

# Risk and Resilience Factors in Urban American Indian and Alaska Native Youth during the Coronavirus Pandemic

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The coronavirus (COVID-19) pandemic poses unprecedented challenges for individuals across the lifespan and these challenges are more pronounced for those who live with poverty and health inequities.<sup>1</sup> American Indian and Alaska Native people have long been one of the highest risk racial/ethnic groups for health disparities,<sup>2</sup> a consequence of sustained colonization and institutional racism, resulting in government oppression, forced displacement and assimilation, and intergenerational trauma.<sup>3</sup> Policies enacted over decades have contributed to these disparities, including forced removal from American Indian and Alaska Native homelands, forced placement into boarding schools with the intent of assimilating American Indian and Alaska Native youth into mainstream society, and laws prohibiting American Indian and Alaska Native people from practicing their religious and spiritual ceremonies.<sup>4</sup> For example, the Relocation Act of 1956 is one US law that many people believe contributed to numerous health disparities among urban American Indian and Alaska Native people.<sup>5</sup> This act financed the relocation of American Indian individuals and families to job training centers in designated US cities. Instead of creating greater economic stability, large numbers of American Indian people who moved to urban areas became unemployed, homeless, and disconnected from their community-based support networks.<sup>6</sup>

Today American Indian and Alaska Native people are particularly vulnerable groups for adverse health and socioeconomic effects of COVID-19. According to Dante Desiderio, executive director for the Native American Financial Officers Association, "COVID-19 could be a perfect storm for Indian Country"<sup>7</sup> due to the confluence of socioeconomic disadvantage, historical trauma and disenfranchisement, and high rates of existing comorbidities among American Indian and Alaska Native people.<sup>8</sup> Previous research has documented numerous challenges experienced by Native populations during earlier pandemics, including overcrowding in houses, limited access to care, and inadequate community awareness.<sup>9</sup>

To date, there has been scant systematic study of the effect of previous pandemics on this population, in part because few research teams have the community-based infrastructure and capacity to roll out a rapid response evaluation of pandemic-related experiences in this underserved population. During the H1N1 pandemic in 2009, hospitalization rates among American Indian and Alaska Native people were higher than for all other US groups.<sup>10</sup> A recent study using a national sample to estimate vulnerability to COVID-19 found that among low-income racial/ethnic groups, Native groups run the highest risk of illness from COVID-19.<sup>11</sup>

To our knowledge, only one study to date has assessed the long-term psychosocial effects of quarantine on youth and families following an infectious disease outbreak (H1N1 or SARS), and this was retrospective.<sup>12</sup> It is important to understand how teens may be affected during the current COVID-19 pandemic, as adolescence is a critical developmental period in which numerous neurobiological, psychosocial, and physical changes occur that can affect health behaviors and outcomes into adulthood. For example, adolescence is a time known for both initiation and escalation of alcohol and other drug use, as well as increased risk for depression and anxiety.<sup>13</sup> Adolescents are also vulnerable to initiating health behaviors that may accelerate risk for cardio-metabolic diseases, including poor sleep, lack of physical activity, and poor dietary

behaviors.<sup>14</sup> Furthermore, adolescence is a time of increasing autonomy from parents and increasing reliance on social connections with peers, which may make adolescents particularly vulnerable to social isolation and other psychosocial and behavioral consequences during state-mandated stay-at-home orders.<sup>15</sup> In fact, recent work on the effects of COVID-19 on youth has shown that many teens and young adults report increased sleep problems,<sup>16</sup> as well as depression and anxiety, due in part to lack of support at home and limited access to health and social resources.<sup>17</sup>

American Indian and Alaska Native adolescents are underrepresented in health research, and they may be a particularly at-risk population for adverse emotional, behavioral, and physical health consequences of COVID-19. For example, these adolescents experience disproportionately high rates of existing risk factors known to worsen the negative effects of COVID-19, including heart disease, diabetes, and obesity, as well as other psychosocial, mental, and behavioral health problems, such as depression and alcohol and other drug (AOD) use, all of which may be exacerbated during the current pandemic.<sup>18</sup>

Most work on American Indian and Alaska Native health disparities has focused on adults living on reservations or tribal lands. However, more than 70 percent of Native populations live in urban settings.<sup>19</sup> Limited descriptive information is available on this vulnerable population, particularly adolescents.<sup>20</sup> Urban American Indian and Alaska Native people experience unique risk factors that may increase their vulnerability to health disparities, especially during times of increased stress such as COVID-19. For example, experiences of acculturative stress directly and indirectly associated with historical trauma have been shown to result in poor mental health outcomes and increased AOD use.<sup>21</sup> In addition, a variety of psychosocial and environmental risk factors, such as witnessing domestic violence, physical/sexual/emotional abuse, and family history of mental health and substance use may intensify during the mandate to stay at home, increasing the chances of negative outcomes.<sup>22</sup>

Our multidisciplinary, community-based research team has worked for more than a decade with urban community organizations across the state of California to understand health disparities and experiences of urban American Indian and Alaska Native youth and adults across numerous domains, including violence,<sup>23</sup> discrimination,<sup>24</sup> mental/physical health and AOD use,<sup>25</sup> sleep,<sup>26</sup> navigating cultural identity,<sup>27</sup> and increasing access to culturally appropriate care.<sup>28</sup> Given our long-term, established relationships with these organizations, we closely collaborated with several urban communities to develop an online COVID-19 survey and a video-based qualitative interview for urban American Indian and Alaska Native teens. The goal was to understand the challenges that these urban-based teens were experiencing during the pandemic in order to inform prevention and intervention efforts for this underserved and vulnerable population during this critical period of development.

We administered the online survey from May–July 2020 to capture risk and protective factors operating at several levels: individual (e.g., technology use), family (conflict and cohesion), community (sense of community), and cultural (engagement in cultural activities). Key pandemic-related outcomes were also captured, including sleep disturbance, risk-taking behaviors (e.g., alcohol use), and mental health (depression,

anxiety, and post-traumatic stress disorder). To understand how the current pandemic is affecting American Indian and Alaska Native adolescent sleep habits, routines, and health behaviors, we also conducted qualitative interviews with a random subset of the larger sample via videoconference.

