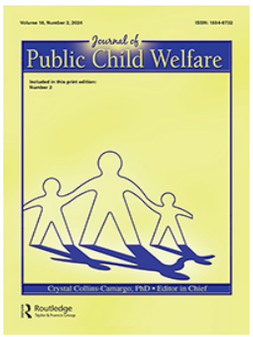

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RESEARCH ARTICLE

Examining prevalence and predictors of food insecurity for transition-age youth transitioning out of foster care

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ABSTRACT

Transition-age youth with foster care involvement (TAY) face significant risks for food insecurity and other hardships in early adulthood. Using representative survey data of youth transitioning out of foster care in California, we examine the prevalence and predictors of food insecurity. We find that about 30% of study participants were food insecure at ages 19, 21, and 23. We also identify multiple risk and protective factors associated with being food insecure, such as TAY's sexual identity and receipt of public benefits. The results of our study offer life-stage-specific recommendations for policy and practice to address food insecurity among TAY.

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Food insecurity; transition-age youth; foster care; public aid; extended foster care

Introduction and motivation for the study

Food insecurity is one of the most common forms of material hardship – living without necessities such as housing, electricity, water, and health insurance (Neckerman, Garfinkel, Teitler, Waldfogel, & Wimer, 2016). According to the United States Department of Agriculture (USDA), about 90% of U.S. households were food secure "with access at all times to enough food for active, healthy life for all household members" (Coleman-Jensen, Rabbitt, Gregory, & Singh, 2022, p. i). That means about 10% of U.S. households were food insecure, meaning they have limited access to food. Some populations face higher risks of food insecurity. One such population is transition-age youth with foster care involvement (hereafter referred to as TAY).

We use the term TAY throughout this manuscript to describe young people approximately ages 16–23 who are in the transition period from adolescence to adulthood and who also have been involved in the foster care system. Key evidence highlights the significance of this developmental period, as young people navigate legal, social, economic, and biological shifts that can cumulatively shape the remainder of their adult lives (e.g., Danziger & Ratner, 2010; Gunter &

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Holford, 2023; Heinz & Bynner, 2021). This unique transitional time can be difficult for all young people to maneuver, but it may be especially challenging for young people with foster care experience who often face distinct barriers and risks to successful transitions to adulthood, including social and economic precarity (Luhr, 2018; Peters, Sherraden, & Kuchinski, 2016).

Despite the importance of this transitional period and the unique challenges faced by TAY, literature on the TAY's food insecurity during this time is limited. We examine the prevalence of food insecurity among TAY at age 19, 21, and 23 and identify risk and protective factors associated with TAY's food insecurity. Our analyses leverage longitudinal data from a representative sample of youth in California foster care. Our results suggest that about a third of TAY in California were food insecure at ages 19, 21, and 23. We also identified multiple risk and protective factors associated with youths' food insecurity conditions at different ages, such as sexual identity and receipt of public benefits. Our study responds to the growing concerns about food insecurity in America, contributes to the literature on the economic outcomes of TAY and the predictors of such outcomes, and, most importantly, informs social and child welfare policy and practice decisions.

Background

Food insecurity among transition-age youth with foster care involvement

When reviewing the existing literature on food insecurity among TAY, most studies do not distinguish between food insecurity experienced while youth were in care versus food insecurity while youth were out of care. This is due in part studies often include a mix of youth who are still in foster care and youth who have left care. Besides, child welfare policies differ across states. For example, some states have elected to extend the foster care age limit to 21, while others require youth to exit care at age 18. Thus, a multistate study with 19-year-olds will include some youth who can remain in care and other youth who had to leave. Consequently, with this caveat in mind, in this section we broadly review literature below that captures food insecurity of TAY.

Given the variations in foster care policies across the country, findings from existing studies on food insecurity of TAY vary by location and policy context. Yet, overall, large regional studies of TAY indicate that food insecure behaviors, such as skipping meals, not eating enough, or borrowing money for food from friends or relatives because they could not afford food, are prevalent among TAY (Courtney et al., 2007, 2018). A study in three Midwestern states (Illinois, Iowa, and Wisconsin) provides early evidence that one in four young adults with foster care histories experience food insecurity at age 21 (Courtney et al., 2007). Findings from a longitudinal survey of older youth exiting foster care in a western state also identified high rates of food insecurity, with 29% of

study participants reporting food insecurity at age 19 (about four-fifths were in care and one-fifth were out of care) (Courtney et al., 2016). Later in the study when all participants had exited care, about 29% were food insecure at age 21 and 28% were food insecure at age 23 (Courtney et al., 2018, 2020). This study also identified significant differences in TAY food insecurity experiences across demographics, with female youth being more likely than male youth to report food insecurity and Hispanic youth tending to report fewer food insecure experiences than their non-Hispanic peers (Courtney et al., 2016, 2018, 2020). Furthermore, studies suggest that food insecurity is more common among TAY than among peers in the general public (U.S. Government Accountability Office, 2018). For instance, a study of about 34,000 college students in 24 states shows that 55% of the students with foster care backgrounds experienced very low food security compared to 33% of those never placed in foster care (Goldrick-Rab, Richardson, & Hernandez, 2017). However, a limitation of this study is that it used a very broad definition of foster care involvement: ever being in foster care. The study sample likely includes TAY (i.e., youth who were in care in their late adolescence and beyond) as well as students who had only been in care early in life. The data used in the analysis does not allow for this distinction to be made.

Food insecurity among TAY is particularly worrying because these young people experienced multiple economic challenges and limiting circumstances, and their support networks are often disrupted or diminished due to their involvement in foster care (Collins, Spencer, & Ward, 2010; Okpych, Park, Powers, Harty, & Courtney, 2023). Previous research indicates that young adults with foster care involvement face challenges in securing employment, adequate earnings, stable housing, and day-to-day necessities. One study showed that young people with foster care experience are significantly less likely than their peers to be employed and earn significantly less income, which are disparities that continue through age 30 (Stewart, Kum, Barth, & Duncan, 2014). Another study found that the average earnings of youth with foster care history in Wisconsin are below the poverty level, even eight years after exiting foster care (Dworsky, 2005). Furthermore, young people who leave foster care experience high rates of homelessness, ranging from 31% to 46% (Dworsky, Napolitano, & Courtney, 2013). One study examined housing stability in the two years after youth exited foster care and found that 22% of youth experienced chronic homelessness (Fowler, Toro, & Miles, 2009). A recent study found that about half of young adults with foster care histories experience at least one material economic hardship event at both age 19 and age 21, such as not having enough money to buy clothes or not having enough money for rent, though TAY who stayed longer in extended foster care (EFC) report significantly fewer hardships than TAY who spent less or no time in EFC (Nadon, Park, Feng, & Courtney, 2022).

