[Molly Lowe]: Thank you, everyone. Once again, my name is Molly Lowe with SAMHSA’s Center for the Application of Prevention Technologies. Welcome to the webinar on Trauma and Adverse Childhood Experiences: Implications for Preventing Substance Misuse. We are excited to present this webinar for SAMHSA’s Center for Substance Abuse Prevention staff members, and we are looking forward to having a conversation with you virtually about this work and how it impacts substance misuse.

Once again, this training was developed under SAMHSA’s Center for the Application of Prevention Technologies task order, and you will see our objectives for the webinar today. By the end of the webinar, you should be able to describe SAMHSA’s comprehensive approach to trauma; identify some of the mechanisms by which Adverse Childhood Experience's (ACE) data influence substance use and misuse and related behavioral health problems; understand the cumulative impact of those ACEs on use in the context of other stressors; and explore the importance of focusing on strength and resilience, coming from that protective approach, when developing ACEs-informed prevention efforts.

Resources are available below for download or in the link that David Castaneda has presented in the chat box. We have the slides (also sent out to all registrants this morning); a handout on ACE-attributable outcomes; a handout on trauma and substance use information and resources, which includes resources from SAMHSA's CAPT, as well as information on SAMHSA's trauma-related technical assistance centers and other resources on ACEs data; and SAMHSA's concept of trauma and guidance for a trauma-informed approach, as that serves as the foundation for this presentation and work.

I'm so pleased to welcome our presenters today. As I said, I'm Molly Lowe with SAMHSA’s Center for the Application of Prevention Technologies, and I oversee our national and cohort-based services here within the CAPT, but I'm pleased to welcome our very experienced and esteemed presenters today and introduce you to them:
Tenly Biggs, who is a public health advisor in the community support program's branch of SAMHSA’s Center for Mental Health Services. She has worked on primary and behavioral health care integration and trauma-informed care and behavioral health disparities. During her tenure as a presidential management fellow, she worked on developing the behavioral health disparities strategy for SAMHSA’s Office of Behavioral Health Equity, as well as on the Peace Corp volunteers sexual assault hotline policy at the Peace Corp headquarters. We are very pleased to have Tenly presenting today on SAMHSA’s work in this area.

We also have Dr. Laura Porter, who is a CAPT associate and co-founder of ACE Interface, a company that provides education, analysis, process design, facilitation, and other products designed to help prevent adverse childhood experiences and improve well-being. She has more than a decade of experience leading successful state-wide implementation of ACE study concepts, and she also has experience in analyzing and disseminating surveillance and archival data to support the decision-making in designing and facilitating processes to improve public health safety and productivity.

And then last, but certainly not least, we have Vicki Turner, who is the National Prevention Network representative and Director of the Prevention Resource Center House within the Montana State Department of Public Health and Human Services. She has worked in the field of prevention for 17 years, and she serves as staff to the Montana Interagency Coordinating Council for State Prevention Programs, whose goal is to coordinate a state-wide system of prevention towards reducing youth risk behaviors, with a specific eye on addressing and curbing underage drinking, illicit drug use, and prescription drug misuse and abuse; and she has a strong background in integrating adverse childhood experiences data into their state prevention efforts, which we will hear more about shortly.

So, with that, I'm going to go ahead and turn it over to our first presenter, Tenly Biggs.

[Tenly Biggs]: Thank you, Molly. That was a wonderful introduction, and I'm going to speak pretty quickly, so if you guys have questions, you know, please if you can ask them after or even email me.

So, as some folks have heard of the SAMHSA Trauma and Justice Strategic Initiatives (SIs), this is part of six SIs that we have in the new leading change document 2.0, and the Trauma and Justice Strategic Initiative is to implement and study a trauma-informed approach throughout health, behavioral health, and related systems; create capacity and system change in the behavioral health and justice systems to prevent the entry or deeper involvement of individuals with mental, substance use; and co-occurring disorders into the justice system; and support reentry into the community to further public safety and personal recovery. Overall, the goal is to reduce the impact of disasters on the behavioral health of individuals, families, and communities. So, there are three approaches to the trauma and justice SI.

Okay, so within the leading change document, you know, we have various goals within goal 3, and so goal 3.1 is to implement and study a trauma-informed approach throughout health, behavioral health, and the related system. You'll see these four buckets. I'm not going to go into detail, but the one that we will be talking about today is SAMHSA's Comprehensive Public Health Approach to Trauma, and it's to understand the integration of trauma strategies for implementing a trauma-
informed approach across all of SAMHSA and all our federal agencies and public health sectors. And so just to kind of give a quick example, when we look at our public health approach to trauma, we are looking at the very beginning of a public health approach, early identification and screening, prevention, and treatment and then recovery, and we are looking at this across the lifespan. So from birth to older adults and aging, we are looking at all these different areas and how our program in SAMHSA intersects with this, as well as our partner and sister agencies. Some of you on the phone have probably been involved in different parts of these four categories. I know when you look at the third one, which is on SAMHSA's Trauma Technical Assistance Coordination Strategy, we look internally here at SAMHSA concerning our training and TA Centers and we have the National Center for Trauma-Informed Care, the National Traumatic Stress Network, the CAPT, etc. We have all these various TA centers that have emphasized trauma-informed care and trauma-informed approaches.

Back in 2014, after two years of going through public comments and getting input from experts in the field to develop this concept of trauma, SAMHSA published this document, which is a handout that Molly referenced, to help people understand the shared meaning and definition of trauma and the trauma-informed approach. We use this as the foundation for all sectors, whether it's child welfare, military families/veterans, the Department of Justice, the Department of Ed., etc., we are trying to have folks look at what we mean by trauma and use it as a way to build their own concepts. It's a way to measure and provide training and technical assistance. In this particular document, you can understand SAMHSA's concept of trauma, the three "E"s: Individual trauma results from the event if there is an event or set of circumstances that is experienced by the individual as physically or emotionally harmful or lift-threatening and that had lasting adverse effects on the individual's functioning and mental, physical, social, emotional, or spiritual well-being. So, basically, individual trauma comes from an event they experience and the effect and how that impacts a person's overall health and well-being.