## METHODS

### *Sample and Recruitment*

Participants in this COVID-19 study come from a sample of youth participating in a longitudinal survey study, “Native American Youth Sleep Health and Wellness” (NAYSHAW), which involves quantitative and qualitative (i.e., in-depth interview) data to broaden our understanding of sleep and its role in health among urban American Indian and Alaska Native youth. All recruitment, data collection, and analytic procedures for both NAYSHAW and this COVID-19 study were approved by the RAND Institutional Review Board. In order to be eligible for NAYSHAW, youth had to either verbally self-identify as American Indian or Alaska Native, or be identified as American Indian or Alaska Native by a parent or community member; live in an urban community; and be in the age range of 12–16 at the time of their baseline survey (March 2018–March 2020). Excluded were adolescents with major neurologic conditions (including intellectual disability), chronic medical conditions (e.g., cancer, diabetes, cardiovascular disease), or diagnosis of sleep apnea or restless legs syndrome.

As before, we worked closely with our community partner Sacred Path Indigenous Wellness Center (SPIWC) to ensure culturally appropriate engagement and recruitment of urban American Indian and Alaska Native youth and families.<sup>29</sup> In addition, two of our research team members and coauthors are American Indian and Alaska Native: the chief executive officer of SPIWC, Dr. Carrie L. Johnson, is Wahpeton Dakota, and Dr. Daniel L. Dickerson is Alaska Native (Inupiaq). This COVID-19 study was conducted, in part, in response to community concerns about how COVID-19 was affecting Native youth across a variety of domains. As part of NAYSHAW, SPIWC hired American Indian and Alaska Native recruiters in each city to assist with study advertisement and recruitment of youth at key community events. The current study occurred between May and July 2020, and youth from the original NAYSHAW sample again consented to be part of this study. All study participants were under the age of 18; thus, we obtained parental consent and youth assent.

The entire NAYSHAW sample of  $N=143$  was invited to participate in the survey. However, in order to be part of this special issue on COVID-19 among Indigenous People, we included the first fifty random respondents who completed a survey from May–July 2020 for a rapid assessment. The survey focused on health outcomes and behaviors, social relationships, and cultural participation during COVID-19. The surveys were completed online to ensure the health and safety of participants and data collectors and consistent with the state of California’s stay-at-home orders, which took effect March 19, 2020. To minimize survey length and participant burden, we selected validated measures that tapped into key constructs of risk and resilience, and

knowledge, perceived risk, and attitudes related to COVID-19. Youth were paid \$30 for survey completion. We also randomly selected twenty adolescents with whom we conducted in-depth, semi-structured interviews via Facetime. These youth were sampled from the original NAYSHAW sample (N=143) using stratified random sampling across age, gender, and geographical location. Youth were paid \$35 for qualitative interviews. All interviews were audio-recorded and transcribed verbatim. Eighteen of the twenty youth who completed an interview also completed the online survey.

## Quantitative Measures

*Demographics.* Teens self-reported age, gender, race/ethnicity, tribal affiliation (although we do not report tribal information in order to ensure anonymity), family structure (i.e., two-parent vs. single-parent household), and parental education (maternal and paternal highest level of education).

*COVID-19 Knowledge, Perceptions, Behavior, and Challenges.* Knowledge about COVID-19 was measured with items such as “how much do you know” about coronavirus? from “not at all” to “very much.” Risk perception towards COVID-19 was ascertained using items asking about (1) perceived susceptibility (e.g., how likely, from “very unlikely” to “very likely” do you think oneself/someone in the household would be infected with COVID-19); and (2) perceived severity (e.g., rate the seriousness of COVID-19 compared to other non-communicable diseases, from “not at all dangerous” to “very dangerous”). We captured *behavioral responses* by asking participants to rate their level of adherence (from “not at all” to “very much”) to recommended infection control practices (e.g., washing hands, wearing masks).<sup>30</sup> *Challenges* related to COVID-19 public health measures included items asking how participants’ lives have been affected by the COVID-19 related public health measures (e.g., stay-at-home order), such as how participants were affected by school closings and business closings (from “not at all” to “very much”). All COVID-19 measures were derived on the basis of prior epidemiological studies of community responses to infectious diseases.<sup>31</sup>

*Financial Hardship.* We measured *housing security* (e.g., since the stay-at-home order for coronavirus began, how many days have you had any problems in getting a clean and safe place to sleep for the night?) through a set of validated questions focused on (1) difficulty to access a clean, safe place to sleep;<sup>32</sup> (2) the need to sleep at a friend’s/family member’s home; and (3) experience sleeping in temporary settings (e.g., shelters, public areas, or personal vehicle).<sup>33</sup> *Food security* (e.g., did you worry that food at home would run out before your family got money to buy more?) was assessed using the validated self-administered food security survey module for children ages twelve years and older.<sup>34</sup> Scores were summed based on affirmative answers, with scores of 0 = high food security; score 1 = marginal food security, score 2-5 = low food security, and score 6-9 = very low food security.

