

An Invisible Problem: Food Insecurity

Devastating consequences go far beyond hunger



Prepared by



for





Executive Summary

What can negatively impact workplace productivity, school performance, and the rate of chronic diseases such as diabetes and obesity? You may be surprised to learn that the answer is **food insecurity**.

Food insecurity is different from hunger. Food insecurity is the underlying problem that stems from the lack of nutritious food. The physical sensation of hunger is a symptom, not cause, of food insecurity. While common sense is enough to appreciate the pain and uncertainty experienced by children and adults who do not know when their next meal will be, the financial impact of food insecurity on society and employers is less known. In a sense, food insecurity is invisible to those not experiencing it.

There are varying degrees of food insecurity —reduced variety in diets, the occasional need to skip meals, and a more serious struggle to meet basic nutritional needs.

Evidence shows food insecurity impacts individuals, families, employers, and communities. Because the rate of food insecurity has increased by more than a third since 2007, its negative impact continues to expand.

In 2015, 42.2 million Americans (13 percent of households) were estimated to live in food insecurity — meaning they did not know where their next meal would come from. The rates are comparable among the 1.5 million people living in the six counties served by the Health Care Foundation of Greater Kansas City (see Table 1).

Just under **13 percent** of the population in these counties are food insecure. This includes more than **150,000 adults** and **41,000 children**. The rate ranges from a high of more than **17 percent** in Allen and Wyandotte counties to a low of **9 percent** in Johnson county.

143,466

KANSAS CITY METRO AREA
HOUSEHOLDS

DON'T KNOW WHERE THEIR
NEXT MEAL IS COMING FROM



NOTE: All text and data in **blue font** is derived from the Cost of Food Insecurity Calculator.



What is food insecurity?

United States Department of Agriculture (USDA) defines food insecurity as a state in which “Either due to lack of money or other resources, constant access to sufficient food is limited at times during the year.”

USDA's food-security statistics are based on a national food security survey conducted as an annual supplement to the monthly Current Population Survey. In the survey, individuals and households are assessed to determine their social and economic status, uncertain or limited access to sufficient food, and if and how often they skipped a meal. If, at times during the year, normal eating patterns are affected or the average food intake is reduced because the household lacks resources and money needed for food, the household is considered food insecure.¹

Until 2006, the USDA used the term “food insecurity with hunger.” Why did they drop the word “hunger,” which seems more direct, as opposed to “food insecurity,” which sounds like a bland euphemism? Hunger is a physiological state. Hunger describes the physical pain and discomfort one feels when they lack sufficient food, and is only one of the symptoms of food insecurity. Hence food insecurity is the more appropriate term to describe the broader problem that has more far-reaching consequences.¹

To adequately address the many consequences of food insecurity, policymakers and employers need measures that help them quantify and understand its burden.

The Cost of Food Insecurity (CFI) calculator developed by The HSM Group, Ltd. helps quantify food insecurity and its cost in six individual counties in Kansas (KS) and Missouri (MO), and the Kansas City metro area, a geographical region spanning 15 counties across both states. The calculator considers socioeconomic conditions such as household type, income, education, gender, and race to estimate food insecurity.

The calculator not only projects the burdens but also quantifies the benefits of policy measures to reduce food insecurity.

The calculator estimates the toll resulting from food insecurity in the Kansas City metro area to be a staggering **\$1 billion** in health care costs, and more than **377,000 days** of missed school per year.

The calculator is also designed to be used by employers to quantify the economic impact of food insecurity on their businesses. It calculates lost productivity as the number of days lost and the associated costs. Lost productivity cost employers in the six counties **up to \$730 million** each year.

With this interactive calculator, decision-makers now have a tool to help them take control of food insecurity and its consequences, and to improve the lives of their constituents, employees, and communities.



How the CFI Calculator Works

The calculator is based on established peer-reviewed clinical and federal research. The calculator takes a step-by-step approach to estimate the amount of time and money lost due to food insecurity.

Starting with estimating age, gender, and racial breakdown of the county or workforce, the number of individuals experiencing food insecurity is estimated. Indicators such as median income are used to account for socioeconomic differences between counties or metro areas.



