

## **EconoFact Chats: Causes and Consequences of Malnutrition Today**

**William A. Masters, Tufts University**

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### **Michael Klein**

I'm Michael Klein, executive editor of Econofact, a non-partisan web-based publication of the Fletcher School at Tufts University. At Econofact, we bring key facts and incisive analysis to the national debate on economic and social policies, publishing work from leading economists across the country. You can learn more about us and see our work at [www.econofact.org](http://www.econofact.org).

### **Michael Klein**

Hunger is an ongoing problem. It is estimated that about 2.3 billion people on this planet, 30 percent of the world's population are food insecure. That is, they report skipping meals, or eating less due to a lack of access to food. This is not just a problem in poor countries. It is estimated that 34 million people in the United States, more than 10 percent of the population, is food insecure. This includes 9 million children, about 1 in 8 of all children in the country. Why are so many people in the world still hungry, despite the fact that hundreds of millions of people have been lifted out of poverty over the past decades? Why is there hunger in every county of the United States, one of the richest countries of the world?

And what can be done about this? To answer these and other questions about hunger and food insecurity, I'm very pleased to welcome to Econofact Chats Professor Will Masters of the Friedman School of Nutrition at Tufts University. Will has won a number of awards for his research on food and agriculture, and is an elected fellow of the African Association of Agricultural Economists. Will, welcome to Econofact Chats.

### **Will Masters**

Thanks, Michael. It's great to be with you and talk about this.

### **Michael Klein**

So let's start with some basics. What do we know about malnutrition and its effects on people's health and well-being?

### **Will Masters**

Well, the first thing I've discovered about malnutrition working in a school of nutrition is it's so common. Most people have some form of malnutrition, some kind of deficiency, some excess, because most of the nutrients in food just can't be seen. They can't be tasted. You can't smell them. You don't know how much would be needed for health, even if you knew what was in your food. So, for thousands of years, we've had too little of almost everything. Women in particular have been so undernourished that children are born really small. Infant feeding has been super inadequate, so kids' growth has been stunted. And there's often periods of illness or extreme deprivation, so people become very thin later on. So those extremes of stunting and thinness are still a big problem for poor people. But economic development has now allowed most of us to get plenty of calories, basic protein. So what's left is this hidden hunger from those

micronutrients that we can't see, taste, or smell. And then there's the issue that people get too much refined grains, too much added sugar, too much salt that triggers unwanted weight gain, diabetes, hypertension. So for most of human history, just a lot of deficiencies. Now we have these excesses in unwanted weight gain, diabetes, and so forth. So this goldilocks problem of finding nutrition, the right balance, has been really hard.

**Michael Klein**

Well, you call it a goldilocks problem. I guess porridge doesn't solve it, though, does it?

**Will Masters**

That's right.

**Michael Klein**

So at some level, Will, it's not about not having enough money, but not having enough knowledge, right?

**Will Masters**

Exactly. Yes, it's so interesting. Money buys the food we want, but getting the nutrients we need for our future health just turns out to be really hard. It's hard to see what it is that we need. We don't know what we need. And so much of what we know we like turns out not to be really healthy. So, hormones drive us to get at least enough energy each day. So, pretty much everyone has enough calories to maintain their body weight because our hormones drive us to have at least enough to maintain our weight each day. And then taste drives us to really like certain fat, salt, so forth. People get plenty of those, too. It's those other hidden hunger, the minerals, the vitamins, the bioactive compounds that are deficient or excessive.

**Michael Klein**

What about traditional diets? Are they also lacking in these micronutrients and other things that the body needs?

**Will Masters**

Fascinating, yes. So traditional balanced diets were often inadequate in total quantity, so people had too little. But they seem to want things that are very healthy, fruits, vegetables, dairy, eggs. Those are key traditional things. It was very, enormous drudgery to prepare them. And as I mentioned, the quantities were often too low. Now we have this amazing variety of foods, super convenient, ultra delicious, but it's really hard to get what we need from the modern food system.