*Mental Health.* We measured *depression* using the Patient Health Questionnaire-8 (PHQ-8), a brief, self-report screening instrument for depression (e.g., little interest or pleasure in doing things, feeling down, depressed, or hopeless), with a high sensitivity (89.5%) and good specificity (78.8%) for detecting major depression among

adolescents.<sup>35</sup> Response options for each item ranged from 0 = “not at all” to 3 = “nearly every day.” Scores are summed, and a score of 10 or greater is considered major depression.<sup>36</sup> *Anxiety* was measured using the Generalized Anxiety Disorder-7 (GAD-7), a brief self-report screening measure of anxiety (e.g., feeling nervous, anxious, or on edge) validated in adolescents.<sup>37</sup> Response options for each item ranged from 0 = “not at all” to 3 = “nearly every day.” Scores on the GAD-7 range from 0 to 21; scores of 5, 10, and 15 represent mild, moderate, and severe anxiety symptoms, respectively, with scores of 10 or greater indicating clinically significant anxiety.<sup>38</sup> *Post-traumatic stress symptoms* (e.g., repeated, disturbing memories, thoughts, or images of a stressful experience from the past; feeling very upset when something reminded them of a stressful experience from the past) were measured with the six-item brief version of the Post Traumatic Stress Disorder (PTSD) Checklist – Civilian version (PCL-6).<sup>39</sup> Response options for each item ranged from 1 = “not at all” to 5 = “extremely.” The scale is scored by summing responses on each item, with possible scores ranging from 6 to 30. Higher scores on this scale reflect greater severity of PTSD symptoms, and a score of 14 or higher is considered a positive screen for PTSD (sensitivity = 0.92-0.98, diagnostic efficiency = 0.71-0.75).<sup>40</sup> The PCL-6 has been used in an adolescent sample to examine effects of COVID-19, and has shown good internal consistency.<sup>41</sup>

*Sleep.* We measured *sleep disturbance* using items asking about frequency of indicators of erratic sleep/wake behaviors over the past two weeks (e.g., needed more than one reminder to get up in the morning, had an extremely hard time falling asleep). Items were rated on a scale of 0 (never), 1 (once), 2 (twice), 3 (several times), to 4 (every day/night). Higher scores indicate greater sleep disturbance or sleep-wake problem behaviors. *Sleep quality* was assessed by asking participants to rate their overall sleep quality in the past month on a Likert scale from 1 (very good), 2 (fairly good), 3 (fairly bad), to 4 (very bad). Questions were derived from the School Sleep Habits Survey for Adolescents, which has been validated in adolescents.<sup>42</sup>

*Substance Use.* We assessed alcohol, marijuana, and tobacco use with items from Monitoring the Future,<sup>43</sup> which we have used in our ongoing longitudinal studies of adolescent risk-taking behaviors, including American Indian and Alaska Native teens.<sup>44</sup>

*Daily Activities.* Items from the Youth Risk Behavior Survey (YRBS) measured physical activity levels, hours of playing computer games, watching movies/videos, doing homework, reading, and spending time with friends and family during a typical day since the stay-at-home order for COVID-19. Response items were from no hours to five or more hours a day.<sup>45</sup>

*Family Cohesion and Conflict.* We measured family-level factors of cohesion (e.g., in our family, we really help and support each other) and conflict (e.g., in our family, we lose our tempers a lot) with subscales from the Brief Family Relationship Scale (BFRS) asking youth to answer these questions with the following timeframe, “since the stay-at-home order for coronavirus began.”<sup>46</sup> The BFRS has been validated in a sample of Alaska Native youth.<sup>47</sup>

*Community Cohesion.* Community cohesion was measured in the last two weeks with items such as “I felt people in my community were coming together and

supporting each other” (responses: “not at all,” “less than half the days,” “more than half the days,” and “nearly every day”). Items have been used in prior work with American Indian and Alaska Native people.<sup>48</sup>

*Participation in Traditional Practices.* We asked participants about their participation in a variety of Native traditional practices, including virtual activities, such as beading, attending powwows, cooking classes, or drumming, as this information is critical to identify potential sources of resilience in Native communities. Items were based upon extensive research conducted with American Indian and Alaska Native adolescents, parents, and community partners.<sup>49</sup>

### *Quantitative Analysis*

For each of the measures described above, we provide descriptive data. We tabulated item-level responses, and calculated summary scale scores where applicable.

### *Qualitative Interview*

The COVID-19 interview protocol was designed to elicit perceptions about changes in daily behaviors and social interactions, sleep environments and patterns, and cultural participation during the pandemic. Questions covered six main topical domains informed by our review of the literature, findings from the first wave of NAYSHAW interviews,<sup>50</sup> and from feedback from community members regarding the effects of COVID-19 on urban Native communities. The focus of this interview was on perceived changes in: (1) daily habits and routines, such as use of electronics; (2) family and social relationships; (3) sleep environments and arrangements; (4) sleep behavior, such as bedtimes, rise times, and difficulty falling asleep; (5) quality of sleep; and (6) cultural dimensions of life and sleep. Figure 1.S (supplemental materials) provides the full interview protocol.

### *Qualitative Analysis*

We uploaded all transcripts to Dedoose, a cloud-based platform that facilitates collaborative management, coding, and analysis of mixed-methods data.<sup>51</sup> Given the topical interest, the complex medical emergency surrounding COVID-19, and the timely need for preliminary data about the impact of COVID-19 on health and behaviors, we employed a rapid assessment (RA) approach<sup>52</sup> that precluded the calculation of metrics like inter-coder reliability,<sup>53</sup> percent agreement,<sup>54</sup> and saturation.<sup>55</sup> Advantages associated with RA methods include the rapid identification of relevant issues with high potential for informing immediate resource allocation and long-term policy planning to support vulnerable populations during critical times, such as pandemics.<sup>56</sup>

The objective of our analysis was to ascertain how the survey and qualitative data informed each other in meaningful ways and to provide further descriptive data on pandemic-related experiences among American Indian and Alaska Native youth. Thus, the codebook was developed by two coders (Alina I. Palimaru and Ryan A.

Brown) based on pre-identified domains from the survey instrument. More than half of the codes in this study's codebook mirrored codes we had deployed and assessed for reliability during a prior study.<sup>57</sup> The scope of this RA approach was to code content within domains of the survey; however, coding also allowed for some degree of inductive reasoning based on dimensions emerging from the interview content, such as valence of thematic categories (e.g., positive or negative, change or no change).<sup>58</sup> Although we did not employ a fully inductive methodology to identify the range of themes emerging from the content, we remained adaptable and rigorous by validating survey findings with qualitative themes and vice versa.