Food insecurity is especially concerning because it is linked to adverse health, behavioral, and social outcomes beyond economic hardship. For children and

youth, food insecurity and poor nutrition may harm children's physical, cognitive, and social-emotional development (Arlinghaus & Laska, 2021; Cain et al., 2022; Hines, Markowitz, & Johnson, 2021; Knowles, Rabinowich, Ettinger de Cuba, Cutts, & Chilton, 2016). Adolescent food insecurity is a significant risk factor for mental health problems, such as increased anxiety, substance use disorder, persistent depressive disorder, and suicide symptoms (Alaimo, Olson, & Frongillo, 2002; McLaughlin et al., 2012) and academic outcomes, such as lower vocabulary, reading, math and English scores (Aurino, Fledderjohann, & Vellakkal, 2019). Qualitative evidence from 20 focus groups with nearly 200 teens across the U.S. found that many young people engage in criminal activity and are sexually exploited to secure food (Popkin, Scott, & Galvez, 2016). Although we could not be sure whether the study included young people with foster care histories, the study suggests some disturbing consequences that young people experiencing food insecurity may suffer.

Potential risk and protective factors of TAY's food insecurity

To explore potential risk and protective factors of TAY's food insecurity, we build on the literature on the factors associated with TAY's economic challenges and the characteristics of the general population experiencing food insecurity. There are limited studies on predictors of TAY's food insecurity. Moreover, food insecurity is one of the most common forms of material hardship that is often accompanied by other forms of insecurities, such as economic hardship, housing instability, and foregone medical care (Gould-Werth & Seefeldt, 2012).

Potential risk factors

Several studies identify individual-level factors that increase TAY's chances of experiencing adverse economic outcomes. For example, some studies find that youth identifying as a sexual minority are more likely to experience economic hardship (Nadon, Park, Feng, & Courtney, 2022) and depend on aid from SNAP and SSI (Dworsky, Napolitano, & Courtney, 2013). Evidence also indicates that young people in foster care with mental health or substance abuse disorders and those with juvenile legal system involvement are more likely to experience adverse outcomes, such as homelessness, compared to other youth in foster care (Dworsky, Napolitano, & Courtney, 2013). Additional studies show that Hispanic youth in foster care tend to experience worse economic hardships as adults than do non-Hispanic White youth (Watt & Kim, 2019). Further evidence also documents that most female parents with foster care histories face distinct barriers to education and employment associated with parental responsibilities (Hook & Courtney, 2011).

The findings from the food insecurity literature suggest a similar set of individual-level risk factors. For instance, a study using the National Health

Interview Survey data from 2011 to 2017 finds that, in the population experiencing food insecurity, females are 23% more likely to be food insecure than males, Black adults are 1.7 times more likely to be food insecure than White adults, and that the likelihood of food insecurity increases as income decreases (Walker et al., 2021). Being a parent may be another factor exposing TAY to food insecurity. Extensive research consistently finds that about a tenth or more of U.S. households are food insecure, and the rates are higher in households with children (Coleman-Jensen, Rabbitt, Gregory, & Singh, 2022).

More recent literature highlights environmental and structural risk factors that can increase the likelihood of food insecurity, including major household events (e.g., job loss, birth, illness), rising gas prices, racism, inability to access public aid, and concentrated poverty (Bowen, Elliott, & Hardison-Moody, 2021; di Giovanni, Kalemli-Özcan, Silva, & Yildirim, 2022; Holben & Marshall, 2022; Maynard, Meyer, Perlman, & Kirkpatrick, 2018). Regarding racial and ethnic disparities, research suggests that social and economic disadvantages among people of color likely contribute to higher food insecurity rates. For example, racism and discrimination may exacerbate racial income and wealth disparities, which in turn lead to food insecurity (Bowen, Elliott, & Hardison-Moody, 2021; Odoms-Young & Bruce, 2018).

The COVID-19 pandemic also intensified food insecurity in the United States (Kim-Mozeleski et al., 2023). A study conducted by multiple federal agencies in the early onset of the COVID-19 pandemic showed that 23% of U.S. households and 30% of households with children were food insecure in April and May of 2020 (Schanzenbach & Pitts, 2020).[1] The pandemic intensified food insecurity among American families in multiple ways, including health impacts from infection and a long recovery process, a significant increase in unemployment through layoffs and furloughs, delays in unemployment insurance payments, and food scarcity at local grocery stores (Lauren et al., 2021; Morales, Morales, & Beltran, 2021; Wolfson & Leung, 2020). Studies on the impacts of COVID on TAY is growing, but collectively suggests that the pandemic put TAY in a challenging position. Compared to the pre-pandemic years, TAY were more likely to be unemployed, disconnected from school and work, have fewer savings, experience food insecure, and experience behavioral health issues (Rosenberg, Sun, Flannigan, & O'Meara, 2022; Ruff & Linville, 2021).

Potential protective factors

Emerging literature also yields insights into the social and political factors that may insulate TAY from food insecurity. One study suggests that placement in kinship care settings may increase children's food and economic insecurity experiences as they often live with families grappling with poverty and receive fewer services and public aid (Ehrle & Geen, 2002). A recent study demonstrates the protective effects of enduring social support networks, long-lasting relationships that youth can turn to for emotional support, tangible support,

and/or advice (Okpych, Park, Powers, Harty, & Courtney, 2023). The study found that youth with an enduring relationship are less likely to experience food insecurity (22%) compared to TAY without an enduring relationship (36%) (Okpych, Park, Powers, Harty, & Courtney, 2023).

Participation in extended foster care (EFC) is another important potential protective factor. The Fostering Connections to Success and Increasing Adoptions Act of 2008 allowed states to extend the foster care age limit from 18 up to age 21 (Mosley & Courtney, 2012). Remaining in foster care provides young people not only with case management but also financial support to meet their housing, food, and daily living needs (Courtney, Okpych, & Park, 2021)Studies have identified substantial benefits to staying in EFC, including increased earnings (Hook & Courtney, 2011), improved secondary and postsecondary education outcomes (Courtney, Okpych, & Park, 2018; Okpych & Courtney, 2020), reduced risk of justice system involvement (Lee, Courtney, & Tajima, 2014), delayed pregnancy (Dworsky & Courtney, 2010), and decreased risk of housing instability and economic hardships (Courtney, Okpych, & Park, 2018). When looking at the impact of time in EFC on food insecurity, past studies in one state found that EFC did not significantly reduce the likelihood of food insecurity at ages 19 or 21 (Courtney & Okpych, 2017; Courtney, Okpych, & Park, 2018), but each year in EFC did decrease the odds of food insecurity at age 23 (Courtney, Okpych, & Park, 2021). As mentioned above, a limitation of existing literature on food insecurity among TAY is that many cannot pinpoint whether food insecurity occurs when youth are in foster care or out of care. A strength of the present study is our ability to take a more nuanced approach to examining food insecurity among youth who are in and out of foster care.

Government-funded safety-net programs play an important role in reducing the risk of food insecurity. A study showed that an additional $1,000 in direct cash benefits from safety-net programs significantly reduced experiences of food insecurity by 1.1% points (Schmidt, Shore-Sheppard, & Watson, 2016). The Supplemental Nutrition Assistance Program (SNAP, also known as food stamps) is the primary federal program to address food insecurity and the nutritional needs of American households. The program serves about 15% of U.S. families, and studies find significant reductions in food insecurity experiences for families receiving SNAP (Gray, 2019). For example, a study found that SNAP use reduces food insecurity in households with children by at least six percentage points (from 31% to 25%) (Gundersen, Kreider, & Pepper, 2017). Further research indicates that a growing number of young adults on college campuses are food insecure, with 7.3 million U.S. college students meeting the income requirements for the SNAP program (Freudenberg, Goldrick-Rab, & Poppendieck, 2019).

The Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) is another targeted program providing supplemental foods to low-income expectant and postpartum women and low-income families with infants or children up to five years old who are at nutritional risk (Oliveira &

Frazão, 2015). Many studies have found WIC receipt to positively impact healthy and nutritional food consumption (Caulfield et al., 2022; Schultz, Byker Shanks, & Houghtaling, 2015). A longitudinal study of the most at-risk mothers in Massachusetts showed that enrollment in WIC lowered the risk of food insecurity by a third (Metallinos-Katsaras, Gorman, Wilde, & Kallio, 2011). The Temporary Assistance for Needy Families (TANF) program provides financial assistance to low-income families with children, including about half a million adults and 1.6 million children (Administration for Children & Families, 2020). A study found that the communities with lower access to TANF are more likely to report a higher prevalence of food insecurity (Borjas, 2004).

Despite the prevalence of food insecurity in the U.S., the negative outcomes associated with food insecurity among young adults, and the compounding vulnerabilities of TAY, few studies have examined food insecurity among TAY. By examining the prevalence, risk, and protective factors of food insecurity among TAY at different points of their lives, our study contributes to the emerging and important body of work that can inform both practice and policy in child welfare and other social policy areas that may address food security concerns in the U.S.

Methods

Data

We used youth survey data and administrative data from the California Youth Transitions to Adulthood Study (CalYOUTH), a decade-long evaluation of the impacts of California's extended foster care program on youth outcomes. CalYOUTH conducted longitudinal surveys with a representative sample of TAY in California. The first survey was conducted in 2013 when eligible youth were about 17 years old. To be eligible for the survey, youth had to be between ages 16.75 and 17.75 in December 2012 and have been in California foster care for at least six months. Across California's 58 counties,[2] we identified 2,583 eligible youths. To maximize the number of counties represented in the study, CalYOUTH used a stratified random sampling approach. Based on the number of eligible youth in each county, the youth had different chances to be randomly selected (e.g., 100% chance for youth from counties with less than six eligible youths and 25% chance for youth from counties with more than 100 eligible youths). This sampling strategy identified a sample of 880 youths. Among these, 117 youths were found to be ineligible during the survey field period for various reasons (e.g., runaway status for at least two months, incarcerated, physically and mentally unable to participate). Out of the remaining 763 eligible youths, 727 completed the first survey when participants were 17.5 years old on average (response rate = 95%). Three follow-up surveys were conducted when the youth were about age 19 (in 2015; $n = 611$; follow-up rate = 84%), age 21 (in 2017; $n = 616$; follow-up rate = 85%), and age 23 (in 2019; $n = 622$; follow-up rate = 86%).

The youth survey data collected in-depth information on a wide range of youths' characteristics, experiences, and outcomes (e.g., food insecurity, demographic characteristics, social supports, behavioral health issues, education status, etc.). For more information about the study's sampling and recruitment procedures, see Courtney et al (2016, 2020, 2018).

This manuscript also leveraged multiple sources of administrative data. We used California's child welfare administrative data to gather youths' foster care history and maltreatment records. We also used California Employment Development Department (EDD) data to gather information on youths' earnings. The information on the amount of the Supplemental Nutrition Assistance Program (SNAP or CalFresh) and Temporary Assistance for Needy Families (TANF or CalWORKS) youth received comes from California's Electronic Benefits Transfer and Statewide Automated Reconciliation System (EBT/SARS) data. CalYOUTH received approvals of the University of Chicago's and California Department of Social Service's Institutional Review Boards for conducting youth surveys and accessing administrative data. In addition, to capture contextual information on the counties in which youth were supervised, we used the following publicly available data sources: California Secretary of State's voter registration data and American Community Survey estimates on unemployment rates. Leveraging multiple and reliable quantitative data is a unique strength of our study. We discuss the importance of similar studies to guide child welfare policy and practice in the Discussion section.

Sample

The analytic sample for the current study includes 681 CalYOUTH participants. These include young people who participated in the baseline survey at age 17 (Wave 1 in 2013) as well as at least one of the follow-up surveys at age 19 (Wave 2 in 2015), 21 (Wave 3 in 2017), or 23 (Wave 4 in 2019). There were 12 additional youths who met these criteria but were not included in the analytic sample because they did not give permission to CalYOUTH to access their administrative data. The sample size for individual analyses varies based on the number of missing values for each outcome and the number of youth who participated in each survey wave. For instance, the analyses predicting youths' food insecurity experience at age 21 uses the information of 592 youths, and a similar analysis predicting youths' food insecurity experience at age 23 uses information of 603 youths.

Outcome variables

Our outcome is a binary measure of food insecurity. We created three food insecurity measures from survey data collected at ages 19, 21, and 23, respectively. The outcome was captured by the U.S. Department of Agriculture's (USDA) food insecurity questionnaire, which asked about experiences in the past 12 months

(Carlson, Andrews, & Bickel, 1999). Following the USDA's definition (Coleman-Jensen, Rabbitt, Gregory, & Singh, 2022), we classify a youth as food insecure if they endorsed two or more of the following five items: (1) Anyone in a household skipped/cut the size of meals because of not enough money for food; (2) Did not eat for a whole day because of not enough money for food; (3) Ate less than you should because of not enough money for food; (4) Did not have enough money to buy food after food didn't last (sometimes or often), and; (5) Could not afford to eat balanced meals (sometimes or often).

Predictor variables

Our predictors included several relevant youth and county-level attributes. These independent variables include several individual characteristics, such as race, gender, sexuality, income, education, and parenting status, which were found to be significant predictors of food insecurity and/or youth outcomes in previous studies discussed above in the literature review (e.g., Coleman-Jensen, Rabbitt, Gregory, & Singh, 2022; Courtney et al., 2016; Nadon, Park, Feng, & Courtney, 2022; Walker et al., 2021). Also included are multiple policy and regional factors found to be significant in previous food insecurity and TAY studies, such as participation in EFC (Courtney, Okpych, & Park, 2018; Hook & Courtney, 2011), receiving public benefits, and unemployment rate among young people (Bowen, Elliott, & Hardison-Moody, 2021; Coleman-Jensen, Rabbitt, Gregory, & Singh, 2022). As described in the Analytic Approach section, we created measures for each predictor around the time of the three survey waves (age 17, age 19, and age 21).

TAY's demographic characteristics

Using the youth survey data, we captured youths' demographic characteristics, including their age when the food insecurity was measured, gender (0 = female, 1= male), race/ethnicity (0 = White, 1 = Black, 2 = Multiracial/ethnic, 3 = Hispanic, 4 = Other[3]), and sexual orientation (0 = identified as 100% heterosexual, 1 = identified not as 100% heterosexual).

