page 2 shows a comparison of which questions and domains are covered by both modules and which are unique to one of the modules.

For background information on the ACEs indicators please see the indicator narratives available at:
http://www.amchp.org/programsandtopics/data-assessment/Pages/LifeCourseIndicators.aspx

Figure 1. BRFSS ACE module and NSCH AFE Module by Abuse and Dysfunction Domain

BRFSS (11 Question ACE Module)	NSCH (9 Question AFE Module)	
Household mental illness		Common Factors
Did you live with anyone who was depressed, mentally ill, or suicidal?	Did [child's name] ever live with anyone who was mentally ill or suicidal, or severely depressed for more than a couple of weeks?	
Substance Abuse		
Did you live with anyone who was a problem drinker or alcoholic?	Did [child's name] ever live with anyone who had a problem with alcohol or drugs?	
Household member imprisonment		
Did you live with anyone who served time or was sentenced to serve time in a prison, jail, or other correctional facility?	Did [child's name] ever live with a parent or guardian who served time in jail or prison after [he/she] was born?	
Parental separation or divorce		
Were your parents separated or divorced?	Did [CHILD] ever live with a parent or guardian who got divorced or separated after [child's name.] was born?	
Adult violence		
How often did your parents or adults in your home ever slap, hit, kick, punch or beat each other up?	Did [child's name] ever see or hear any parents, guardians, or any other adults in his/her home slap, hit, kick, punch, or beat each other up?	
Physical abuse		Unique Factors
Did you live with anyone who used illegal street drugs or who abused prescription medications?	Not included	
Before age 18, how often did a parent or adult in your home ever hit, beat, kick, or physically hurt you in any way? Do not include spanking.	Not included	
How often did a parent or adult in your home ever swear at you, insult you, or put you down?	Not included	
Sexual abuse		
How often did anyone at least 5 years older than you or an adult, ever touch you sexually?	Not included	
How often did anyone at least 5 years older than you or an adult, try to make you touch them sexually?	Not included	
How often did anyone at least 5 years older than you or an adult, force you to have sex?	Not included	
Neighborhood violence		
Not included	Was [child's name] ever the victim of violence or witness any violence in [his/her] neighborhood?	
Racism		
Not included	Was [child's name] ever treated or judged unfairly because of [his/her] race or ethnic group?	
Economic hardship		
Not included	Since [CHILD] was born, how often has it been very hard to get by on your family's income, for example, it was hard to cover the basics like food or housing? Would you say very often, somewhat often, not very often, or never?	
Death of a parent		
Not included	Did [child's name] ever live with a parent or guardian who died?	

What other differences should be considered between NSCH and BRFSS when analyzing LC-01 and LC-02?

Although both Life Course Indicators LC-01 and LC-02 measure ACEs, they focus on different populations (adults vs. children) and use different data sources (NSCH vs. BRFSS) so they are not interchangeable.

Methodology:

There are methodological differences between the NSCH and BRFSS that may cause differences in the data collected on ACEs. A major difference between NSCH and BRFSS is that BRFSS surveys adults 18 years or older about their *own* health rather than a *child's* health. When dealing with sensitive questions like the one's asked in both the BRFSS ACEs module and NSCH AFEs module, there may be differences in how an adult answers questions about their own past and how an adult answers these questions about a child currently in their household. Differences noted in prevalence of ACE in BRFSS and NSCH may not be due to changes in actual prevalence of ACEs between generations but differences in how these questions are being answered in each survey.

Sample analyses that can be performed with ACE & AFE data:

The analyses that can be performed with NSCH and BRFSS data differ due to differences in population surveyed and data availability.