The other takeaway is the trauma-informed approach, and we use the four "R"s. A trauma-informed program, organization, or system should do the following: They should realize the widespread impact of trauma and understand potential paths for recovery. We should recognize the signs and symptoms of trauma, not only just among your clients, but among family, your staff, and others involved with the system. We hear so much about trauma that is within the system that is supposedly trauma-informed, but instead they are actually retraumatizing their staff or their client, and so we look at the responding to trauma and how do you integrate that whether it's your policies, procedures, practices, training and of course being able to resist for traumatization.

Not only is it important to understand the four "R"s and the three "E"s, but you need to think about what are the key principles that make an organization or program trauma-informed. The key principles are safety; trustworthiness and transparency; peer support; collaboration and mutuality; empowerment, voice, and choice; and cultural, historical, and gender issues. All of these principles should be embedded in an organization or program, your policies, your governance, your leadership. Are they putting money towards, trauma-informed care training for staff, vicarious trauma, etc.? On page 11 there is detail about these values and principles, and on page 12 there is information about the ten domains. In the paper there are questions that organizations can ask themselves to
determine if they are meeting those elements of trauma-informed care. For example, “do I have policies and procedures in place regarding ABCDE?” It is a way for folks to measure how far along they are regarding being in some of these domains. And, of course, they can use any of this information to tailor it to their specific area. So, again, you may not use all of it but can use some pieces of it.

[Laura Porter]: This is Laura Porter. Thank you so much for having me and hosting this webinar. We are going to start out by talking a little bit about this issue of the trauma happens in the context of people's lives. It happens in the context of their daily relationships with one another and also in the context of the communities, their cities and counties, and the nation as a whole. We need to be thinking about context all the way along as we are developing strategies for reducing trauma. So that's one of the factors that we should keep in mind as we walk through, and let's make sure we get questions about context all the way through because a lot of this slide presentation is about the data itself, but there are plenty of discussions we can and probably should have about the context for presenting adverse childhood experience.

Here is the hypothesis that was the foundation of the adverse childhood experience study. This is the “Adverse Childhood Experience Pyramid” as the co-principal investigators named it. These co-principal investigators are Dr. Robert Anda, who was working at the Center for Disease Control and Prevention in Atlanta, and Dr. Vincent Foletti, who was working at Kaiser Permanente in charge of preventive medicine in San Diego. These two scientists, both award-winning doctors and tremendous leaders in their fields, had been investigating various kinds of fields, but when they came together, they realized that they were developing a common view of what might be the origins of the disease and social problems that they had been studying for many years.

At the time of the ACE study's design, almost all preventative research was about the top three rungs of this pyramid, and even today most prevention research literature is still about the top three rungs of this pyramid. We identify risk, and our purpose in identifying risk factors is that we would reduce risk and thereby reduce disease, disability, social problems, and early death. But a risk is not random in the population, and so Drs. Foletti and Anda theorize that something must be driving risk, so they developed this hypothesis about adverse childhood experience (ACE), perhaps the shaping social, emotional, and cognitive development, and that that was driving risk behaviors and other risk factors. This is a whole life perspective, a life course perspective from conception to death, but since the ACE study, we have filled the scientific gaps that are referenced with the two blue arrows on the right side of this graphic. When the ACE study was first formed, we didn't yet have the neuroscience or epigenetic evidence that explained the pathway by which adverse childhood experiences would be shaping social, emotional, and cognitive development and also increasing risk in the human population. But now neuroscientists all over the world have broad agreement that experience during development creates adaptation in the development of brain regions. And the reason for this is that brains develop sequentially, and they bring onboard, at sensitive ages and stages, the kinds of capabilities that we need to take the step in our development. So early in childhood, our brains are developing the kinds of capabilities we need for language development, for the beginning of a memory formation, and for sequencing the physical development of our bodies, etc. But, in middle childhood, we have a second sensitive developmental period that's laying the groundwork for our
emotional regulation, our perceptions of stress and our ability to handle stress, and other key factors. In adolescence, right around puberty, a third sensitive developmental period is also shaping development. So we have multiple sensitive developmental periods in which specific brain regions and the connections among brain regions are influenced by our experience. Essentially, our brains are experience-dependent, and our adaptations prepare for the world that our brains are anticipating we will be living in.

I don’t know about you, but when I went to college, which was a while ago, I was trained that certain adaptations were actually maladaptation—difficulty with emotional regulation, vulnerability to substance use, etc. But these are maladaptations, but now neuroscientists and epigenesists have wide agreement that these are changes that happen in our development and the response to experience our adaptive changes. They prepare the species to survive if, in fact, we need to live in a dangerous environment. Actually, we are very fortunate because we don’t live day-to-day in a tremendously dangerous environment, and so we are working as a society to make sure that regardless of people childhood experience, whether they live in a very safe environment or a very dangerous environment, that we can build the kind of society that can support everyone and fully participating community-wide and fully able to give their gifts because the community context is welcoming of a full range of kinds of adaptations that occur because of adverse childhood experiences.

Dr. Vincent Foletti and Dr. Robert Anda proceeded to develop the largest public health study of its kind. Over 17,000 participants in the ACE study agreed to answer questions about their health history and also about their childhood experiences. These were Kaiser Permanente members. They had some of the best health insurance in the world. Mostly they were middle class and upper middle class-employed, well-educated individuals living in the San Diego area, which is a mostly Caucasian population, and a really common question when we are talking about the ACE study is “why did the scientists choose to do the study on a Caucasian population?”, and the truth is that wasn’t the choice they made. They were making the choice about the study population simply based on Kaiser Permanente’s interest and willingness to host such a very large study, and it just happens that the San Diego population is skewed in the direction of higher-income, Caucasian, employed, and well-educated adults. But it turns out that that study population has been incredibly useful because it tells us more about how common adverse childhood experiences are in the population.