## QUANTITATIVE RESULTS

### *Sociodemographic Characteristics*

Youth who completed the survey ranged in age from twelve to sixteen (mean age fourteen), with 58 percent self-identifying as female (table 1). Although all youth had to either self-identify verbally as American Indian or Alaska Native, or be identified as American Indian or Alaska Native by a parent or community member, three youth did not self-identify as American Indian or Alaska Native on the survey. This is similar to what we have found in other work with urban Native teens where not all teens marked American Indian or Alaska Native on their survey.<sup>59</sup> Most of the sample (48%) reported that their mother had some college or graduated from college, and 24 percent said that their father had some college or graduated from college.

### *COVID-19 Knowledge, Perceptions, Behavior, and Challenges*

In terms of COVID-19 knowledge, most teens said they got their information from social media (70%) and their family (56%), followed by the news (40%), and friends (22%). Teens believed that the symptoms for coronavirus were serious (34% somewhat serious, 56% serious, 10% very serious), and 88 percent said it was important or very important to take actions to avoid getting or spreading coronavirus. Figure 1 shows how dangerous youth thought coronavirus was compared to other infectious diseases, such as the flu, Ebola, and HIV/AIDS. For example, 38 percent of youth indicated that the flu was "dangerous" or "very dangerous," whereas 84 percent endorsed these categories for coronavirus, which was similar to Ebola (90%) and HIV/AIDS (90%).

Table 2 provides information on how often teens engaged in different activities to avoid getting or spreading coronavirus. Top activities included staying at home, washing hands frequently, and wearing a face mask. Fourteen of the fifty teens (28%) said they knew someone who had coronavirus; however, only 9 percent thought it likely that they would get coronavirus. Most (48%) reported that it was unlikely or very unlikely that people in their household would get coronavirus; however, 36 percent said it was likely or very likely that someone in their community would get coronavirus. In terms of challenges related to COVID-19 public health measures, most teens said they were affected by school (88%) and business closings (84%).



TABLE 1  
 SAMPLE DEMOGRAPHICS (N = 50)

	<i>M (SD, range) or N (%)</i>
<b>Age</b>	
12 years old	6 (12%)
13 years old	13 (26%)
14 years old	14 (28%)
15 years old	7 (14%)
16 years old	10 (20%)
Mean age, years (continuous)	14.0 (1.31, 12-16)
<b>Gender</b>	
Male	21 (42%)
<b>Race/Ethnicity*</b>	
Hispanic/Latino(a)	25 (50%)
American Indian/Alaska Native	47 (94%)
Asian/Asian American/Pacific Islander	4 (8%)
Black/African American	6 (12%)
White/Caucasian	9 (18%)
<b>Grade</b>	
5 <sup>th</sup> grade	0 (0%)
6 <sup>th</sup> grade	1 (16%)
7 <sup>th</sup> grade	8 (16%)
8 <sup>th</sup> grade	12 (24%)
9 <sup>th</sup> grade	15 (30%)
10 <sup>th</sup> grade	6 (12%)
11 <sup>th</sup> grade	8 (16%)
<b>Father's education</b>	
Did not finish high school	10 (20%)
Graduated from high school	15 (30%)
Some college	4 (8%)
Graduated from college	8 (16%)
Don't know	13 (26%)
<b>Mother's education</b>	
Did not finish high school	4 (8%)
Graduated from high school	17 (34%)
Some college	10 (20%)
Graduated from college	14 (28%)
Don't know	5 (10%)
Single-parent households	21 (41%)
<b>Food security</b>	
High	24 (48%)
Marginal	12 (24%)
Low	12 (24%)
Very low	2 (4%)

Note. All demographic data except food security were taken from the participant's original baseline survey. \*Race/ethnicity categories are not mutually exclusive.

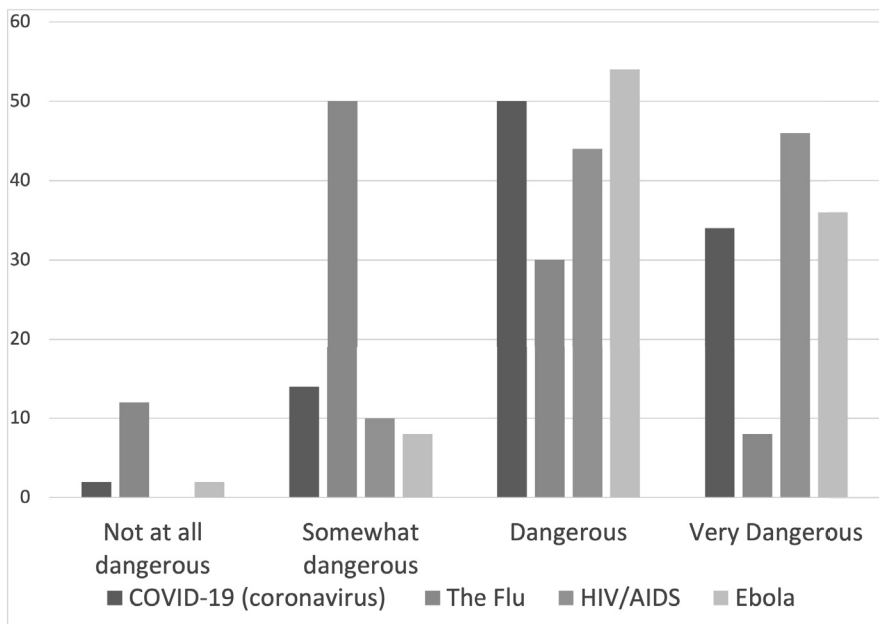


FIGURE 1. COVID-19 Risk Perceptions Relative to Other Infectious Diseases ( $N = 50$ )

TABLE 2  
PERCENT OF SAMPLE REPORTING BEHAVIORS TO PREVENT  
GETTING OR SPREADING THE CORONAVIRUS ( $N = 50$ )

	Not at all	A little bit	Very much
Wear a face mask	10%	18%	72%
Wash hands frequently for at least 20 seconds	2%	22%	76%
Use hand sanitizer	6%	32%	62%
Avoid coughing into your hands	6%	18%	76%
Stay at home	2%	20%	78%
Avoid other people, especially crowds	2%	20%	78%
Cancel travel plans	8%	16%	76%

### *Financial Hardship*

For housing security during the pandemic, only two youth reported that they had problems getting a place to sleep for the night. One teen said they slept at a friend or other family member's house because they had nowhere else to stay, one teen said they stayed in a youth/adult shelter, and one youth said they slept outside because they had nowhere else to stay. In contrast, 24 percent reported low food security and 4 percent very low food security.