Youth-level risk and protective factors

We also measured risk and protective factors relevant to youth's economic insecurity and food insecurity experiences (Nadon, Park, Feng, & Courtney, 2022), including having health insurance, having health conditions or disabilities that limit daily activities, whether youth felt that they had an adequate number of people providing emotional support (someone to talk about something private) and tangible support (someone who can lend or give something the youth needed) (0 = none or too few people, 1 = enough people), screened positive for mental health disorder[4] or sub-

stance use disorder[5] using the Mini International Neuropsychiatric Interview (MINI),[6] parenting status [0 = not parent, 1= parent not living with their child(ren), 2 = parent living with their child(ren)], household size, and secondary or postsecondary education enrollment status (0 = Not in school, 1 = Part-time enrollment, 2 = Full-time enrollment).

Youth's foster care history

Using California child welfare administrative data, several measures captured aspects of youths' foster care history that have been found to significantly influence TAY outcomes (Courtney & Okpych, 2017; Courtney, Okpych, & Park, 2018, 2021). These include the age when they first entered foster care, the number of placement changes per year in care before age 18, ever placed in relative foster care before age 18, ever placed in congregate care (group home, residential treatment facility, or other child caring institution) before age 18, ever placed in a probation-supervised placement before age 18, and the number of months youth stayed in EFC. We also capture the number of the screened-in reports (i.e., substantiated, inconclusive, or unfounded) youth had for five different types of maltreatment allegations: sexual abuse, physical abuse, severe/general neglect, emotional abuse, caretaker absence/incapacity as a measure of multiple forms of maltreatment youth experienced (Herrenkohl & Herrenkohl, 2007).

Income and housing expenses

Another set of predictors includes various sources of youths' income and housing expenses. These variables were created from state administrative data when available, as well as self-reported information from the CalYOUTH surveys. Given that a youth's financial security is likely related to their food security, we use income and housing expense data for the same time period that the TAY's food insecurity status was measured. We leveraged administrative data to estimate youths' earnings (EDD data) and the amounts of SNAP and TANF youth received in the 12 months before ages 19, 21, and 23, respectively. Based on survey data, youth reported the amounts they received in the past 12 months in unemployment benefits, workers' compensation, and rental assistance. Amounts of each of these were computed from the three follow-up surveys when they were about 19, 21, and 23 years old, respectively. The CalYOUTH surveys asked whether youth ever received WIC benefits, but not about the WIC benefit amount. Thus, we used publicly available data on the WIC benefit amount in California to estimate youths' WIC benefit amount. The WIC amount was based on a youth's gender, parenting status, age of their child(ren), whether parenting youth were living with the child(ren), and whether they indicated receiving WIC. We captured the amount of rent or mortgage payments TAY paid monthly using the CalYOUTH survey. Housing

accounts for over a third of most American household expenses, particularly higher for lower-income households and individuals, potentially impacting their spending on needed and nutritious food (The White House, 2021).

County characteristics

Informed by our previous study demonstrating the county-level context's influence on TAY's experiences and outcomes (Park, Okpych, Harty, & Courtney, 2023), we measured two county-level attributes. Local labor market conditions are measured through American Community Survey estimates on unemployment rates among residents between ages 16 and 24. Using county-level voter registration data from the California Secretary of State website, we measured the county's political atmosphere with the percentage of Republicans among the county's registered voters – a common approach used by political scientists. Previous studies show local political preferences influence their social service system's administrative processes and outcomes (Elgin & Carter, 2019; Hutchcroft, 2001).

Analytic approach

Before examining predictors of food insecurity, we provide descriptive statistics for the outcomes and predictors used in our analyses. We then use linear probability models to estimate the associations between a unit change in each predictor and the expected change in the probability of youth being food insecure at age 19, 21, and 23, respectively (Heckman & Snyder, 1997). We use lagged predictors from the previous interview wave to ensure the predictors temporally precede the outcome. For instance, when estimating food insecurity at age 21, we use predictors measured at age 19. We apply survey weights in the analyses to account for CalYOUTH's stratified random sampling approach so that findings are expanded to the youth population meeting the study criteria. Missing values of predictor variables were addressed with multiple imputation by chained equations (MICE) (Buuren, 2010) to minimize bias from reduced observations. We analyzed thirty imputed datasets.

Results

Descriptive statistics

TAY's demographic characteristics

Our sample includes racially and ethnically diverse youth in California foster care (see Table 1). There were more females than males. At each interview wave, more than a fifth of the youth identified with a sexual orientation that was not 100% heterosexual.

Table 1. Descriptive statistics.

	Youth survey W1		Youth survey W2		Youth survey W3		
	N = 681 youths		*N* = 588 youths		*N* = 592 youths		
	N	Mean (S.D.)/%	N	Mean (S.D.)/%	N	Mean (S.D.)/%	Diff.
Youth demographic characteristics							
Age at the time of the survey, Mean (SD)		16.95 (0.28)		19.50 (0.26)		21.55 (0.31)	***
Assigned sex at birth (Male), %	276	40.1%	236	40.2%	232	37.6%	
Race/Ethnicity, %							
White	164	18.6%	138	17.5%	164	21.5%	
Black	101	17.5%	104	22.7%	103	22.1%	
Multiracial/ethnic	98	14.7%	66	9.3%	60	8.9%	
Hispanic	293	46.7%	260	47.3%	243	44.4%	
Other[1]	24	2.7%	23	3.2%	26	3.1%	
Not 100% heterosexual, %	153	23.1%	125	20.8%	144	22.8%	
Youth's risk and protective factors							
Have health insurance, %	653	96.9%	543	92.9%	530	88.6%	***
Health condition limits daily activities, %	39	4.5%	118	18.7%	127	19.9%	***
Have adequate emotional social support network, %	468	65.4%	354	58.3%	388	62.7%	**
Have adequate tangible social support network, %	415	59.1%	331	53.1%	344	55.6%	
Positive screening for mental health disorder[2], %	302	43.0%	173	26.7%	161	24.7%	***
Positive screening for substance use disorder, %	185	25.0%	93	14.1%	90	12.3%	***
Household size, Mean (SD) [3]				3.07 (2.46)		2.94 (2.39)	
Parenting status, %							***
Not a parent	636	93.3%	475	79.9%	409	67.8%	
Parent not living with their child(ren)	11	1.8%	21	3.7%	36	6.2%	
Parent living with their child(ren)	32	5.0%	95	16.4%	150	26.0%	
Enrolled in high school or college, %							***
Not in school	68	9.8%	288	47.1%	440	71.9%	
Part-time enrollment[4]			116	21.1%	70	13.3%	
Full-time enrollment	613	90.2%	187	31.8%	85	14.8%	
Youth's foster care history							
Age of foster care entry, Mean (SD)		10.05 (5.39)		10.17 (5.42)		10.17 (5.37)	
Number of placement changes per year in foster care before age 18, Mean (SD)		1.53 (1.07)		1.52 (1.08)		1.55 (1.08)	
Ever placed in kinship foster care, %	418	64.12%	364	64.1%	370	64.3%	
Ever placed in congregate care, %	358	53.27%	305	53.6%	311	53.0%	
Ever in probation-supervised foster care, %	10	1.71%	6	1.05%	8	1.78%	
Number of screened-in-report[5] maltreatment types[6], Mean (SD)		3.11 (1.13)		3.11 (1.15)		3.13 (1.14)	
Months in EFC, Mean (S.D.)							
In the past 12 months, before completing the W2 interview		9.93 (4.06)					
In the past 12 months, before completing the W3 interview				8.50 (5.30)			
Between 18th and 21st birthdays						27.22 (13.08)	
County characteristics							
Unemployment rate among ages 16–24%), Mean (SD)		24.4% (5.0%)		19.0% (4.1%)		13.3% (3.2%)	***
Percentage of Republicans among registered voters, Mean (SD)		28.2% (9.6%)		28.3% (9.6%)		26.3% (9.4%)	***