The ACE study considered ten categories of adversity that occur during development during the childhood years. They looked at three kinds of abuse: psychological, physical, and sexual. They considered two kinds of neglect, emotional and physical, and they considered the five indicators of powerful dysfunction. Their thinking was that these were household experiences that would create stress in the life of a child. Now we understand that there’s a threshold of stress that we need to pay attention to from a neuroscience perspective, that we have a biological response to the kinds of stressors that create the fight/flight/freeze response, the danger perception, and that during development human beings ideally only have that kind of fight/flight/freeze danger response for about twenty minutes at a time and then they would have an adult present who could get them to safety and who then who could hold them or rock them or use a variety of techniques to help them calm back down. And in the fight/flight/freeze, that danger response, our biological response to
stress, the body is flooded with stress hormones and neurotransmitters that help us react to the
danger and help us be strong enough and have the kind of stamina and quick reactions to keep us
safe. But, unfortunately, one of those stress hormones is cortisol. Cortisol, when it’s at high levels in
the bloodstream and the brain, can be toxic to developing brain cells. So when people are
experiencing highly stressful kinds of situations, either episodically (so they never know when the
next danger is coming) or for long durations, that means their biological stress response, the levels
of cortisol and other stress chemicals, are affecting brain development and preparing that person to
live in what could be a dangerous world for the rest of their life.

These ten indicators of adversity during childhood are probably not the only kinds of experiences
that actually shape brain development. We know from the scientists that when children are in these
high alert biological states for long periods of time, whether it's from these ten categories or from
things like witnessing violence in the neighborhood or being bullied, etc., we also see people shaped
in their neurology and also epigenetically to that danger during development. But these ten
categories are incredibly important, and we will talk about their predictive value for the kinds of work
we do in this presentation.

The first finding is that these adverse childhood experience categories are extremely common.
Among these 17,000 participants, 11% had experienced psychological abuse, 28% physical abuse,
15% emotional abuse and on and on. Each of these independently is powerful, but together they
form a phenomenally predictive power over health and well-being through the life course. More than
1 in 4 of the 17,000 participants experienced a household member who was abusing substances
while they were growing up.

Looking at this data, the ACE study scientists realized that ACEs almost never come in singles.
These ten categories typically come in clusters. Although those clusters don’t have a particular
pattern, for every person in the original 17,000-plus participants that had one of these categories of
adverse childhood experience, 87% had another category. Therefore, they thought it makes sense
to be studying the accumulation of these categories of adversity in people’s lives during
development. And so we created a very simple way of looking at accumulation. They developed the
ACE score where each category of experience would be one point. For example, if a person has
experienced none of these, they will have an ACE score of 0. If someone experienced five of these
categories, they would have an ACE score of 5, and so on all the way up to an ACE score of 10.

The ACE score is very predictive of mental, physical, behavioral, social, and productivity kinds of
problems throughout the life course. And one of the ways that we, in epidemiology, consider whether
a factor is causing a result is whether there is a strong graded relationship between the disease
agent and the prevalence of the disease and the population. So, in this case, the higher the ACE
score, the higher the percentage of the population with health or social problems – a classic causal
relationship. There are actually nine tests in epidemiology for inferring cause, and the ACE study
meets all nine of those tests. We use this graded relationship because it creates great visuals and
people can understand more about how powerful ACEs are through this particular mechanism.

So we know that ACEs are predictive of many different aspects of substance use and misuse of a
population. ACEs are predictive of early initiation of alcohol use and continuing problem drinking into
adulthood. ACEs are predictive of increased likelihood of early initiation of tobacco use and then continued tobacco use throughout adulthood and nicotine-related disease. ACEs are also predictive of prescription drug use and misuse and lifetime illicit drug use. In fact, the two highest correlations that we see in this study are between ACEs and suicide risk and between ACEs and illicit drug use.

I'll show you some of these dose response or strong graded relationship kinds of graphs. Along the bottom here the horizontal access is the ACE score from 0 to 1 to 2, 3 and then the gold bars are people with an ACE score of 4 or more. ACEs are predictive at the population level, so each of these bars represents a group of people with an ACE score of -- in the case of the gold bars, with an ACE score of 4 or more. ACEs are not predictive at the individual level, so we want to make sure we are continuously using an ACE study regarding population risk but not making judgments about whether or not an individual with a high ACE score has a particular problem because ACEs won't predict an individual response. If we had more time for the brain science, I could explain more about that.

A common question is about each category and whether one has a higher effect than another on the child, or if they are co-occurring, how does that impact treatment? What the scientists found from this data is that among the population group, let's say we had 100 people who have experienced physical abuse and 100 people who have experienced emotional abuse, each of those groups would be significantly affected by those experiences, but the group that experienced both physical and emotional abuse (meaning they would have an ACE score of 2) would have more significant effects than either of the other groups with an ACE score of 1. We did see some differences in the kinds of effects that the experiences had, but the most important and most significant findings that they had was that the accumulation of multiple kinds of adversity is predictive of the outcomes that we see. And brain scientists explain that because there are three factors that drive outcome from experience during childhood. One is the age at which adverse experience is occurring in someone's life due to the sequential development of brains and brain regions having sensitive developmental periods where they are extra responsive to experience. The second is gender. Girls and boys respond differently at various ages and stages to experiences. And the third is the type of experience, and so when we work with a mix of variables, then it makes sense that two different types of experience are possibly happening at different ages and stages in a person's life would have more effect than one type of experience.