## *Mental Health*

In terms of mental health symptoms over the last two weeks, 18 percent of the sample reported clinically significant anxiety (GAD-7  $\geq 10$ ), and 22 percent reported clinically significant depression (PHQ-8  $\geq 10$ ). Some of the most frequently endorsed items for anxiety were becoming easily annoyed or irritable (62%), worrying too much about different things (60%), and feeling nervous, anxious or on edge (48%). For depression, the most frequently endorsed items were poor appetite or overeating (62%), trouble falling/staying asleep or sleeping too much (60%), and feeling tired or having little energy (60%). In addition, 28 percent of youth met criteria for PTSD on the post-traumatic symptom scale (PCL-6  $\geq 14$ ). The average score for the sample was 11.12 (SD 5.58) with a range of 6–24. Some of the most frequently reported items were feeling distant or cut off from people (66%), difficulty concentrating (50%), and feeling upset when something reminded you of a stressful experience from the past (50%).

## *Sleep*

Sleep problems were prevalent. For example, 40 percent of youth said that their sleep quality was “fairly bad” or “bad” in the last month. When asked about different sleep behaviors in the past two weeks, 80 percent reported staying up past 3:00 am, 62 percent said they slept in past noon, 78 percent said they felt tired all day, 46 percent reported having nightmares, 78 percent said they had a hard time falling asleep, and 46 percent said they woke early and couldn’t get back to sleep.

## *Substance Use*

Overall, a low percentage of youth reported any past-month substance use. For example, seven (14%) out of the fifty teens reported at least one drink of alcohol in the past month, five (10%) teens reported any marijuana use, six (12%) reported using over-the-counter medicines to get high, and only two (4%) teens reported using cigarettes, e-cigarettes, inhalants, or prescription medicines to get high. None of the teens reported smokeless tobacco or stimulant use, or any other illegal drugs to get high in the past month.

## *Daily Activities*

For activities during the pandemic, most teens said that they exercised at least one day in the past week (86%), and the mean number of days of exercise was three. Almost one-third (30%) reported playing video games for more than five hours a day, and 26 percent reported watching movies/videos for more than five hours a day. Most indicated that they were not able to hang out with their friends (60%). Forty percent said they spent five or more hours a day with their family, and almost all (90%) said they spent at least one hour a day helping their family with housework, caregiving (taking care of siblings or other family members), or other tasks. Sixty percent spent at least one hour a day reading, and 70 percent spent at least one hour a day doing homework.

TABLE 3  
 PARTICIPATION IN TRADITIONAL PRACTICES SINCE  
 STAY-AT-HOME ORDER FOR CORONAVIRUS BEGAN (N = 50)

	Any participation (%)
Beading	32
Dancing	30
Drumming	8
Native cooking	42
Virtual powwows	18
Virtual talking circles	20
Prayer	44
Other	22

### *Family, Community, and Cultural Factors*

Teens indicated low levels of family conflict (mean=.58; range 0-2) and high levels of family cohesion (mean = 1.52; range 0-2). The majority also reported strong community cohesion, with 71 percent saying that they felt that people in their community were coming together in the last two weeks, and 78 percent reporting that they had improved relations with their family and friends. Furthermore, most teens (82%) reported that they had participated in traditional practices since the stay-at-home coronavirus order began. Some of the most frequently reported activities were prayer, Native cooking, beading, and dancing (table 3).

### QUALITATIVE RESULTS

We conducted twenty interviews with a subsample of youth randomly selected from the larger survey sample. Interviewed teens were aged twelve–sixteen, with a mean age of fourteen. Forty-five percent of the qualitative subsample was male, and 95 percent of youth identified as American Indian or Alaska Native. Sixty-five percent of this sample said their mother had some college education or graduated from college, and 35 percent said their father had some college education or graduated from college. Below we discuss the main themes that emerged within the conceptual bounds of the survey and explain how the qualitative findings align with the survey results.

### *COVID-19 Risk Perceptions, Safety Behaviors, and Health Perspectives*

With regard to COVID-19 risk perceptions, qualitative findings align with survey results in that most teens (n=17, 85%) said they were taking the risk of the disease seriously and engaging in safe practices, including staying indoors to avoid contact with friends or other family members who might bear a risk of exposure, washing hands, and wearing masks and gloves while outside. As one sixteen-year-old female participant

said, “I don’t go anywhere. I have not been to stores or I don’t go to restaurants to get food. I don’t really go anywhere. I just stay home, stay away.” Specifically, half of interviewees described a heightened awareness of the importance of safety behaviors. Some, like this sixteen-year-old male respondent, were motivated by personal safety: “When I get packages, what if the mailman had touched something? Because he touches a lot of things from a lot of places, it’s mail. You never know. That’s why when we get it, we spray it and stuff and make sure they’re clean. . . . You have all your defenses up about everything, and you’re just like, ‘Don’t touch me!’” Others were driven by the need to protect immuno-compromised parents and family members, as this sixteen-year-old female explained: “My dad had to have heart surgery, and he has diabetes. It wasn’t a huge issue before corona because he’s trying to be healthier and stuff like that. But now since he’s such a high risk for stuff like corona, it’s like, well, I need to be healthy.”

Most participants (n=15, 75%) said that coronavirus featured in their daily thoughts to some extent. Some said they tried to avoid thinking about it too much, and others were anxious about the uncertainty and the risk it posed to their families. A thirteen-year-old female respondent mentioned that, “It makes me anxious, because we don’t know if you’re going to get it or if you have it. And if you have it you might give it to someone else that you care for.” A sixteen-year-old male described being angry with people who do not comply with safety guidelines:

The biggest issue that I have with coronavirus is the other idiots. . . there is no really other word to describe what these people do. Because it is a pandemic. It is or was a pandemic which means it spread across planet Earth, infects millions of people, and killed thousands, which means it is a very big thing. Besides those people who think it’s not a super big deal or whatever or the people who don’t take it seriously—those are the biggest issues to me—I’m not so much scared of the virus. I’m scared of the people who would spread the virus because they don’t take it seriously.