Since diabetes and obesity are chronic diseases that have been shown to be associated with food insecurity, the subpopulation of food-insecure individuals who suffer from those diseases is then calculated.²⁻⁷

For businesses, lost productivity because of these chronic diseases and associated costs is estimated. Health care burden is estimated as costs associated with the treatment of these conditions. While depression is not included in the calculator, there is research pointing to a significant connection.⁸

For counties, the calculator also generates annual estimates of the cost burden to school districts resulting from food-insecurity-related absenteeism. Days absent from school are used to estimate lost time in school and the resulting cost burden.

In summary, the calculator uses published data to estimate:

- rates of food insecurity prevalence
- rates of successful policy measures and the resulting reduction in costs.

It is designed to be customizable for employers. Users may enter their own estimates to arrive at relevant results.



Table 1: Local impact of food insecurity

		Total Population	Food Insecure %	Food Insecure Adults	Health care cost ^a Adults	Food Insecure Children	Health care cost ^b Children	School Absenteeism Days
	Area	2010 US Census	Cost of Food Insecurity Calculator Output*					
	Kansas City Metro	2,035,334	12.00%	192,251	\$1,048,042,552	51,874	\$23,126,985	377,424
	Kansas City MO	459,787	15.29%	56,698	\$309,085,085	13,583	\$6,055,709	95,032
KANSAS	Allen County	13,371	17.09%	1,822	\$9,932,502	463	\$206,419	3,400
	Johnson County	544,179	9.08%	38,623	\$210,550,517	10,771	\$4,802,035	78,816
	Wyandotte County	157,505	17.22%	20,895	\$113,907,595	6,225	\$2,775,292	43,704
MISSOURI	Cass County	99,478	11.03%	8,500	\$46,337,141	2,472	\$1,102,092	18,568
	Jackson County	674,158	14.74%	79,407	\$432,881,571	19,979	\$8,907,238	144,021
	Lafayette County	33,381	13.15%	3,462	\$18,872,845	928	\$413,730	7,055
	6 county total	1,522,072	12.72%	152,709	\$832,482,111	40,838	\$18,206,806	295,564

* Calculator estimates are obtained by the CFI Calculator. Please refer to page 6 for information on how the calculator works.

^a Health care costs include PCP visits, emergency department visits, hospitalization, and medication costs for chronic conditions stemming from food insecurity.

^b Health care costs include PCP visits, preventative care, emergency department visits, hospitalization, and medication costs for children.



Table 2

Prevalence of Food Insecurity by Selected Characteristics		
	Category	Food Insecurity %
National Statistics	Household composition ¹	
	With children < 18	16.6
	With children < 6	16.9
	Married couples with children	10.2
	Single women with children	30.3
	Single men with children	22.4
	Other households with child	26.2
	No children < 18	10.9
	More than one adult, no children	8.5
	Women living alone	14.7
	Men living alone	14.0
	Household with elderly	8.3
	Elderly living alone	9.2
	Race/ethnicity of head ¹	
	White	10.0
	Black	21.5
	Hispanic	19.1
	Other	10.3
Kansas Statistics	Age group ^{2*}	
	18–29	16.8
	30–49	16.5
	50–69	12.2
	≥ 70	7.1
	Sex ^{2*}	
	Male	12.6
	Female	15.6
	Household income ^{2*}	
	< \$25,000	28.3
	\$25,000-\$49,999	15.4
	\$50,000-\$74,999	8.9
	≥ \$75,000	4.7

*Pan et al., had looked at food insecurity in 12 states. From the data, the KS area prevalence was extracted



Who is impacted by food insecurity?



Impact on families

Household income and family structure are strong indicators of food insecurity. Adults with household incomes less than \$25,000 and children in those households are the most vulnerable.

Households headed by single women with children have the highest rate of food insecurity at more than 30 percent¹ (*See Table 2*). The calculator estimates that in the Kansas City metro area, **nearly 1 in 5 households** with children under 18 have food insecurity. If the household is headed by a single woman, that number increases to nearly **1 in 3** with food insecurity (*See Table 1*).

Women in general have a nearly 25 percent higher rate of food insecurity than men. When looking at race and ethnicity, Black and Hispanic populations are found to be much more food insecure than others² (*See Table 2*).

Impact on businesses

Food insecurity poses an invisible challenge to employers by impacting workforce productivity. Productivity at work is closely related to the consistent availability of safe, nutritious food.