This chart shows us the dose-response relationship. The classic stair-steps shape represents the relationship between ACE score and the risk and the population for, in this case, starting to use alcohol at age 14 or younger. You can see the higher the ACE score, the higher the risk and the population for beginning drinking very young. There is more than four-fold increase in risk between people with ACE scores of 0 and people with ACE scores of 4 or more. We also see that same pattern for starting to drink in the ages 15 to 17.

We also see the relationship between ACEs and illicit drug use. There is more than a ten-fold increase in the risk of starting illicit drug use at age 14 years or younger. Neuroscientist researcher, Dr. Martin Piescher from Harvard and McLean Hospital, says that when we see regular drug use at age 12 or younger we are very likely to see trauma in that person's history. So, this early onset of illicit drug use should be a big red flag, and when we see large groups of people in a particular community starting to initiate drug use so young, we are probably seeing an indicator of trauma.
going on in that community, but also, because early onset actually is also shaping brain
development and shaping the way the brain provides reward, reinforcement, and positive feelings in
life, they are also shaping that population’s vulnerability for mental health challenges.

And this is the same kind of graphics where we see ACE scores increasing, almost doubling the risk
of heavy drinking: a five-fold increase in becoming an alcoholic, associated with ACE scores and
then this interesting finding that people with higher ACE scores are more at risk for marrying an
alcoholic. ACES are also shaping our relationships and our ability to perceive danger coming in our
lives, and so we see people with higher ACE scores being more vulnerable to difficult relationships,
relationships with difficulties like alcoholism, violence, mental health challenges, and more, and that
is a part of what we are concerned about is creating community context in which the social networks
around people get strong enough that they can be protective so that relationships get healthier and
healthier over time. And that context is critical because these changes that have occurred are
changes in the development of the brain and epigenetic markers, and so one of the strongest ways
that we can provide protection and resilience is through a strong and healthy social network around
people who have experienced high levels of adverse childhood experience.

Here we see the relationship between ACEs and illicit drug use. And here are some outcomes
associated with high ACE scores in Washington. We’ve also given you a handout that has more
detail about this. ACEs are predictive not only of substance abuse and mental health challenges, but
they are also predictive of the rates of all the leading causes of death and disability in our nation,
major diseases like heart disease, diabetes, asthma, cancer, and more. They are predictive of risk
factors for the common diseases and poor health. They are predictive of almost all dimensions of
poor mental health in our society—everything from not being able to get sleep, to depression, to
hallucinations, bipolar disorder, and more. They are also predictive of general health and social
problems. ACEs are highly predicted of homelessness, of injury on the job, of incarceration, and
other factors. And, probably most importantly from a prevention standpoint, is that ACEs are
predictive of risks for intergenerational transmission of ACEs, meaning that people with higher ACE
scores have more risk for, especially those five categories of ACE that are in the household
dysfunction category. And so that strong social network is critical for reducing the risk of
transmission of ACE from one generation to the next.

ACEs are considered to be the most powerful predictor of health. They are considered to be the
most important determinant because they are driving so many different problems and also because
they are driving such a large percentage of each of these problems. In epidemiology, there’s a
standard calculation that’s called population-attributable risk, and that calculation allows us to look at
-- if we imagine that we were able to erase all ACEs from the population, the population attributable
risk calculation tells us how much of a disease or condition would no longer be present in the
population. For this particular graphic, my team developed -- actually Sasha Silvana, amazingly
talented artist and anthropologist, developed right after the Gulf oil spill and we were thinking about
ACEs as an oil spill in the social ecology of our lives and you can see some of the ACE-attributable
related problems around the outside of this pie chart and then the dark gray area in the center
represents the percentage of each of those that is attributable to adverse childhood experience. So,
a third of binge drinking in the population is attributable to ACEs. 36-1/2% of tobacco use; 1 in 5
cases of asthma; 40% of depression; 67% of suicide attempts; 61% of having disturbed, disruptive days where one's mental health kept you from doing usual activities; 67% of life dissatisfaction; 52% of disability interrupted days; almost 56% of anxiety disorders are attributable to adverse childhood experience; 54% of marijuana use. These are huge population-attributable risk numbers. Dr. Anda, when he speaks, says he could have spent his entire career as an epidemiologist and senior researcher at the CDC looking for one kind of variable that was driving 2% of any one of these kinds of challenges in the population, but instead he and Dr. Foletti identified the common driving force of very large percentages of many, many different mental, physical, behavioral, social, and productivity problems in the population.

These population-attributable risk numbers run from 14% all the way 80% depending on which variable we are looking at, but the good news, from a prevention standpoint, is that as we reduce ACE scores from one generation to the next, it's like putting a sponge in the middle of this oil slick. We are going to reduce all of these ACE attributable problems concurrently. There is no other science that we know of today that we can weave into our work. We can weave across sectors and disciplines and develop common language and common approaches that have such a powerful prevention potential for our population, and that's why communities across the nation are just seizing the opportunity to hold this adverse childhood experience study information and its associated sister science (neuroscience epigenetics and resilience) to change the way they are relating to communities and families and to empower parents to take the most powerful public health steps that could be taken in our generation, and that's for parents to reduce the rate of adverse childhood experiences in the next generation.

So, there is a progressive nature to adversity that we are beginning to be able to chart the course through public data sets and be able to see how adversity is unfolding in people's lives from the standpoint of those population data view and also from the standpoint of neuroscience.