Note: *$p < .05$, **$p < .01$, ***$p < .001$. [1]Includes Asian, Pacific Islander, and Native American; [2]Includes major depressive episode, dysthymia, manic episode, hypomanic episode, obsessive-compulsive disorder, post-traumatic stress disorder, social phobia, attention-deficit hyperactivity disorder, oppositional defiant disorder, conduct disorder, or psychotic thinking; [3]The Wave 1 interview did not ask about the youth's household size; [4]Part-time enrollment response option was not offered in the Wave 1 interview; [5]Includes substantiated, inconclusive, and unfound allegations records; [6]Includes sexual abuse, physical abuse, neglect, emotional abuse, and caregiver absence.

Youth-level risk and protective factors

Most youth had health insurance, but the percentage with insurance decreased as they got older. About 5% of youth reported a health condition that limited their daily activities at age 17, and 19% and 20% reported a limiting health condition at ages 19 and 21, respectively. More than half of the youth reported they had enough people to rely on for emotional support and for tangible support. The percentages of youth who screened positive for a mental health disorder (43%) or a substance use disorder (25%) were highest at age 17 and declined with age. This trend is consistent with a prior longitudinal study of youth transitioning out of care (Brown, Courtney, & McMillen, 2015). On average, youth were living with two other individuals at ages 19 and 21. The percentage of youth reported being a parent increased from 7% at age 17 to 32% at age 21, and most parenting youth lived with their child(ren). The percentage of youth enrolled in secondary school (e.g., high school, GED classes) or postsecondary education (e.g., college, vocational school) significantly decreased from 90% at age 17 to 28% at age 21. This trend reflects the natural shift from most youth attending secondary schools to selective youth enrolled for postsecondary education during this developmental period.

Youth's foster care history

On average, youth in our sample entered foster care at age 10. Before turning 18, on average, youth had more than one placement change for each year they were in care. Before their 18th birthday, more than a half of youth had resided in kinship foster care (64%) and in a congregate care placement (53%), while less than 2% of the youth were ever placed in probation-supervised foster care. An average youth experienced multiple types of substantiated, inconclusive, or unfound maltreatment allegations. The average amount of time youth spent in EFC was a little more than two years (27 months).

County characteristics

The contexts of the counties where youth were supervised changed across the years of the youth surveys (Wave 1 in 2013, Wave 2 in 2015, and Wave 3 in 2017). Counties' average unemployment rate among ages 16–24 decreased from 19% in 2013 to 13% in 2017. The average percentage of Republicans among registered voters decreased by about two percentage points in the period.

Income and housing expenses

Based on our decision to use TAY's income and expense data for the same period the food security status was measured, in Table 2 we present youths' income sources, housing expense, and food insecurity at ages 19, 21, and 23. Average earnings in the past 12 months significantly increased from about $2,800 at age 19 to $8,700 at age 23. Regarding public benefits, youth tended to receive more TANF (or

Table 2. TAY incomes, housing expenses, and food insecurity experience.

	Youth survey W2 (age 19)		Youth survey W3 (age 21)		Youth survey W4 (age 23)		
	N = 588 youths		*N* = 592 youths		*N* = 603 youths		
	Unweighted N	Weighted Mean (S.D.)/%	Unweighted N	Weighted Mean (S.D.)/%	Unweighted N	Weighted Mean (S.D.)/%	Diff.
Income in the past 12 months before completing youth survey, Mean (S.D.)							
Earnings		$2,810 ($8,336)		$5,196 ($8,050)		$8,726 ($11,363)	***
TANF or CalWORKS		$199 ($1,016)		$328 ($1,342)		$726 ($1,976)	***
SNAP or CalFresh		$674 ($1,429)		$760 ($1,315)		$1,083 ($1,543)	***
Unemployment insurance		$56 ($786)		$50 ($655)		$318 ($2,585)	*
Workers' compensations		$21 ($302)		$16 ($231)		$61 ($582)	*
Rental assistance		$513 ($3,813)		$77 ($721)		$379 ($2,197)	**
WIC		$109 ($269)		$79 ($197)		$188 ($345)	***
Rent/Mortgage payments per month, Mean (S.D.)		$168 ($351)		$448 ($443)		$575 ($673)	***
Food insecurity experience, %							
Anyone in household skipped/cut size of meals because of not enough money for food	92	15.6%	98	14.1%	98	15.8%	
Did not eat for a whole day because of not enough money for food	69	10.8%	74	11.3%	75	11.0%	
Ate less than you should because of not enough money for food	135	20.8%	129	19.5%	125	18.8%	
Did not have enough money to buy food after food didn't last	211	34.7%	196	31.5%	191	30.5%	
Could not afford to eat balanced meals	215	33.2%	212	34.4%	200	32.5%	
Food insecure (USDA's definition)	186	29.2%	185	29.1%	178	28.2%	

Note: *$p < .05$, **$p < .01$, ***$p < .001$.

CalWORKS), SNAP (or CalFresh), unemployment insurance, and WIC payments at age 23 than at ages 19 and 21. The average amount of rental assistance received was highest at age 19, averaging around $510 per month. The average monthly rental assistance was about $80 at age 21 and $380 at age 23. The monthly expense for housing (i.e., rent or mortgage payments) increased from about $170 at age 19 to $580 at age 23.

Food insecurity experience

A little less than a third of TAY were considered food insecure at each of the three times it was assessed (ages 19, 21, and 23). Note that the food insecurity rates presented in Table 2 differ slightly from the rates reported in the CalYOUTH descriptive reports because the latter includes the full study sample. The CalYOUTH reports with the full sample showed food insecurity rates to be about 29% at age 19, 29% at age 21, and 28% at age 23 (Courtney et al., 2016, 2018, 2020). In the reports, the most common food insecurity experiences were youth "sometimes" or "often" not having enough money to buy food after food did not last (35% at age 19, 32% at 21, and 31% at 23) and not being able to afford to eat balanced meals (33% at age 19, 35% at 21, and 32% at 23) (Courtney et al., 2016, 2018, 2020). Although less common, about one in ten youth reported not eating for a whole day at some point in the past 12 months because they did not have enough money to buy food (11% at age 19, 11% at 21, and 11% at 23) (Courtney et al., 2016, 2018, 2020).

Predictors of food insecurity

Table 3 displays the results of the multivariate linear probability regression models, which investigate the associations between the predictors and the probability of being food insecure at ages 19, 21, and 23. We ran three models separately using the food insecurity status at age 19, 21, and 23 as the dependent variables. We used the variables listed on the left column (e.g., demographic characteristics, risk and protective factors, foster care history, income and housing expenses, and county characteristics) as predictors in each model. Many associations were age-specific and not statistically significant ($p < .05$) across all three ages.