NSCH

- Point-in-time prevalence estimate for AFE among children
- Point-in-time prevalence estimate for two or more AFE among children
- Assess cumulative numbers of AFE among children with AFE
- Compare prevalence to other states or the national prevalence
- Stratify prevalence of AFE by subpopulations
- Examine associations between multiple child and family risk factors and AFE

BRFSS (if module was performed in your state)

- Point-in-time prevalence estimate for three or more ACEs among adults
- Compare prevalence to other states that also completed the BRFSS ACEs module
- Stratify prevalence of three or more ACEs by subpopulations
- If multiple data years are available, change in prevalence of reported ACEs over time
- Examine associations between multiple adult health outcomes and ACEs (obesity, hypertension, chronic diseases, etc)
- Examine associations between multiple health risk behaviors and ACEs (smoking, binge drinking, drug use, nutrition, etc)
- Examine the cumulative effect of ACEs on health outcomes and risk behaviors

Criticisms of ACE associations with health risk behaviors and health outcomes

Some critics of associations found between exposure to multiple ACEs and health outcomes or risk behaviors in BRFSS point out it may be the physical, sexual, and psychological abuse ACEs that are driving the associations and that the household dysfunction stressors may not be statistically influential. If household dysfunction stressors are of particular interest, you can analyze child abuse ACEs and household dysfunction ACEs separately to assess the significance of both types of ACEs. The Utah Department of Health performed such an analysis that is highlighted below as an example of ACE data in public health practice.

ACE data in Public Health Practice

Many state health departments are aware of ACEs, but the next steps in using ACE data may be unclear. Below are two examples of ACE data being used in public health practice.

Utah Department of Health – Direct and Environmental ACEs

Utah included the ACE module in their 2013 BRFSS, which created an opportunity for the Violence and Injury Prevention Program at the Utah Department of Health to examine the adjusted effects of direct and environmental ACEs on certain health risk behaviors and outcomes. They defined direct ACEs as childhood exposure to physical, sexual, or verbal abuse and environmental ACEs as childhood exposure from household adults to mental illness, substance abuse, divorce,

incarceration, or witnessing domestic violence. Analysts examined the association between exposure to ACEs and health risk behaviors including current smoking, binge drinking, heavy drinking and health outcomes including "fair or poor health," lifetime depression, and obesity. They found direct ACEs were positively associated with fair or poor health status, depression and obesity, while environmental ACEs were positively associated with current smoking, binge drinking, fair or poor health, and lifetime depression. Individuals with both direct and environmental ACEs had greater odds for all risk behaviors and health outcomes compared to those who were exposed to only environmental ACEs or only direct ACEs. Next steps for the analysis may be to further assess opportunities for behavioral health interventions for children exposed to environmental ACEs but not direct ACEs. The positive association between environmental ACEs with current smoking, binge drinking, fair or poor health, and lifetime depression could be indicative of fewer interventions reaching children exposed to environmental ACEs than those exposed to direct ACEs. The Utah Department of Health ACE research will be featured in an upcoming *Health Status Update*, a newsletter that goes to the governor and is printed in the Utah Medical Association bi-monthly newsletter. A full summary of this ACE work in Utah is available at http://health.utah.gov/opha/publications/hsu/1507_ACE.pdf. For more information please contact Michael Friedrichs at mfriedrichs@utah.gov.

Vermont Departments of Health & Mental Health – NSCH AFE Analysis

In Vermont (VT), Senior MCH Epidemiologist, Laurin Kasehagen, performed an analysis of VT children with adverse family experiences (AFE) using NSCH data and created a presentation for the Vermont state legislature ACEs committee. The VT AFE analysis showed 13% of children (<18 years) have 3 or more AFE. The 4 most common AFEs in VT are living with someone who is very depressed, mentally ill, or suicidal, living with someone who has a drug or alcohol problem, not having enough food or stable housing, and divorced/separated parents. Children in VT exposed to 3 or more AFE have higher odds of low resilience and flourishing and failing to engage in school. The presentation uses data visualizations and VT specific statistics to effectively communicate the prevalence of AFE in VT and their impact on physical health, mental health and health risk behaviors. The presentation has been modified into a shorter framework for the Vermont state public health grand rounds and community presentations. This presentation also includes relatable social math examples such as, 1 in 8 children in VT have experienced 3 or more types of AFE, which equates to about 800 classrooms of 20 children. VT identified 3 possible next steps from their analysis: (1) identify kids with high risk of AFE, (2) identify the best setting for interventions and prevention, and (3) leverage existing programs such as evidence-based home visiting to reduce exposure to AFE.