Early trauma and stress create these predictable patterns of brain development. People with a lot of trauma and stress might become more hypervigilant, hyper responsive, very quick to anger, very slow to soothe. They might be much more mission-focused and have a hard time picking up ancillary details around them, and they also might experience small amounts of stress as major crises in their lives. And all of these kinds of adaptations to early trauma and stress are helpful for keeping the species alive, but they create difficulty in the lives of individuals. They lead to these difficulties with cognition, and you see some of the cognitive impacts of early traumas and stress in the upper green box. They lead to difficulties with attention and hyperactivity kinds of disorders, and they lead to difficulties with behavior and relationship. One of the challenges that we see among people who have a lot of early trauma and stress is that they have difficulty picking up the social cues in the environment. So, well-meaning children, for example, or adults might be engaged in a relational environment and just not pick up the social cues, so that maybe it's time stop this kind of play and move on to another kind of play, so it's really helpful for all us to develop the habit of verbalizing social cues where everyone has a chance to productively relate with one another in social environments.

These kinds of responses to early trauma and stress increase the risk of early substance abuse and use which we have already shown you, and that combination can lead to special education referral,
failure in school, social relation problems, and being kicked out of school. Interestingly enough, this link is not so much about a person's adaptation to trauma, it's about society's response, and so we end up with a progressive nature of diversity because individuals are normally adapting to stress and trauma, they have changes in the way their brains and bodies are responding to relational environments and warning, etc. And then society is responding to these normal adaptations to trauma and stress by reject and eject policy. We see schools and after-school programs across the nation making changes to policy so that environments are more supportive of kids learning the kinds of skills that they need to stay in school. We see schools instead of using expulsion or using in-house suspensions and special trauma-informed teachers and counselors to work with kids so that we can keep them in school and keep them in healthy relational environments.

This progression leads naturally to adult stressors like people having lower-wage jobs and needing public assistance that leads to higher risk for prison, for pregnancy early in life and it leads to these risks for mental and physical health and substance use and victimization and all of that, again, leads back to the risk for intergenerational transmission of ACEs.

You then should be able to map out the progression of adversity in people's lives if each of these shift risk areas is a great potential for prevention. We can interrupt the transmission of the progression of adversity and think about stopping the progression as powerful prevention because we might not be able to prevent the first ACE, but if we can prevent the ACE score from getting to 10, we will have made a huge contribution to the population's health. It's also true though that, even among people with high ACE scores, if we can prevent society's response doing more harm, we also have done a tremendous prevention of service to the population.

So ACEs have an impact on individuals. It has the biological and epigenetic impacts that we discussed briefly in this webinar, but they also have the psychological and social impact because of the response that society typically has to people who've experienced trauma and adversity during their childhood. And that's one of the really important things to remember is that we may not be able to change the fact that someone's brain has developed differently because of their childhood experience, but we can change our response to that -- those individuals by creating more welcoming environments, reducing the triggers that make them highly stressed, etc.

We've begun to collect adverse childhood experience data in the adult survey, the behavioral risk factor surveillance system in about 27 states now, and we have ACE prevalence from those states. We also started to see the collection of ACE data among children. The National Survey of Children's Health created a separate set of questions that they call adverse childhood experiences, but it's a slightly different list. This list includes separation or divorce (which is in the original ACE data), death (which is not), incarceration of a parent or guardian (which is in the original ACE study list, but in the original ACE study it's anyone in the household), whether the child lives with someone with a mental illness, suicidal or depressed, or the individual in the household has an alcohol or drug problem (those are in the original ACE study), and witnessing violence in the household (a slightly different definition from the original study). And then these last three are not in the original list of ten ACEs: 1. victim of violence or witnessed violence in the neighborhood, 2. suffered racial discrimination, and 3. whether the child's caregiver had found it hard to get by on the family's income. We are learning more about various kinds of adversity and how they interact with human
development. At this point, what is most predictive of health and well-being is the ACE score from the original study, but we see these new studies coming out looking at various kinds of adversity and they learn more and more. Dr. Martin Paschier has developed a new set of questions that asks about the exact age and stage in which adversity occurred, and that is highly predictive of where their mental challenges that hasn't been tested on these other health and social kinds of problems.

We are moving from prediction to prevention. Dr. Rob Adna said what's predictable is preventable, and that's what great about the ACE score is that it's highly predictive and we can now chart the course for the mechanisms are that lead us from ACEs to challenges in people's lives. That means we have new tools for preventing ACEs in the next generation and also for preventing the progress of adversity throughout the life course. Resilience research teaches us that we want to strengthen three protective systems to improve ACE effects and reduce the likelihood of ACEs in the next generation. We want to improve people's capabilities. There are many kinds of capabilities we might want to improve. One of them is self-regulation. We want to improve people's capabilities for communicating with others for having a positive view for developing hope-filled kinds of action. There's a long list of capabilities that are important. Most of our public investments are in building capabilities, but there are two other predictive systems we also need to strengthen. We need to strengthen attachment and belonging in the social and cultural environments that people live and then their family environment. And we also need to strengthen that sphere that's larger than self and family, and that's the sphere of community, culture, and spirituality. Dr. Ann Masten, one of the leaders in resilience research, says that nurturing the healthy development of these three protective systems is our best shot at inoculating the population from the threats of adversity.

We are beginning to hear more about self-regulation. People who have a lot of trauma and adversity during their developmental years may have a very quick response to stress, and that's incredibly helpful for the species to survive; if, for example, there is a tiger going to leap out of the woods, you would want to respond very quickly and you want to notice a small amount of noise or wrestling in the weeds and you would want to respond incredibly quickly with a lot of adrenaline, a lot of cortisol, and the ability to move quickly and mount lots of emotion. But, in our everyday lives, these kinds of stressors can come up, and society expects us to stay calm and in control throughout our day and the environments we work and live. Children who are able to stay calm and in control, meaning they are able to stay regulated under stress, are much more likely to have better school attendance and better engagement in learning. But it's also true that people who have been affected by a lot of adversity might find self-regulation very difficult and they have a biological response to stress that makes dysregulation a more common experience in their life. And, as mentioned earlier, people who grew up where they only had short amounts of stress for 20 minutes at a time and they have an adult that can keep them safe and then rock them, or soothe them, or sing a song, or take a walk, or all these different traditional, actually ancient methods, for reregulation. When that happens over and over and over in a child's life, they regain the ability to reregulate themselves and understand, at a cellular level, how to reregulate after they've been stressed. But a person who has had a lot of adversity in their life is hardwired to stay on high alert for longer periods of time, and they may need to be more intentional about reregulating after they've become in a state of high alert.