### *Financial Effects*

Half of the interviewed teens said that one or both of their parents or grandparents were able to continue with their employment from home after the stay-at-home orders had been imposed. Three (15%) mentioned that one parent experienced job loss: “My dad, he really can’t work that much, either, with everything going on” (female, 12). Another two (10%) said that initial job loss had been followed by employment: “When the coronavirus started, he [dad] got laid off because everybody got laid off and they didn’t work for a while. But now he works” (male, 16). Several respondents mentioned changes in sleeping arrangements since the stay-at-home order went into effect, such as having to share rooms with immediate and extended family members, indicating that housing arrangements may be used to support relatives who have had financial difficulties during the pandemic: “I do share a room with my brother. He just recently came back home after being away for a while, but I share a room with him now. Before he showed up, I was also sharing it with someone else [from] our family, but he wasn’t

here most of the time. He works as a trucker, so he only had stuff in the closet and the bed just folded up in the corner” (male, 16).

### *Sleep Patterns, Sleep Quality, and Sleep Behaviors*

Qualitative findings support survey results with respect to perceived effects of the pandemic on changes in sleep patterns, quality, and behaviors. Similar to survey respondents, teens talked about a shift to later bedtimes and later rise times: “I go to sleep way later than the time I would usually go to sleep. I get way too much sleep. One time I went to bed at, like, 5:00 am and then I woke up at, like, 7:00 or 8:00 pm” (female, 13). Changes were mostly explained by the fact that most teens did not have to get up early to attend school in person, as this quote from a sixteen-year-old male illustrates: “Before the stay-at-home order, I had school, so I went to sleep around 9:00 because I would wake up at 5:30 just to get to school on time. . . . Every day is like the weekend right now. But like on the weekends, we don’t really have anything to do, so we would just go to sleep any time.” During COVID-19, more than half of the teens (n=12, 60%) in the qualitative interview said they went to bed between midnight and 3:00 am during the week, and two (10%) acknowledged going to bed after 3:00 am. Only one participant (5%) reported going to bed between 9:00 pm and 10:00 pm, two (10%) said they went to bed between 10:00 pm and 11:00 pm, and three (15%) went to bed between 11:00 pm and midnight. Weekends tended to be similar with regard to bedtime and rise time schedules.

Although 40 percent of teens reported “fairly bad” or “bad” sleep quality on the survey, only two interview respondents mentioned that their sleep quality had deteriorated during the pandemic. As this twelve-year-old female interviewee explained: “Sometimes it’s like I just can’t go to sleep, because it’s too much on my mind.” A quarter of participants (n=5) said their sleep quality was “unaffected,” “good,” or “pretty good,” and six (30%) said their sleep quality had actually improved, mostly due to sleeping longer and being more relaxed about sleep due to not having to worry about getting up early for school. This sixteen-year-old female commented: “I think right now it’s better than it usually is because I think I don’t have anything to do. I’m not stressing about anything. It’s not like a chore because a lot of the time, I feel like sleeping is a chore. I’m like I have to sleep so that I can wake up tomorrow and be energized.”

Almost half of interviewees (n=9, 45%) discussed changes in napping patterns associated with the pandemic. Of these, two said that prior to COVID-19 they were not in the habit of napping, but they had since begun napping out of boredom or due to feeling tired: “Before coronavirus I really didn’t nap, because I had stuff to do. Now it’s like I don’t have anything to do, so I’m like, ‘I’m just going to go to sleep.’ So that’s how I nap” (female, 12). Two other teens mentioned napping more now compared to when they were in school: “It [napping] changed a little bit because we go walking a little bit more” (male, 12). Three said they used to nap before the pandemic because they were getting tired at school, but had since stopped because their routine no longer tired them: “Before the coronavirus, practically every other day, I came home from school, napped. But now I don’t do that” (male, 16). The rest described changes

in the duration or timing of their naps. Among teens who said they did not nap, several expressed concerns that midday napping would undermine their ability to sleep well at night: “I don’t like naps because I’m not tired by the time I get to bed, and I don’t sleep. It kind of just messes with everything. So, I just let myself be tired throughout the day, knowing that I’m going to sleep a lot or very nicely when I go to bed” (male, 16).

### *Use of Electronic Devices*

A majority of teens (n=16, 80%) described increases in the amount of time they spent using electronic devices such as phones, laptops, game consoles and televisions during the pandemic. Online classes were a key factor driving increases in time spent on electronic devices, followed by playing video games, being on social media and watching television. As this twelve-year-old female explained, her electronic use went up “drastically, oh my gosh. I’m on my phone a lot more and I’m on the computer that my school gave me, my Chromebook, a lot more doing the assignments because that’s like the only way to really do assignments.” A sixteen-year-old male interviewee estimated that he spent “a good eighty percent” of his day online, while a thirteen-year-old male teen said, “I’ve used my Xbox a lot more than I usually have. I use it almost every day. Before the coronavirus started, I would only use it during the weekends.”

### *Family Relationships*

Teens also talked about the effect of the pandemic on their relationships with parents. A quarter (n=5) said they felt they got closer to their parents or family, as this twelve-year-old female explained: “I’ve gotten a lot closer with them, a lot closer. I was already really close with my father, but we’ve been spending a lot more time together now. And also, with my mother too; I’ve been spending more time with her.” Four (20%) perceived they spent more time together with their families: “I definitely talk to them more. We do participate a lot together in family events inside the house” (female, 15). Others (n=4, 20%) said they did not perceive any changes in their relationship with their parents, and a couple (10%) described some conflict during the pandemic: “We just argue a lot because we’re all in the house” (female, 13). One sixteen-year-old female participant talked about missing the physical gestures of affection between her and her mother: “I guess my mom, since she works at a hospital. She doesn’t come into the rest of the house because she’s worried that she might give us corona. And so I guess I don’t touch her really as much. And so I miss things like hugging her and just, you know—like you don’t realize how much you touch other people or people in your family until you don’t.”