Iowa Department of Health & University of Kansas – Lemonade for Life

Associations between poor health outcomes and ACEs can seem deterministic; however, some states are working on interventions that help families build an understanding of ACEs, resiliency and healthier futures.

The Iowa Department of Public Health partnered with The University of Kansas to develop the Lemonade for Life curriculum, which can be used with family support professionals, MCH leaders, and pediatricians to translate ACE research into practice strategies to help families understand past adverse experiences and develop resiliency plans for sustainable change. The Lemonade for Life curriculum includes a process and tools for having discussions with parents about ACEs, administering an ACE questionnaire and creating a plan with next steps for the family. The curriculum was piloted by 12 family support workers, mostly in home visiting programs, who received training on the Lemonade for Life curriculum tools and had 90 days to use the curriculum with at least eight clients. The initial results of the pilot indicated the resources and materials in the curriculum were successful in strengthening client engagement and enabling clients to better understand the impact ACEs had on them and could have on their children. To access further information about Lemonade for Life, please visit the Web page at http://www.iowaaces360.org/lemonade-for-life.html or access the AMCHP 2015 Annual Conference Presentation here.

Examples of additional ACE analyses and resources from various states

- Adverse Childhood Experiences in Wisconsin: Findings from the 2010 Behavioral Risk Factor Survey
  Produced by Children's Trust Fund, Children's Hospital and Health System, Child Abuse Prevention Fund
- Adverse Childhood Experiences in Minnesota: Findings & Recommendations Based on the 2011 Behavioral Risk Factor Surveillance System - Executive Summary
  Produced by the Minnesota Department of Health

- Adverse Childhood Experiences in Minnesota: Findings & Recommendations Based on the 2011 Behavioral Risk Factor Surveillance System – Full Report
  Produced by the Minnesota Department of Health
- Adverse Childhood Experiences among New York's Adults: A Research Brief on Child Well-Being
  Produced by the Council on Children & Families funded in part by the Annie E. Casey Foundation and New York Head Start Collaboration Project