Dr. Bessel van der Kolk and several other resilience researchers including Colleen Bas and others
learned about how people build self-regulation skills. Dr. Bessel van der Kolk, who is one of the leaders in trauma-informed care treatment development, says that there are two critical factors that we do concurrently. One is we activate people's social engagement at the same time that we are calming the physical tensions in their body. And this is critical because people who've had a lot of trauma and adversity have been in relational environments where social engagement equaled danger, and so their bodies experienced the physical tension as if that danger were occurring at the moment in their lives. But the way that people create neuro connections is to have a lot of repetition of a new kind of experience. Dr. Bessel van der Kolk says the new experience we want to build is to have social engagement that doesn't trigger these incredible physical tension responses in the body. We do that by promoting community, exercise, and play and by practicing connection with others at the same time that we are using mechanisms for calming physical tensions in the body. For example, in classrooms, teachers can integrate exercise and play with mindfulness moving, breathing, biofeedback, etc. These are powerful mechanisms for helping people build self-regulation skills. Every month new studies are coming out about how we help people with this. It is going to be at the forefront of some of the treatment methods that we will come up in the next ten years.

The second dimension that we want to build is attachment and belonging. We have fewer public investments and attachment and belonging, and those investments tend to be tucked into other kinds of programs. And there is a common kind of discussion in the popular press that if you just had one caring adult you would be much better off. But the literature actually says caring and competent capabilities are nestled together with attachment and belonging. They are connected because our capabilities allow us to attach and belong with others or become a barrier in attachment and belonging with others. One thing that we need to work on is our capabilities to work with people who have difficulty with self-regulation, who have difficulty with picking up social cues, and on and on. We need to develop the capabilities of the prevention professionals and the providers, neighbors, and friends to have strong and positive relationships with people who had lots of stress and trauma during development.

Things that promote belonging: our connections and bonds with parents and caregivers; our positive relationships with competent and nurturing adults; friends or romantic partners who provide a sense of security and belonging; peer helping systems; art, movement, rhythm, and music; learning together; developing ceremonies and rituals. The one thing that I note about this list is many of these include a rhythm of engagement with others, and our society has moved towards having a much more kind of random engagement of people in the public lives. But human beings respond better to a regular, rhythmic, ritualistic, ceremonial ways in the world for thousands of years. That's how people have come together, and we need to get back to promoting a rhythm of engagement and community that allows people to step in whenever they have the ability to step into the community's rhythm and rituals. People who have a lot of adversity may find it difficult to actually participate in the daily life of a community, but they need to know that every month there's an opportunity and they can imagine themselves coming and they can come some of the time. Just imagining oneself belonging in the community ceremonies or rituals or traditions is a part of promoting belonging.

Lastly, we want to strengthen the sphere that is about community, culture, and spirituality. And as
we do that, we are building a stronger environment for people to overcome the effects of stress and trauma in their lives. We've engaged with Vicki Turner, who is our next speaker, and many others. Dr. Rob Anda and I work in at least 26 states to help build a common language in communities across disciplines and sectors so that people can talk about ACEs. ACEs are common, and they are interrelated, they add up in people's lives, and they have a significant impact. But they also create a common language for us to talk about how we have been affected by the experiences we've had in our lives, and that common language can build a stronger community. In fact, when I say to a group I have an ACE score of five, which I do, the interesting thing about the common language of ACEs is people don't know which five. So we can have these conversations about how we have been affected by the experiences in our lives without having to reveal tremendous amounts of personal information. ACEs give us this new way of working together to ameliorate risk and to build a stronger culture and stronger cross-system momentum for prevention and protection in the population.

The protective systems that we are building -- capability, attachment/belonging, and stronger communities of honor, respect, spirituality and culture -- are going to be at the heart of helping one generation to reduce ACE prevalence in the next generation, and that is the strongest, most powerful act that our generation can give for improving health in the future.

I have a couple of questions and then I am going to pass to Vicki: "Is it usual for individual ACEs to block adverse memories for many years and not discuss with anyone?" I wouldn't say it's usual, but it's not uncommon. Human bodies have amazing abilities to navigate life to continue functioning in the face of horrific kinds of experiences, and one of the ways that people navigate life and continue is to block memories and filter sensory information. People with lots of adversity and trauma in their history actually have a different perception of reality, moment by moment, than the person without that adversity. These different mechanisms we have for continuing to live in the face of phenomenal adversity are ways that are helpful to a species but also create challenges because people aren't always able to recall exactly what happened in their life. However, recalling exact memories is less important than being able to reflect on how one is navigating life now and participate in healthy social and peer support environments that allow for healing and recovery to occur.

Another question: "Is this related to the social development theory?" The work regarding risk and protective factors are predictive of healthy youth development, but the ACE scores are more predictive. When we look at the combination of the literature on ACEs and social development theory, we can find a powerful nexus between the two, but there is not a direct link between the two bodies of work.

[Molly Lowe]: Thank you again and we will turn it over now to Vicki.

[Vicki Turner]: Thank you very much for this tremendous opportunity to share how Montana is integrating ACEs and trauma-informed approaches to our overall prevention efforts. I'm thrilled to follow Laura. She leaves lots to think about. I feel very honored.