### *Social Relationships*

When asked about the effects of the pandemic on relationships with friends, nearly half (n=9, 45%) described keeping in touch with friends via social media: “I talk to them probably about once a week, like talk to them on the phone. We’ll text each

other a couple times a week, but we'll probably talk, actually talk, like Facetime or whatever about once a week" (female, 16). A quarter (n=5) of interviewed teens said that they were typically reserved and liked to keep to themselves, which meant that their social life had not been affected. As this fifteen-year-old female explained: "The school friends are school friends. They stay over there. I keep myself distanced from a lot of people." Finally, a quarter of participants mentioned that some of their old relationships eroded since the start of the pandemic. One sixteen-year-old female teen said: "I don't like texting. I don't. And people take that personal, and they do not like me anymore," while a twelve-year-old female participant lamented: "Half of them I really don't talk to anymore. Like I talk to them, but I don't talk to them as much as I did before. I feel like I'm losing a couple friends. I feel like I know how [who] they really are now."

### *Community Cohesion and Participation in Traditional Practices*

Consistent with survey results, qualitative findings suggest that teens have been engaging in traditional practices by themselves, with their families, and with other community members, often virtually. Half of the interviewees said that traditional practices helped them cope with stress caused by the pandemic: "When we smudge it kind of just cleanses stuff and . . . you don't really focus that much on the coronavirus. You're just being positive" (male, 12). Several respondents (n=3, 15%) described taking part in online powwows or events tailored to specific interests, as this sixteen-year-old male teen explained: "Something that I am aware that is put up is for dancers, and singers, and drummers in the Native community. They have an online website. It's called *The Virtual Powwow*." Another twelve-year-old female was grateful for the range of online workshops available: "It just gives me something to do. There's cooking workshops and beading workshops, art workshops, stuff like that."

## DISCUSSION

To our knowledge, this is the first study to use both quantitative and qualitative data to describe effects of a pandemic on urban American Indian and Alaska Native youth across a variety of domains. We focused on trying to understand challenges that these urban-based teens were experiencing during the pandemic by exploring how the pandemic affected teens' mental health, substance use, sleep, family dynamics, financial hardship, community cohesion, and participation in traditional practices. Findings capture both self-reported data and narrative reflections on the pandemic *during the pandemic* rather than retrospectively, thus strengthening the internal validity of the results. Equally important was the community-based approach in our study design: as both quantitative and qualitative instruments were derived with input from our community partners; the study therefore prioritized areas of concern for the community, including cultural sensitivity, multigenerational family dynamics, and traditional practices.

Overall, teens noted the seriousness of COVID-19, and reported numerous ways that they protected themselves, including wearing a mask and washing hands



frequently. This is important to note because it shows resilience against a long-standing erosion of civil discourse, i.e., honest and constructive public dialogue reflecting the public interest.<sup>60</sup> Furthermore, despite recent messages by political leaders and the media comparing COVID-19 to the influenza virus,<sup>61</sup> teens in our study were very concerned and believed COVID-19 to be quite dangerous compared to the flu. It is also possible that adolescents chose to protect themselves due to personally knowing others who had COVID-19.

Findings from interviews focused on key adolescent outcomes during the early months of the COVID-19 pandemic, including sleep patterns and quality, mental health, social relationships, and economic well-being. However, causal relationships cannot be determined because data are cross-sectional. Most teens said that they had trouble falling asleep or were sleeping too much, and many stayed up past 3:00 am and woke up much later compared to sleep schedules pre-pandemic. Narrative comments contextualized these findings by clarifying that in the absence of a school-imposed routine, teens' days were considerably less structured and they faced challenges related to balancing online classes, homework, and leisure time. According to the interviews, much of this imbalance was driven by a significant increase in use of electronic devices for both school and personal communication. Screen time was already high before the pandemic among American Indian and Alaska Native teens and other groups of teens.<sup>62</sup> In addition, nearly half of the teens reported an increase in daytime napping, in part due to more flexible schedules and to fill time during their mostly unstructured days. In the absence of external motivators and structure offered by in-person schooling, findings warrant attention to how modern technology can be harnessed not only to assist teens with planning and managing their time, but also to emphasize the importance of providing some structure and limitations on technology use. This is especially important given that most high schools in California will likely continue distance learning until at least April 2021, and potentially until fall 2021.<sup>63</sup> Findings also highlight a potential benefit for teens' sleep duration in the absence of in-person school, as early school start times during the traditional school year have been identified as a key factor curtailing adolescents' sleep opportunity in previous work,<sup>64</sup> and was also noted by many adolescents in the current survey and interview.

Teens also reported significant anxiety and depressive symptoms in the previous two weeks. Approximately one in five met clinically significant thresholds for anxiety and depression, and one in four met criteria for PTSD. These findings are likely explained, in part, by teens' reports of psychosomatic symptoms, indicated by both the quantitative and qualitative data, including dramatic changes in sleep patterns, anxiety around COVID-19 and its effects on daily life, and feeling distant or cut off from people. Similar findings on stress, anxiety, and depression during the COVID-19 pandemic have emerged from recent studies on general populations in Spain,<sup>65</sup> Italy,<sup>66</sup> and China.<sup>67</sup> It is noteworthy that the studies in Spain and China found that younger respondents tended to have a higher prevalence of anxiety and depressive symptoms related to the COVID-19 pandemic. It is crucial to provide parents with tools to talk to their teens about their feelings and thoughts during

these unprecedented times. Research has shown that when parents communicate effectively with their teens, teens feel more resilient and are able to more successfully cope with stressful experiences.<sup>68</sup> In addition, it is important to consider enhanced mental health resources through other institutional settings, such as community organizations or schools.