SAS Code for LC-01 and LC-02

SAS Code for LC-01 Adverse Childhood Experiences among Adults

```
/**Import data**/
Libname BRFSS11 XPORT 'N:\jfarfalla\BRFSS\2011\LLCP2011.xpt';

Libname DATAOUT2 'N:\jfarfalla\BRFSS\2011\Data Set';

/**2011 BRFSS Data**/
PROC COPY IN=BRFSS11 OUT=DATAOUT2;
RUN;

Data BRF2011;
Set Dataout2.llcp2011;
Run;

/*Create data set with only the 5 states that did the module to increase processing
speed*/
Data dataout2.ACE;
Set dataout2.llcp2011;
WHERE _State in (27, 30, 50, 53, 55); /*Minnesota, Montana, Vermont, Washington,
Wisconsin - all states that performed the module in 2011*/
Run;

/*Create a sum variable for ACE - Create a variable for 3+ ACE*/

Data dataout2.AdCE;
set Dataout2.ACE;
If ACEDEPRS EQ 1 Then ACE1=1; /*Live with anyone depressed, mentally ill, or suicidal?*/
Else ACE1=0;

If ACEDRINK EQ 1 Then ACE2=1; /*Live with a problem drinker/alcoholic*/
Else ACE2=0;

If ACEDRUGS EQ 1 Then ACE3=1; /*Live with anyone who used illegal street drugs/abused
prescriptions*/
Else ACE3=0;

If ACEPRISN EQ 1 Then ACE4=1; /*Live with anyone who served time in prison or jail*/
Else ACE4=0;

If ACEDIVRC EQ 1 Then ACE5=1; /*Were your parents divorced or separated*/
Else ACE5=0;

If ACEPUNCH EQ 2 OR ACEPUNCH EQ 3 Then ACE6=1; /*How often did your parents beat each
other?*/
Else ACE6=0;

If ACEHURT EQ 2 OR ACEHURT EQ 3 Then ACE7=1; /*How often did a parent physically hurt you
in any way?*/
Else ACE7=0;
```

```
If ACESWEAR EQ 2 OR ACESWEAR EQ 3 Then ACE8=1; /*How often did a parent swear at you?*/
Else ACE8=0;

If ACETOUCH EQ 2 OR ACETOUCH EQ 3 Then ACE9=1; /*How often did anyone ever touch you
sexually*/
Else ACE9=0;

If ACETTHEM EQ 2 OR ACETTHEM EQ 3 Then ACE10=1; /*How often did anyone make you touch
them sexually?*/
Else ACE10=0;

If ACEHVSEX EQ 2 OR ACEHVSEX EQ 3 Then ACE11=1; /*How often did anyone ever force you to
have sex*/
Else ACE11=0;

ACETOTAL= Sum(ACE1,ACE2,ACE3,ACE4,ACE5,ACE6,ACE7,ACE8,ACE9,ACE10,ACE11);

If ACETOTAL GE 3 Then R122=1;
Else R122= 0;


Run;
Proc Format;
Value _State
       27 = "Minnesota"
       30 = "Montana"
       50 = "Vermont"
       53 = "Washington"
       55 = "Wisconsin";

Value YesNo 1="yes"
            2="no";

Value R122R 1="yes"
            0="no";

Run;

/*Estimate for each state*/
Proc sort data=dataout2.AdCE;
By _State;
Run;

proc freq data=dataout2.AdCE;
Table R122;
By _State;
Weight _LLCPWT;
Format _State _State. R122 R122R.;
Run;
```