One of the things I'd just like to point out anytime we have a conversation with those on the East Coast is to remind you how big Montana is. We are the fourth largest state in the US. You can see from the map that in geographic size that we are bigger than Connecticut, Delaware, Rhode Island,
and a few other states combined, but we are very sparsely populated. We have less than a million people. Our economy is agriculture, including wheat, cattle, and sheep. We have natural resources in mining. We have a tourism industry that's pretty hot, and going on right now is our service industry. We have three and a half more times livestock than humans, and we also have seven reservations in our state.

One of the things that Montana did in 2011 was to conduct their own ACE study. We ran the behavior risk factor surveillance system (BRFSS) ACE module in 2011 and then released the results in 2013. This is important for the Department of Public Health and Human Services where I am housed because BRFSS is also in our public health and safety division.

Our Montana results are not much different than what we find in the national population. About 40% of adults have no ACEs in Montana. About 43% have between one and three, and about 17% have four or more. Four or more is a tipping point for many negative health and social outcomes. In Montana, 60% of our adult population has one or more ACEs. We do not have local data, and so we believe that by looking at the national data and Montana’s data and that they are very similar and we use the national data to guide some of our work.

As we began to take a look at the data, we had several opportunities within the Department of Public Health and Human Services to acquire training. Several agencies and programs were starting to take an interest in understanding trauma and its lifelong effects on health, the unintended consequences on our healthcare systems, and to our communities and families. Science and reports were coming to the forefront and training was starting to become available through the CAPT, as well as several of the other training and technical assistance centers that support the different programs in our department to include mental health, Child Family Services and so forth. So, we started in 2013 to understand that the trauma-informed approach should be a top priority in our state agency planning.

Why has Montana taken on in a trauma-informed approach in implementing ACEs training? Within the department’s child abuse neglect programs, or substance use and misuse programs, mental health, suicide, and all of the programs that we provide to our citizens are interwoven. There is shared risk and protective factors when you are looking at substance abuse problems and mental health problems, and we believe with our sparse resources and a limited number of staff that we had to work smarter and think about how to integrate or bring together resources to address some of our most critical health problems in our state.

Throughout these past few years, our Montana legislature hasn’t been too kind when it has come to addressing the problems and services that prevent and treat kids and families with stressors such as abuse, neglect, substance use, and mental health challenges. Through our extraordinary leadership and commitment of our agency director, Richard Opper, we led the effort to bring state level, program level, and community level staff into a small workgroup to take a look at our data and explore opportunities to collaborate and coordinate ways to mitigate the cumulative effects of ACEs on our programs, communities, and families. We believe that cumulative effects impact the cost of care, our budget, and our agency’s bottom line, which is services and programs for our citizens. During this process, we conducted an assessment, and one of the identified needs of staff and our
communities was more training on ACEs and trauma-informed approaches. Together we began working with an agency called ChildWise, which is a nonprofit organization that provides training and resources about child development throughout our state. We are also an affiliate with one of our largest mental health treatment programs for children called Inner Mountain. Working with the nonprofits, working with the state agency and with Richard's leadership, we found some resources and were able to train 25 master trainers. Then we developed a strategy where ChildWise took on training communities, and the Department of Public Health and Human Services focused its training on 3,000 staff, contractors, and partners. We are about through that process of training all of our current staff in the Department of Public Health and Human Services. Other state agencies are also jumping on board with our agency to include corrections, crime control, juvenile justice, Office of Public Instruction, which is our Department of Education, and then our State Board of Education. We also recognize that training alone is not going to solve the whole issue of stopping or mitigating the trajectory of ACEs, but it was a place to start. We also hope that all of the participants will take away tools, ideas, data, and start breaking down the silos of thinking and service so we could work more efficiently and effectively in delivering our services and programs. We have some ways to go, certainly, but we are moving in that direction.

Now, I'm going to switch to specifically what we are doing in the Department of Public Health and Human Services, which is the mothership of state agencies. We are a super agency and the biggest in state government concerning staff and of programs and resources without any additional resources and funds. Through the leadership of Richard, we've been able to educate and train almost 3,000 staff across the department. We have staff in five different facilities or institutions to include our state and mental health hospital, our developmental disabilities facility, our senior long-term care facility, as well as our chemical dependency center. And that is going well. Through that effort, we've been collecting information from each of the training sessions to identify tangible next steps, and it's amazing what staff can come up with in terms of creating creative ideas or implementing creative ideas and solutions and strategies to begin looking at the way we provide services, not only to our clients and customers but how we work with one another in a more ACE-informed, trauma-informed approach. We also have created some crisis diversion programs in implementing ACE education and training. We are partnering with our Project LAUNCH, which is focused on early childhood and through the Home Health pilot projects in two of our counties. ACE's training is provided to those that are participating in that particular pilot project. In our children's mental health program, we've implemented the child and adolescent functional assessment scale, or the CAFAS, when working with youth in the mental health system as well as youth in the child and family services system. We also have another grant coming into Montana from SAMHSA. It's the Billings Destress Grant. Destress is developing systems for trauma responsive education and supportive solutions. It's a grant in Yellowstone County in eastern Montana, and we've partnered with them. They are working on the local level to get emergency systems, trauma-informed, and ACE-informed into that process we've been able to partner with them to share resources, training, strategies, and so forth. We have also provided ACEs training to all of our substance abuse prevention specialists. In fact, one of our master trainers in our state is one of the contractors for our block grant and Partnership for Success Grants, and so far we've been implementing ACEs training on the local level if it's included in the prevention plan.
And then finally, specific to the Montana Department of Public Health and Human Services, we have built an introduction to ACEs, brain development, stress, and trauma into an online training and an in-person training session that all new hires of the Department of Public Health and Human Services need to complete during their onboarding process.

In the July training, one of our prevention specialists has taken the ball and run with providing ACEs information and training in the community and developing additional resources. Every time they produce the Missoula Forum newsletter, there's a piece on ACEs. That newsletter is not only distributed throughout Missoula County and western Montana but across the state. Our prevention specialists have indicated that because the science about ACEs is so clear, that when it comes to the SPIF process, they've been able to integrate the science into the community building cycle and quite frankly the language and concepts are very easy to understand. We provided training to the prevention specialists who are working with tribes, as well as our own staff. We have many folks who serve Native Americans through our health program and there is a profound effect on folks.