A person who hasn't eaten or is suffering from chronic conditions resulting from food insecurity is bound to miss work more often. When present, they may not be able to perform to their full potential. The time lost when employees are absent or not fully productive comes at a cost to the employer. Additionally, increased health care costs from resulting chronic conditions are a burden for those who are self-insured.





Impact on schools

Poverty and food insecurity are complex, intertwined social factors that could manifest as hunger, malnourishment and poor health in children.^{9,11} Children living in food-insecure households without access to quality nutritious food may be malnourished and often go to school hungry.^{9,10} A combination of both can lead to cognitive deficit, poor performance in school, and absenteeism.^{9,11}

Teachers and principals frequently observe students who come to school hungry. Students who are hungry often do not interact or engage positively with their teachers and classmates, cannot focus on schoolwork, and lack energy. This can have dire effects on their future, triggering a vicious cycle of underachievement leading to less opportunity in the workplace and less economic success.⁹

Children and teenagers who were food insecure were more than two times as likely to repeat a grade, and missed more school days.¹¹

In the Kansas City metro area, **52,000 children** younger than 18 experience uncertain or limited availability of safe or nutritionally sufficient foods. Recent studies have shown that students who come from food-insecure households are more likely to have lower psychosocial function and to have gone through psychological counseling. These students are late to or absent from school more often, and may need special education services. In the near term, they are also marginally more likely to repeat a grade.

Impact of hunger on students at school⁹

Impact on education	% of educators reporting
Inability to concentrate	88%
Lack of energy or motivation	87%
Poor academic performance	84%
Tiredness	82%
Behavioral problems	65%
Students feeling sick	53%

In the long term, students with higher rate of absenteeism are more likely to drop out of high school, leading to low paying jobs in the future, lost lifetime earnings and most importantly, the chance to escape food insecurity.¹¹

Encouraging kids to stay in school and programs that motivate them to get to school are ways to disrupt this vicious cycle. When kids stay in school, their education level increases and when education levels increase, food insecurity decreases.^{9,11}



Absenteeism also has an economic impact on schools. The Department of Education calculates a “revenue limit” for each student in a public school. School districts receive money by student-based attendance. When a student misses 10 percent or more of the school year, the student is considered chronically absent.¹² This funding system penalizes absenteeism and may result in reduced funding in subsequent years.

For each day a student misses, we estimate schools in Kansas and Missouri are burdened with a **\$38 deficit** in their expected funding.

In the Kansas City metro area, the calculator estimates that **51,874 children** miss **377,424 school days** costing **\$14,342,103** to the school system.

Health care: A societal burden of food insecurity

Findings from several studies suggest that food insecurity is strongly related to chronic diseases. Particularly, evidence for the association between food insecurity and Type 2 diabetes and obesity has been well documented. The premise behind this association is that food insecurity leads people to choose food options that may be inexpensive and highly palatable, but have more calories. Another reason behind obesity and diabetes is the cyclical nature of having enough funds for sufficient food at the beginning of the month but not enough at the end of the month when funds run out. This can lead to weight gain, which contributes to the development of chronic diseases.³

According to published national statistics, 51.7 percent of food insecure adults suffer from obesity and 45.1 percent suffer from diabetes.^{2,4,6,8} Additionally, 21 percent of food-insecure children suffer from poor health.¹³

In the Kansas city metro area alone, the calculator estimates that **192,345** affected adults may cost **\$1.048 billion** and **51,874 affected children** can cost **\$23 million** in health care expenses.



Impact of food insecurity on businesses

While employment makes a difference, a job alone is not sufficient to eliminate the risks of food insecurity. The calculator is designed to help employers quantify the impact of food insecurity on their workforce due to absenteeism or presenteeism.

Absenteeism is defined as the number of days of work missed by an employee due to food insecurity. It is the time lost when they are away from work either because they are sick, experiencing symptoms of associated chronic diseases, have a doctor's appointment, or just did not show up at work potentially because of fatigue or lack of enthusiasm. The lost time is expressed as number of days lost per person per year.

Presenteeism is defined as time lost when employees are at work and are not able to function at full capacity because they cannot focus, cannot accomplish their daily tasks, or tasks take longer than usual. It is expressed as number of days lost per person per year.