Predictors of food insecurity at age 19

At age 19, compared to White youth, the probability of being food insecurity was about 16% points lower for Black youth (*coef.* = −0.16, $p = .023$) and about 12% points lower for Hispanic youth (*coef.* = −0.12, $p = .025$) after accounting for the youth and county characteristics in the model. In a supplemental analysis where Black youth were designated as the reference group, White youth (*coef.* = 0.16, $p = .013$) and multiracial/ethnic youth (*coef.* = 0.17, $p = .027$) both had significantly higher probabilities of reporting food insecurity. When Hispanic youth were designated as the reference group, the results indicated that White youth (*coef.* = 0.12, $p = .025$) and multiracial youth (*coef.* = 0.13, $p = .042$) had higher probabilities of being food insecure at age 19. Identifying as a sexual minority youth (i.e., not 100% heterosexual; *coef.* = 0.19, $p < .001$) and screening positive for substance use disorder (*coef.* = 0.10, $p = .041$) both increased the probability of food

Table 3. Predictors of TAY's food insecurity.

	Food insecure at age 19	Food insecure at age 21	Food insecure at age 23
	N = 588 youths	*N* = 592 youths	*N* = 603 youths
	Coef. (95% C.I.)	Coef. (95% C.I.)	Coef. (95% C.I.)
Demographic characteristics			
Age at the time of the survey	−0.04 (−0.21, 0.12)	−0.13 (−0.34, 0.07)	0.10 (−0.03, 0.22)
Assigned sex at birth (Male, ref. = Female)	−0.07 (−0.16, 0.03)	0.00 (−0.09, 0.10)	0.01 (−0.09, 0.10)
Race/Ethnicity (ref. = White)			
Black	−0.16* (−0.29, −0.02)	0.03 (−0.12, 0.18)	0.04 (−0.09, 0.18)
Multiracial/ethnic	0.01 (−0.13, 0.16)	−0.06 (−0.21, 0.10)	−0.07 (−0.22, 0.07)
Hispanic	−0.12* (−0.22, −0.01)	−0.06 (−0.18, 0.05)	−0.04 (−0.13, 0.05)
Other[1]	−0.08 (−0.29, 0.12)	0.03 (−0.21, 0.28)	−0.03 (−0.21, 0.15)
Not 100% heterosexual	0.20*** (0.09, 0.31)	0.04 (−0.07, 0.15)	0.18** (0.07, 0.29)
Youth's risk and protective factors			
Have health insurance	0.13 (−0.11, 0.36)	−0.12 (−0.33, 0.08)	0.03 (−0.10, 0.15)
Health condition limits daily activities	0.10 (−0.10, 0.31)	0.11 (−0.00, 0.23)	−0.00 (−0.11, 0.11)
Have adequate emotional social support network	−0.02 (−0.12, 0.07)	0.03 (−0.07, 0.14)	−0.04 (−0.15, 0.07)
Have adequate tangible social support network	−0.06 (−0.14, 0.03)	−0.07 (−0.17, 0.04)	−0.17** (−0.27, −0.07)
Positive screening for mental health disorder[2]	−0.06 (−0.15, 0.02)	0.08 (−0.03, 0.18)	0.07 (−0.04, 0.17)
Positive screening for substance use disorder	0.10* (0.00, 0.19)	0.11 (−0.03, 0.25)	0.12 (−0.01, 0.25)
Household size[3]		−0.12 (−0.33, 0.08)	0.00 (−0.01, 0.02)
Parenting status (ref. = Not a parent)			
Parent not living with their child(ren)	−0.23* (−0.42, −0.03)	−0.13 (−0.28, 0.03)	0.05 (−0.12, 0.23)
Parent living with their child(ren)	−0.17* (−0.32, −0.02)	−0.00 (−0.13, 0.12)	0.02 (−0.10, 0.14)
Enrolled in high school or college (ref. = Not in school)			
Part-time enrollment[4]		0.04 (−0.08, 0.15)	−0.08 (−0.21, 0.05)
Full-time enrollment	−0.03 (−0.16, 0.11)	0.03 (−0.08, 0.13)	−0.05 (−0.16, 0.07)
Foster care history			
Age of foster care entry	0.00 (−0.01, 0.01)	0.00 (−0.01, 0.01)	0.01 (−0.00, 0.01)
Number of placement changes per year in foster care before age 18	−0.01 (−0.05, 0.03)	−0.03 (−0.07, 0.01)	−0.01 (−0.05, 0.03)
Ever placed in kinship foster care	0.00 (−0.08, 0.09)	−0.02 (−0.10, 0.07)	0.06 (−0.02, 0.14)
Ever placed in congregate care	0.04 (−0.05, 0.13)	0.07 (−0.01, 0.16)	0.03 (−0.06, 0.11)
Ever in probation-supervised foster care	−0.00 (−0.37, 0.36)	0.05 (−0.30, 0.39)	0.39* (0.03, 0.75)
Number of screened-in-report[5] maltreatment types[6]	0.01 (−0.03, 0.04)	0.02 (−0.02, 0.05)	0.01 (−0.03, 0.04)
Months in EFC			
In the past 12 months, before completing the W2 interview	−0.01* (−0.02, −0.00)		
In the past 12 months, before completing the W3 interview		−0.01 (−0.02, 0.01)	
Between 18th and 21st birthdays			−0.00 (−0.01, 0.00)
Incomes and housing expenses			
Income in the past 12 months before completing the youth survey (in $1,000)			
Earnings	0.00 (−0.00, 0.01)	−0.00 (−0.01, 0.01)	0.00 (−0.00, 0.01)
TANF or CalWORKS	0.02 (−0.03, 0.06)	−0.06*** (−0.09, −0.03)	−0.03* (−0.05, −0.00)
SNAP or CalFresh	−0.03* (−0.06, −0.00)	0.06** (0.02, 0.10)	−0.01 (−0.04, 0.02)
Unemployment insurance	−0.03 (−0.06, 0.00)	0.03 (−0.01, 0.06)	0.01 (−0.01, 0.03)
Workers' compensations	−0.10** (−0.16, −0.04)	−0.04 (−0.18, 0.09)	0.00 (−0.04, 0.04)
Rental assistance	0.00 (−0.01, 0.01)	0.02 (−0.05, 0.09)	0.02 (−0.00, 0.04)
WIC	0.02 (−0.15, 0.18)	−0.14 (−0.36, 0.08)	−0.06 (−0.19, 0.07)

(*Continued*)

Table 3. (Continued).