When that's coupled with the historical trauma and the health disparities in our state, there is some real motivation to take different approaches in our troubled communities and in developing our tribal relationships. When we've done the training, it is so raw that we have to work through the process with the participants in the training to process their own experiences before we can move forward. It also puts the communication and the language in something that the local folks can understand. People are not alone.

We are now shifting into becoming a trauma-informed agency versus just an ACE-informed agency. We are trauma-informed using ACEs as a lens. We just had an intern complete an evaluation of all the training we have done, and some of the key outcomes have included the development of an operational plan. And I'll be honest with you: this whole effort has been like building a plane while we are flying it. There isn't a roadmap, so it's been pretty challenging. Also, we are working on implementing some of the ideas and strategies. We are taking a long view at this. It's not easy to change the culture in a department that's your typical state agency (you do things the way you do because they've always been done that way). We are starting to implement some basic things like, “how do we greet people when we meet them at the door? How do we set up our Offices of Public Assistance so that we don't retraumatize people who are already in crisis?” And, then, finally, one of the main parts is we are using SAMHSA's six key principles of trauma-informed approaches in our efforts. We have the leadership and efforts from high above in our state agency to move in this direction. We are working with our human resources to make sure staff is trained and that the onboarding process includes training. We are not only addressing our mission and vision and goals around health but becoming a trauma-informed agency as a part of that mission. Overall health includes becoming trauma-informed and includes physical and mental health. We are using a common language. We are supporting some master trainers. We are providing some resources through a Moodle on our state agency website where staff can go in and take training courses and we are also making available the film *Paper Tigers*, which is a documentary available to any and all DPHHS staff and contractors that would like to view it. Also, throughout this process, we've learned that some of the things that we were already doing in our state agency are ACE-informed. For example, at our Montana Developmental Center, which is our facility for those with severe developmental disabilities and co-occurring health or mental health problems, through the Mandt
training there's a whole component on ACEs. So, these are some of the things that we are working on in our state, and I'd be happy to take questions at this point and turn it back to Molly.

[Molly Lowe]: Thank you so much, Vicki. Any questions for Vicki on the -- the great work they are doing in Montana on this topic? Or any questions more generally for any of our presenters? For Tenly, Vicki, or Laura?

[Laura Porter]: I just wanted to mention that, Vicki, your work also is partnered with the native research group and there are master trainers that are specifically in the Indian country. Vicki is the peer coach in addition to the phenomenal transformative work that is happening that the state is leading. There is an advantage to having the parallels of the community to be working at the same time that you are.

[Molly Lowe]: One question: “Can you please say more about ACEs training for Native Americans and tribes and their reactions to it?”

[Vicki Turner]: From my experience, it's been very profound in that the ACEs training, and you go through even a short, 30-minute presentation or even the presentation today that Laura gave. You do a lot of self-checking over what you've experienced in your life and your own ACE scores. And for a person whose got historical trauma in their background, my observation is it has been very profound in being able to say, “okay, I've got to get over these pieces and how does it fit in my world in the way that I can understand it and articulate it back to those that are around me?” So, that's something that I have observed. How that has played out in the communities? I'm not really sure.

[Laura Porter]: We often will change the order of the presentation slightly so that we are starting with ACE attributable challenges and talking about if you recognize these in your community. There are some studies that are very similar to the ACE list that were done by native researchers with native people so we should incorporate some of that data in. I was just at the Region 9 and 10 Tribal TANF meeting providing education about ACEs. There are many tribal TANF programs that are using ACE science effectively, so I was excited about how enthusiastic they are and how they are using it for two generation approaches and just for creating a more welcoming and supportive environment. The best compliment of my entire career came from an elder in the Tulalip tribe who said that once the all-staff training happened their non-native staff became kinder. These changes happen in ourselves and that's probably the most important place for them to happen. As we reflect and process, what does this mean for ourselves and what do we want for our children and our grandchildren?

[Vicki Turner]: Can you talk a little bit about master trainers? For example, Roma, you are asking about two groups, one in Missoula and one in Box Elder. For the community-based folks, they can access a trainer through the ChildWise Institute website. Laura, can you explain kind of how that master trainer piece works?

[Laura Porter]: Sure. Dr. Rob Anda and I developed a standard presentation that's a core talk of modules that you can mix and match for different audiences. Largely because Rob was getting really tired. He's been doing ACE education for fifteen years now and he can't be everywhere so we produced this master trainer product where we train 25 people in a system or geographic area and
then they become great at presenting the science with fidelity, and then they become certified to train others. So Montana is one of eleven states that have trained master trainers using the ACE interface curriculum, and so they have the 25 original trainers. I don’t know if you’ve started certifying others. Have you yet, Vicki? Inside of the agency you have, right?

[Vicki Turner]: We have facilitators, and I believe Travelers is starting to do -- I'm not sure if they are calling them facilitators or some other term. I'll put the ChildWise link up on the chat box: www.childwise.org

[Molly Lowe]: Great. Thank you so much to all of our presenters today. This is a fascinating webinar and to all of you for all of your questions. We would really appreciate if you could click on the link directly on the screen right now for the evaluation. Your feedback is very important to us. We use it to inform our future trainings, so please complete that if you get a chance. It's a very brief survey. If you have any questions, you can contact me and I can connect you with presenters as well if you have questions for them. I'm putting my email address in the chat box (mlowe@edc.org), and it's also in the slides. Don't forget you can download those resources that we also send out via email below the chat box.

And thank you all again for logging on this afternoon and spending time with us to review this content. Take care and have a great rest of the week and weekend.