SAS Code for LC-02 Prevalence of ACEs among Children

The following code is available through the 2011-2012 National Survey of Children's Health: SAS Code for Data Users resource[1]

```
Data ADVRSE;
Set NSCH.Data;
ACEincome2_11 =.;
if ACE1 in (1,2)then ACEincome2_11 = 1;
if ACE1 in (3,4)then ACEincome2_11 =0;
if ACE1 in (6,7,.M,.P)then ACEincome2_11 = .M;
```

```
label ACEincome2_11 = "How often has it been hard to get by on your family's income -
hard to cover basics like food or housing?";
ACEdivorce_11 = ACE3;
label ACEdivorce_11 = "Child lived with parent who got divorced/separated after he/she
was born";
ACEdeath_11 = ACE4;
label ACEdeath_11 = "Child lived with parent who died";

ACEjail_11 = ACE5;
label ACEjail_11 = "Child lived with parent who served time in jail after he/she was
born";
ACEdomviol_11 = ACE6;
label ACEdomviol_11 = "Child saw parents hit, kip, slap, punch or beat each other up";
ACEneighviol_11 = ACE7;
label ACEneighviol_11 = "Child was a victim of violence or witness violence in his/her
neighborhood";
ACEmhealth_11 = ACE8;
label ACEmhealth_11 = "Child lived with anyone who was mentally ill or suicidal, or
severity depressed for more than a couple weeks";
ACEdrug_11 = ACE9;
label ACEdrug_11 = "Child lived with anyone who had a problem with alcohol or drugs";
ACEdiscrim_11 = ACE10;
label ACEdiscrim_11 = "Child was ever treated or judged unfairly because of his/her race
or ethnic group";
array recode8 {*} ACEdivorce_11 ACEdeath_11 ACEjail_11 ACEdomviol_11 ACEneighviol_11
ACEmhealth_11 ACEdrug_11 ACEdiscrim_11;
do i= 1 to dim(recode8);
if recode8(i) in (6,7,.P,.M)then recode8(i)=.M;
end;

drop i;
AFESct_11 = 0;
if ACEincome2_11 = 1 then AFESct_11 + 1;
if ACEdivorce_11 = 1 then AFESct_11 + 1;
if ACEdeath_11 = 1 then AFESct_11 + 1;
if ACEjail_11 = 1 then AFESct_11 + 1;
if ACEdomviol_11 = 1 then AFESct_11 + 1;
if ACEneighviol_11 = 1 then AFESct_11 + 1;
if ACEmhealth_11 = 1 then AFESct_11 +1;
if ACEdrug_11 = 1 then AFESct_11 +1;
if ACEdiscrim_11 = 1 then AFESct_11 +1;
/*if ACEincome2_11 =.M and ACEdivorce_11 = .M and ACEdeath_11 = .M and ACEjail_11 = .M
and
ACEdomviol_11 = .M and
ACEneighviol_11 = .M and ACEmhealth_11 = .M and ACEdrug_11 = .M and ACEdiscrim_11 = .M
then
AFESct_11 = .M;*/
if ACEincome2_11 in (6,7,.M,.P) and ACEdivorce_11 in (6,7,.M,.P) and ACEdeath_11 in
(6,7,.M,.P)
and ACEjail_11 in (6,7,.M,.P)and ACEdomviol_11 in (6,7,.M,.P) and ACEneighviol_11 in
(6,7,.M,.P)
and ACEmhealth_11 in (6,7,.M,.P)and ACEdrug_11 in (6,7,.M,.P)and ACEdiscrim_11 in
(6,7,.M,.P)then AFESct_11 =.M;
label AFESct_11 = "Number of Adverse Family Experiences for child, of 9 asked about";
ind6_11_11 =.;
if AFESct_11 = 0 then ind6_11_11 =0;
if AFESct_11 = 1 then ind6_11_11 = 1;

if AFESct_11 > 1 then ind6_11_11 = 2;
if AFESct_11 = .M then ind6_11_11 = .M;
```

```
label ind6_11_11 = "Indicator 6.11: Number of Adverse Family Experiences for child, of 9
asked about";

proc format;
/*ACEincome2_11*/
value ace2income
0 = 'Never/Rarely hard to get by on family income'
1 = "Somewhat Often/Very Often hard to get by on family income"
.M = "DK/Ref/Missing in error/Partial interview";

/*ACEdivorce_11 ACEdeath_11 ACEjail_11 ACEdomviol_11 ACEneighviol_11 ACEmhealth_11
ACEdrug_11 ACEdiscrim_11*/
value ace
0 = "Child did not experience the Adverse Family Experience"
1 = "Child experienced the Adverse Family Experience"
.M = "DK/Ref/Missing in error/Partial interview";

/*AFESct_11*/
value afecount
0 = "Child experienced no adverse family experiences, of 10 asked about"
.M = "DK/Ref/Missing in error/Partial interview to all 9 AFES";

/*ind6_11_11*/
value acemore
0 = "Child experienced no adverse family experiences, of 9 asked about"
1 = "Child experienced one adverse family experience"
2 = "Child experienced two or more adverse family experiences"
.M = "DK/Ref/Missing in error/Partial interview to all 9 AFES";
Run;

Proc freq data= ADVRSE;
Table ind6_11_11;
Weight NSCHWT;
Format ind6_11_11 acemore.;
Run;
```

References

1.) 2011/12 National Survey of Children's Health. Child and Adolescent Health Measurement Initiative (CAHMI), "2011-2012 NSCH: Child Health Indicator and Subgroups SAS Codebook, Version 1.0" 2013, Data Resource Center for Child and Adolescent Health, sponsored by the Maternal and Child Health Bureau. **www.childhealthdata.org**.

To learn more, please contact Caroline Stampfel, associate director, epidemiology and evaluation, at cstampfel@amchp.org or (202) 775-0436.

Association of Maternal & Child Health Programs
2030 M Street, NW, Suite 350
Washington, DC 20036
(202) 775-0436 ▪ www.amchp.org