	Food insecure at age 19	Food insecure at age 21	Food insecure at age 23
	N = 588 youths	*N* = 592 youths	*N* = 603 youths
	Coef. (95% C.I.)	Coef. (95% C.I.)	Coef. (95% C.I.)
Rent/Mortgage payments per month (in $1,000)	−0.05 (−0.15, 0.06)	0.04 (−0.05, 0.13)	−0.02 (−0.08, 0.04)
County characteristics			
Unemployment rate among ages 16–24	0.00 (−0.00, 0.01)	−0.00 (−0.01, 0.00)	0.00 (−0.01, 0.01)
Percentage of Republicans among registered voters	0.00 (−0.00, 0.00)	0.00 (−0.00, 0.01)	0.01 (−0.00, 0.01)
F	4.32***	2.24***	3.50***

Note: *p < .05, **p < .01, ***p < .001. [1]Includes Asian, Pacific Islander, and Native American;[2]Includes major depressive episode, dysthymia, manic episode, hypomanic episode, obsessive-compulsive disorder, post-traumatic stress disorder, social phobia, attention-deficit hyperactivity disorder, oppositional defiant disorder, conduct disorder, or psychotic thinking; [3]The Wave 1 interview did not ask about the youth's household size; [4]Part-time enrollment response option was not offered in the Wave 1 interview;[5]Includes substantiated, inconclusive, and unfound allegations records; [6]Includes sexual abuse, physical abuse, neglect, emotional abuse, and caregiver absence.

insecurity at age 19. Our analyses also showed that each additional month in EFC is associated with reducing the probability of experiencing food insecurity at age 19 by one percentage point (p = .044). In other words, compared to youth who did not stay in EFC during the 12 months before the second wave of the survey (conducted when youth were about 19 years old), the probability of being food insecure was about 12% points lower for youth who stayed a full year (12 months) in EFC. Youth who received an additional $1,000 in CalFresh benefits were expected to have a food insecurity rate at age 19 that was three percentage points lower (p = .042) than youth who did not receive CalFresh benefits. Also, the probability of being food insecure at age 19 was expected to be about 10% points (p = .001) lower for each additional $1,000 in worker's compensation.

Predictors of food insecurity at age 21

The analyses of food insecurity at age 21 identified only two statistically significant predictors, which both relate to youths' income sources. Each $1,000 of CalWORKS benefits youth received decreased the probability of being food insecure at age 21 by six percentage points (p < .001) after controlling for other youth and county attributes. Conversely, the probability of experiencing food insecurity was six percentage points higher for each additional $1,000 in CalFresh benefits (p = .001). Given the moderate correlation between the amounts of CalFresh and CalWORKS benefits received (corr. = 0.58), we ran separate analyses with one benefit at a time including the rest of the predictor variables. The results confirmed their independent associations with youths' food insecurity at age 21 after controlling various youth and county-level attributes. In a model without the amount of the CalFresh benefit

received included in the analysis, youth who received an additional $1,000 in CalWORKS benefits were three percentage points less likely to experience food insecurity ($p = .031$). When we excluded the amount of the CalWORKS benefits, each additional $1,000 in CalFresh benefits increased the probability of food insecurity by four percentage points ($p = .035$). A possible explanation of the counterintuitive relationship between CalFresh and food insecurity experience would be that youth who were food insecure received CalFresh in the first place. Also, there could be some unmeasured confounding factors (e.g., public aid requirements) might have caused this possible endogeneity issue.

Predictors of food insecurity at age 23

At age 23, youth who identified as a sexual minority (i.e., not 100% heterosexual) were 18% points more likely to experience food insecurity than their peer who identified as 100% heterosexual ($p = .001$). Youth who reported having adequate tangible support were less likely than their peers with inadequate tangible support to be food insecure (*coef.* = −0.17, $p < .001$). Compared to youth who had never been placed in probation-supervised foster care, the expected probability of being food insecure at age 23 was 39% points higher for youth ever placed in probation-supervised foster care ($p = .032$). Each additional $1,000 youth received in CalWORKS benefits decreased the probability of being food insecure at age 23 by three percentage points ($p = .018$).

Discussion

Using representative survey data, child welfare administrative data, and public aid usage data, our study estimates prevalence rates of food insecurity among TAY in California as they transition out of foster care. Additionally, we identified multiple age-specific risk and protective factors that are associated with expected probability of TAY's food insecurity. Our findings show that approximately one-third of young adults transitioning from foster care in California experienced food insecurity, as defined by the USDA (Courtney et al., 2016, 2018, 2020). Given the large number of TAY across the country, this finding underscores that food insecurity is a considerable policy problem that deserves attention.

Moreover, our study identifies several notable relationships between food insecurity and youth characteristics. First, we find that young people who identify as sexual minority youth are more likely to report food insecurity at ages 19 and 21 than their peers who identify as 100% heterosexual. These findings are in line with existing research, which demonstrates that young people minoritized sexual identities in the general population face significant economic and interpersonal struggles (Frost, Fine, Torre, & Cabana, 2019; Lee & Ostergard, 2017).

Furthermore, Dworsky (2013) found that sexual minority TAY who were employed earned over a dollar less per hour than their heterosexual peers with foster care histories. Thus, our result indicate a need to provide or expand targeted support to sexual minority TAY to prevent disproportionate economic hardships.

Second, our findings show an elevated risk of food insecurity at age 19 for young people who had previously screened positive for a substance use disorder. Additionally, young people who had ever been in probation-supervised foster care were significantly more likely than their peers to be food insecure at age 23. The literature identifies unique service needs and challenges faced by young people who have a history of substance use and those who have been under probation supervision, such as high rates of trauma, PTSD, and suicidality (Kim, Gilman, Thompson, & De Leon, 2021; Simmons & Suárez, 2016). Our finding highlights the important role the foster care system can play as a targeted point of service provision for young people who have behavioral health challenges and the need for specific rehabilitative services for these youth.

In addition to these risk factors, our study also identifies some notable protective factors that reduce TAY risk of experiencing food insecurity. We find that engagement with public benefits reduces the risk of food insecurity. Receipt of CalWORKS (i.e., TANF) benefits significantly reduces the risk of food insecurity at ages 21 and 23, while CalWORKS (i.e., SNAP) benefits reduces the risk of food insecurity at age 19. An increase in workers compensation income also decreases food insecurity experiences at age 19. Our results align with the literature cited earlier regarding the efficacy of safety net programs in mitigating the risk of food insecurity (Gundersen, Kreider, & Pepper, 2017; Schmidt, Shore-Sheppard, & Watson, 2016). We also find that additional time spent in EFC decreases food insecurity at age 19. While one might expect EFC to have effects at other ages, the impact of EFC is likely related to indirect connections to other services or supports, such as referrals to public benefits and having an adequate tangible social support network. A previous study analyzing CalYOUTH data found time in EFC to decrease the odds of past-year food insecurity by about 21% at age 23 (Courtney, Okpych, & Park, 2021). The difference in findings between the current study and the previous study may be due to the control variables in the regression model.[7] The present study selected control variables that were specifically tailored to the outcome of food insecurity and included controls that were not used in the prior study that used a generic set of controls when assessing several age-23 outcomes (e.g., a youth's receipt of TANF and SNAP were not controlled for in the previous study). Additionally, we found that perceiving that one has adequate tangible support decreases the probability of food insecurity at age 23, which aligns with an earlier finding that enduring and supportive relationships can serve an important protective function for TAY

as they transition to adulthood (Okpych, Park, Powers, Harty, & Courtney, 2023).