When an employee is absent, the company may substitute the employee with a temporary worker, at a cost that is likely to be equal to, or more than, the absent employee's compensation. Or, the employer may elect not to substitute the employee and suffer a loss in output also related to the employee's compensation. In both cases, daily compensation is used as a proxy for the impact to the company.

The calculator estimates the number of employees in a company with food insecurity based on the workforce composition (age, gender, average wage). It then estimates the number of days of lost productivity due to absenteeism and presenteeism.

Manufacturing company example

At a manufacturing company with 2,500 employees, the calculator estimates that **349** employees will be affected by food insecurity. If the average daily wage for males is \$229 and females is \$179 with benefits averaging 35%, the cost of lost productivity to the company

Absenteeism days	3717
Presenteeism days	4217
Total days lost	7934
Total cost of days lost	\$2,303,670



Social factors not covered by the CFI calculator

Food insecurity goes hand-in-hand with other social factors and issues not covered in the calculator. Factors such as limited access to affordable healthy foods, incarceration, and toxic stress should be considered when policy decisions are made.

If unaddressed, these and other factors may have lasting, widespread effects that not only perpetuate the cycle of food insecurity, but compound its negative consequences.

Of formerly incarcerated individuals, 90.9 percent experience food insecurity. This can affect employment, family income, and child educational attainment, perpetuating the cycle of food insecurity.¹⁶

Children who experience hardships such as extreme poverty and subsequent food insecurity, are more likely to develop unhealthy behaviors and serious disease in adulthood from prolonged “toxic stress” exposure.

Toxic stress is defined as stress that is not only overwhelming to a child but also not alleviated by the buffering of supportive adults.¹⁷ These children can experience an increased risk of alcoholism, drug abuse, depression, and suicide. They are also more likely to smoke, be inactive, and be obese as adults.¹⁸ Children exposed to this type of stress long-term can experience learning delays, poor social skills, and behavioral issues that affect their resilience as adults.¹⁷



While most of the focus on equitable food access has been on the concept of food deserts — areas that lack access to healthy food sources — another issue that can be overlooked by typical assessments are *food mirages*. A food mirage usually occurs in gentrifying areas, where grocery stores appear plentiful but have high prices, making nutritious foods inaccessible to low-income individuals and families.¹⁹



Calculating cost savings from policy measures

In addition to calculating the cost burden to counties and employers, the tool also projects cost reductions achieved with policy measures aimed at reducing food insecurity.

The calculator uses data from several established policy measures to estimate the reduction in food insecurity prevalence and subsequent reduction in absenteeism days for both students and employees. Associated cost reductions are potential savings for a county or company after successfully implementing the policy. Policies covered by the calculator are: (see page 13 for descriptions of each policy)

Expanded Food and Nutrition Education Program (EFNEP)



Supplemental Nutrition Assistance Program (SNAP, formerly known as the Food Stamp Program)



Bundle of safety net programs including Temporary Assistance for Needy Families (TANF), Supplemental Security Income (SSI), federal and state Earned Income Tax Credits (EITC), food assistance through SNAP, and Medicaid



Special Supplemental Nutrition Program for Women, Infants, and Children (WIC)





Policy measures impacting food insecurity

In developing the calculator, we looked at federal policy measures that provide food-related assistance. The number of individuals and families varies for each program. There is no central database that identifies how many residents in the greater Kansas City area receive these benefits.

Expanded Food and Nutrition Education Program (EFNEP)

Since 1969, EFNEP has successfully focused on important societal concerns by influencing nutrition and physical activity of low-income households, specifically ones with young children. This is a community-based, relationship-driven, hands-on educational program. Research supports EFNEP's cost-effectiveness, ability to improve food-security status and promote behavior changes that can improve poor health outcomes, dietary intake and further improve food security status.

Supplemental Nutrition Assistance Program (SNAP)

SNAP, formerly known as the Food Stamp Program, is the largest U.S. food assistance program. SNAP provides nutrition assistance to eligible, low-income families and individuals. The program allows participants to purchase food in approved retail food outlets.

Combined bundle of safety net programs (TANF, SSI, EITC, SNAP, and Medicaid)

Combined bundle of safety net programs is the structure of benefits from five major safety net programs — Temporary Assistance for Needy Families (TANF), Supplemental Security Income (SSI), federal and state Earned Income Tax Credits (EITC), food assistance through SNAP, and Medicaid. The safety net program focuses on single-parent families with income below 300 percent of the poverty line. The findings show that food benefits or \$1,000 in cash reduces low food security.