Our findings also highlight the economic strain experienced by many American Indian and Alaska Native families during COVID-19. Although few adolescents reported concerns about housing stability, nearly one-third of the sample (28%) reported low or very low food security. The national average for food insecurity (i.e., very low and low food security) is 11.1 percent, with Black and Hispanic households reporting 21.2 percent and 16.2 percent food insecurity.<sup>69</sup> Our findings are consistent with other data showing about a quarter of Native groups to be food insecure pre-COVID-19.<sup>70</sup> Prior research has shown that health outcomes in US children and adolescents, such as general health, oral health, and cognition are significantly diminished by sustained food insecurity.<sup>71</sup> Food insecurity also exacerbates risk for obesity, diabetes and other chronic conditions that are known to be prevalent among American Indian and Alaska Native people.<sup>72</sup> Results demonstrate the importance of addressing this pervasive socioeconomic problem by enhancing the safety net around food distribution during times of crises as well as other policies to support availability and access to healthy foods.<sup>73</sup>

In the midst of the problems reported, youth also exhibited resilience. First, very few teens reported substance use in the past thirty days. This is notable, as research has shown that teens may be more likely to drink and use marijuana after stressful events and when they are experiencing anxiety and depressive symptoms.<sup>74</sup> Second, adolescents reported high levels of family cohesion and relatively low levels of conflict during the pandemic, and interviews illustrated that teens were spending more time with family, engaging in activities together within the home, and getting closer to parents during this time. Third, the majority of teens said that they felt good about their community, with people in their community coming together in the last two weeks, and most said that they had improved relations with their family and friends. Finally, many of the teens reported participating in traditional practices (e.g., prayer, cooking, dancing) during the pandemic, and half of the teens who were interviewed emphasized that engagement in virtual workshops and ceremonies helped them cope with consequences of the pandemic. This is consistent with previous research showing that participating in cultural events, such as powwows or being part of community cultural gatherings and activities, can positively affect sleep and psychological health,<sup>75</sup> and that cleansing and prayer ceremonies may help adolescents cope with anxiety and depression.<sup>76</sup> Recent work with urban American Indian and Alaska Native teens has shown that connecting with culture is protective; thus, it is imperative that urban Native teens have opportunities to participate in traditional practices by finding innovative ways to connect with their culture during the pandemic.<sup>77</sup> In fact, during the pandemic, many American Indian and Alaska Native organizations have provided numerous ways for youth to meet with the community, including virtual powwows, beading groups, and online cooking classes.<sup>78</sup>

## LIMITATIONS AND CONCLUSION

Due to the rapid data collection timeframe for this study, both the survey and interview samples are relatively small. Given the remarkable circumstances of this pandemic, the team decided that having timely preliminary mixed-methods data on this understudied population was crucial to provide an understanding of how COVID-19 was affecting urban American Indian and Alaska Native teens. Second, teens come from urban areas in southern, central, and northern California, so their experiences may not be representative of urban Native adolescents elsewhere in the United States. Furthermore, data collection occurred between May to July 1, 2020, a period in which different areas in California were transitioning from mandated stay-at-home orders to somewhat less stringent orders, which may have introduced heterogeneity. Third, socially desirable response bias may be a concern with the type of self-reported survey data and interview methods utilized in this study.<sup>79</sup> However, survey and interview findings align with previous research with urban American Indian/Alaska Native teens, for example, on sleep health, mental health, food insecurity, and participation in traditional practices.<sup>80</sup> Fourth, we did not compare quantitative findings to pre-COVID-19 outcomes, and thus we do not know whether in this sample mental health, family cohesion, and other outcomes increased or decreased after COVID-19; however, given that we are continuing to follow this cohort, our future work will allow us to analyze outcomes longitudinally. Finally, we used a rapid assessment method to explore the qualitative data given the timeliness of the data, which precluded the calculation of important qualitative metrics, such as inter-rater reliability and saturation. However, more than half of the codes in this study mirrored codes we had deployed and rigorously assessed for reliability during a prior study.<sup>81</sup> Also, the combined analysis and reporting of survey and interview findings was an effective way of validating qualitative codes against survey results. Finally, all interviewers received extensive training and support relating to interviewing methods, but some differences in style and rapport may have occurred.

We used a community-based participatory approach and worked closely with American Indian and Alaska Native communities to develop our survey and interview and fill an important gap in research with urban Native adolescents during a pandemic. A critical goal of this work was to understand teens' perspectives through qualitative interviews, as their experiences can help inform preventive efforts so that they are culturally appropriate. Work from the IRINAH (Intervention Research to Improve Native American Health) group and others has documented the importance of collaborating with American Indian and Alaska Native communities to address the complex social inequalities stemming from colonization and institutional racism that contribute to health disparities by understanding local issues, utilizing a strength-based approach, and integrating the cultural context into preventative efforts.<sup>82</sup>

Overall, the urban Native teens in this study showed that they understood the seriousness of COVID-19 and were taking steps to protect themselves. As one would expect during a pandemic, many teens reported anxiety and depressive symptoms and sleep problems. Many also indicated financial strain and food insecurity, highlighting

the importance of providing resources during pandemics and beyond for populations who are already disproportionately affected by poverty and disparities. Teens also described their resilience during these difficult times by talking about the support they received from their families and the community, and how opportunities to connect with their culture helped them decrease their stress and anxiety. However, longer term strategies should consider system-level preventive interventions that address racial and historical discrimination as a social determinant of health by limiting exposure to health-damaging factors such as food insecurity and economic deprivation, which could help reduce risk and increase resilience in urban Native communities and youth.

Our findings suggest that prevention programs for urban American Indian and Alaska Native teens during pandemics should incorporate sleep and stress management aids, and enhanced safety-net support to connect families to resources in their community. In addition, resilience strategies need to be encouraged and enhanced, including spending time with family and finding innovative ways to connect with culture and tradition. Most importantly, programs need to be developed with community input to ensure that they are culturally centered and address the existing contexts and capacities of Indigenous communities, which will enhance feasibility and sustainability.<sup>83</sup>

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