Policy and practice implications

Our study offers valuable implications for practice and policy. Overall, our findings suggest that enhancing access to public benefit programs and income support are promising policy levers for reducing the prevalence of food insecurity among TAY. Despite the potential benefits of these safety net programs in addressing food insecurity, many programs have problems with accessibility and retention. Substantial literature has documented the burdens associated with proving, maintaining, and re-certifying eligibility and the stigma from the classist and racist undertones that potential beneficiaries must endure (Barnes, 2021; Gray, 2019). Moreover, since the overhaul of the cash assistance system in 1996, the overall amount of cash assistance and the proportion of low-income families receiving assistance declined as individual states hold significant discretion on how to use block grants (e.g., TANF and housing assistance). For instance, in 2020, only 22% of the combined federal and state TANF grant was spent on basic assistance for families, and only 21% of families in poverty received TANF cash assistance (down from 68% in 1996) (Azevedo-McCaffrey & Safawi, 2022). Further, some subgroups (e.g., immigrants, applicants with prior sanctions, and racial/ethnic minorities) were less likely to receive the benefits in the first place (Hetling et al., 2021). It is important to point out that the average incomes TAY earned between ages 18 and 19 ($2,810), between 20 and 21 ($5,196), and between 22 and 23 ($8,726) are well below the federal poverty line.[8] Therefore, policymakers and practitioners should focus on increasing awareness of and access to these vital services to effectively address this issue.

Our study also finds that predictors of food insecurity vary by the age of TAY. The variations in predictive factors by age suggest that the resource and service needs of TAY may differ depending on how far along they are in the transition to adulthood. It may be important to develop programs or services that better consider how young people's needs evolve over time. Besides, child welfare departments and practitioners would want to nurture collaborative relationships and networks with other service systems to be able to address age- and developmental stage-specific needs and concerns more appropriately by leveraging capacities and resources outside their reach.

Research implications

Additional research is necessary to gain a deeper understanding of food insecurity experiences among TAY, particularly through longitudinal and mixed-methods studies conducted across various administrative settings.

Such research is critical to comprehend the mechanisms behind the between-group disparities in food insecurity that we observe for groups such as those with substance use difficulties. Future research should prioritize the exploration of experiences faced by youth with minoritized identities, such as sexual minority youth and undocumented youth, who experience compounded economic, social, and behavioral health challenges (Dworsky, Napolitano, & Courtney, 2013; Nadon, Park, Feng, & Courtney, 2022). It is crucial for future studies to investigate how systems designed to foster independence in adulthood may be perceived and experienced by youth as paternalistic and discriminatory. This research should encompass an analysis of systemic barriers, bureaucratic complexities, and the potential stigma attached to accessing support services by minoritized young adults. Such factors can intensify feelings of marginalization and vulnerability. A thorough understanding of these dynamics is essential for the development of interventions and policies that are both culturally sensitive and attuned to the specific needs of historically minoritized youth. By doing so, we can ensure that efforts to encourage self-sufficiency do not unintentionally exacerbate systemic inequities or overlook the unique lived experiences of youth with minoritized ethnic, racial, and sexual identities, as well as undocumented youth.

Additionally, we call for future studies to use multiple and reliable quantitative data to examine the impact of policies and programs on food insecurity outcomes that can guide policymakers in designing and implementing targeted interventions to reduce food insecurity among TAY. For instance, examining the impacts of EFC policy and public aid (e.g., CalFresh, CalWORKS, and WIC) would deepen our understanding of the contributors of TAY's food insecurity experiences. Despite the significant importance of these public aid programs and policies, few studies have examined their roles in alleviating various insecurities TAY experience by leveraging quality data.

Limitations

Our findings come with several important limitations that should be considered. First, we cannot control for family or childhood experiences of food insecurity that may influence later food insecurity outcomes. It is well-documented that most youth in care come from impoverished families and disinvested communities (Skinner, Bywaters, & Kennedy, 2023) and such disadvantage may be transferred intergenerationally (Gottschalk, McLanahan, & Sandefur, 2019). Second, since we captured food insecurity experienced during the preceding 12 months and the interviews were conducted at two-year intervals, there is a possibility that we have underestimated the prevalence of food insecurity experienced during the adulthood transition period. Third, we cannot compare the food insecurity experience between transition-age youth in foster care and young people in general. Thus, while

our findings indicate that a substantial percentage of young adults exiting foster care experience food insecurity, we cannot say that these young people are more or less likely to experience this adversity than their non-foster peers. Fourth, the temporal ordering between some of our predictors and food insecurity are not always clear, and there may be bidirectional associations. This was apparent in the counterintuitive finding that receiving CalFresh increased the probability of being food insecure at some ages. As noted earlier, it may be that youth who were at greater risk of food insecurity subsequently received more CalFresh benefits. Finally, our findings may not be generalizable beyond TAY in California. States have different child welfare service structures (e.g., state-administered versus county-administered systems), service offerings for TAY, and environmental contexts (e.g., living expenses, political atmosphere, etc.) that can shape youths' food insecurity experiences, and California represents a unique mix of these factors that may not allow our findings to be applicable outside of this state's setting.

Conclusion

Food insecurity is a prevalent and growing social policy concern in the U.S. general population, and experiences of food insecurity are significant predictors of physical, mental, and behavioral health issues. Our analysis shows that a large proportion of young people exiting foster care – about 30% – experience food insecurity at ages 19, 21, and 23. Furthermore, our study demonstrates that several factors are critical in shaping food insecurity experiences. These findings provide key points of policy and practice expansion and advocacy for reducing this concerning social policy issue. Ultimately, a comprehensive and multidimensional approach is needed to address food insecurity among TAY, which involves addressing the underlying causes of poverty, providing adequate social support, and ensuring access to public benefit programs and income support. Providing support to TAY who are at risk of or currently experiencing food insecurity would not only benefit this specific population but also contribute to the wider goal of reducing food insecurity and advancing social and economic equity for all youth in the United States.

Notes

1. The report used the Household Pulse Survey, which was conducted by multiple federal agencies to understand the effects of the COVID-19 pandemic and experience of American households. The Household Pulse Survey asked a single question about a household's food insecurity status in the past seven days.
2. Seven of California's 58 counties had zero youth who met the study's eligibility criteria and were not included in the study.

3. Includes Asian, Pacific Islander, and Native American.
4. Includes positive screen for major depressive episode, dysthymia, manic episode, hypomanic episode, obsessive – compulsive disorder, post-traumatic stress disorder, social phobia, attention-deficit hyperactivity disorder, oppositional defiant disorder, conduct disorder, or psychotic thinking.
5. Includes positive screen for substance abuse, substance dependence, alcohol abuse, or alcohol dependence.
6. A brief diagnostic tool used to assess psychiatric disorders (Sheehan et al., 2010),
7. Additionally, the prior study (Courtney, Okpych, & Park, 2021) used binary logistic regression whereas the current study used limited probability models. There was also a slight difference in the sample of the previous analysis ($n = 620$) and the current analysis ($n = 603$).
8. 2024 poverty guidelines for the 48 contiguous states and the District of Columbia are $15,060 for household of one and $25,820 for household of three (TAY in our sample live with about two people on average)(Register, 2024). Alaska and Hawaii have slightly higher guidelines.

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The findings reported herein were performed with the permission of California Department of Social Services. The opinions and conclusions expressed herein are solely those of the authors and should not be considered as representing the policy of the collaborating agency or any agency of the California government.

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