Special Supplemental Nutrition Program for Women, Infants, and Children (WIC)

The Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) provides federal grants to states for supplemental foods, health care referrals, and nutrition education for low-income pregnant, breastfeeding, and non-breastfeeding postpartum women, and to infants and children up to age five who are found to be at nutritional risk.

Medically appropriate food assistance

Studies have shown that providing medically appropriate food assistance to food-insecure individuals may enhance health outcomes. A community-based medically appropriate food support intervention for individuals living with Type 2 diabetes and/or HIV determine the acceptability, feasibility, and potential impact of the intervention on mental health, health care use, disease management, nutritional, and physical health outcomes. The six-month intervention offers meals and snacks designed to meet nutritional guidelines for a healthy diet and contain 100 percent of daily energy requirements.^{14,15}



Ways you can help:

- Sign the pledge today at hcfgkc.org/pledge
- Ask your friends to take action and sign the pledge.
- Share the food insecurity calculator with your network. It demonstrates the cost your business or community incurs from food insecurity.
- Contact your elected officials to let them know this issue is important to you — and that you are an active voter!
- Support food repurposing and donation programs that help people in need.

Conclusion

Food insecurity is a huge problem that affects different segments of society. While existing public policies have demonstrated meaningful success, sections of society are still stuck in the vicious cycle of food insecurity and continue to be under-served.

Despite several programs, the most successful of which reduces food insecurity by 60 percent, national statistics indicate that the rate of food insecurity only continues to increase.

It is important that any steps taken to improve or create new policies, address food insecurity in the near term and long term.

Near-term solutions such as providing food assistance and supplementing nutrition at schools are effective in increasing day-to-day productivity. In addition, long-term programs and solutions that ensure children stay in school, move on to college and graduate to stable jobs play an important role in sustainable change.

These should include efforts to:

- Help children stay in school
- Social support networks
- Expansion of social programs to address nutritional and health care gaps for low-income individuals and families,
- Steps to address the challenges of an incarcerated family member as well as an individual's reentry into society.

Moving forward with programs that address the intertwined dynamics of these factors will allow new and existing policies to demonstrate maximum success and long-term benefit to communities and employers.



Model Assumptions and Limitations

Assumptions:

To calculate employer burden from food insecurity we use the human capital approach to estimate the number of individuals that are food insecure in every age bracket and the burden associated with the reduced productivity of that individual.

To estimate the number of affected individuals, we found two sources of food-insecurity prevalence: data collected by US Economic Research Service (ERS), and a peer-reviewed publication by Pan et al. The data from each source was collected and presented in different formats – ERS provided the data as percentage of households that are food insecure whereas Pan et al., provided the data as percentage of people (individuals) in different age brackets who are food insecure. Although the Pan et al., researchers use a different approach to determine food-insecurity status and present the data at an individual level, the overall prevalence established was very similar to data from ERS (14% in Pan et al., vs. 14.5% in ERS). Since the rates were similar, we concluded that the data from Pan et al., is an appropriate stand in to estimate the number of individuals in different age groups who may be affected by food insecurity.

According to ERS, food-insecurity rates in Kansas and Missouri are relatively similar. Due to a lack of Missouri-specific data at the individual level, Kansas prevalence was applied to Missouri.

Furthermore, to bring the prevalence into the socioeconomic context of counties in KS and MO, median income was used as a reference, i.e., the higher the median income vs. the national median income, the lower the rate of food insecurity.

Limitations:

The calculator uses data from a variety of studies, most of which are based on self-reported information. With lost productivity estimates, there may be some reporting and recollection bias resulting in an underreporting of days missed on the job or productivity impacts. If so, estimates of lost productive time and associated costs may be underestimated. Additionally, there are alternative schools of thought that debate the direct impact of food insecurity on certain chronic diseases. Conservative estimates have been used whenever there were discrepancies in the data to neither overstate the cost burden nor the positive impact of policy measures.

About the author

The HSM Group, a division of Newristics, LLC is a health care market research and consulting firm based in Scottsdale, Arizona. HSM's team of researchers has extensive experience in the development of interactive calculators such as the CFI calculator that examine the costs of food insecurity on various populations. For more information, www.hsmgroup.com.

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