**Michael Klein**

How long has this been known?

**Will Masters**

So amazingly recently. So we didn't have good dietary intake data. We still don't. But increasing efforts to do dietary recall surveys, and then a lot of studies of biomarkers in blood, and then

a lot of bench science, really clinical research, and also animal models, just beginning to understand what we need and how the modern food system often doesn't provide it.

**Michael Klein**

What about dietary guidelines that we see from, for example, the United States government? Are those adequate? And in fact, are they correct?

**Will Masters**

It's a great question. So the United States in particular has invested an enormous amount in building the scientific capacity. And from what I understand, my colleagues, I'm an economist, I take what nutrition scientists say, very seriously, I read a lot, I listen to, participate in seminars, and people have very high regard for the US dietary guidelines, especially the scientific advisory committee's report, which is preliminary to the report that the actual guidelines themselves that have a political layer on top of that.

**Michael Klein**

So Will, we've been getting very scientific here, but we're social scientists, you and I. So let's turn to some of the economic issues. Another barrier to families having adequate and sufficient diets is that many poor people live in what's called a food desert. Can you describe what a food desert is and why they matter?

**Will Masters**

So companies can only sell what people will want and, can afford to buy. And, United States residential segregation is so extreme that poor people live very close together, and then more affluent people elsewhere. And so both urban and rural poverty ends up being miles from a well stocked sort of nice grocery store quite often. So that's a food desert. But more accurately now we're calling these food swamps, because what there actually is in those places is, of course, enough food to eat, but it's overwhelmingly not the attractive ingredients for scratch cooking. Instead, it's the ultra processed foods, fast food that people are getting when they have harried lives or challenging difficult circumstances. So there's treats, there's low cost, sweet, salted food, and a lot of diet related disease because of that.

**Michael Klein**

So just going back into science for a moment, what kinds of challenges will people face when they eat these foods that have too much salt, too much sugar, not enough micronutrients and so on?

**Will Masters**

The most visible thing is the unwanted weight gain that gets triggered by often refined grains and added sugar, insulin response, and then rapid return to hunger, wanting more. Our hormones always drive us to have just at least enough food to maintain our body weight, and then we often overshoot. Then the sodium often drives up hypertension. And then as you mentioned, these micronutrient deficiencies from an inadequate amount of fruits and vegetables

and so forth can often lead to B12 deficiency, vitamin D deficiency, other deficiencies, and the illnesses that would result from that.

**Michael Klein**

Okay, so going back to economics, we know even if you're not in a food desert, having enough money is an important part of being able to have an adequate diet. All prices have been rising over the past year or two, but some food prices have vastly outpaced general inflation. What foods have had particularly high rates of price increases, and what's the source of these rising costs?

**Will Masters**

Food prices are so interesting and great lessons for economics. So big price spike for eggs, for example, there was not just all the supply chain congestion from the COVID recovery period when ports and so forth were all hard to get labor during the COVID recovery period now, fuel prices up, but egg prices spiked in particular because of avian flu, decimating the chicken population, and demand for eggs is so inelastic that to squeeze out the last consumers choosing eggs when they didn't really need to or could substitute something else, egg prices had to go way up. Now they're down again. We just had a new inflation report, and egg prices, fruit and vegetable prices, are all well down from the peaks of this post-COVID or late-COVID price rise that was due to higher energy cost, and labor constraints and also congestion in these supply chains.

**Michael Klein**

So, well, I know what you meant by inelastic, but many of our viewers might not. Can you just briefly describe in a more intuitive way what that means?

**Will Masters**

People go to the store and egg prices are a little higher, and they say they shrug their shoulders and buy it anyway because eggs are just an ingredient often in a larger thing that they want to have, and a lot of eggs are consumed away from home, and restaurants are hesitant to raise their menu prices for, French toast or pancakes or omelets, and so you tend to see people still buying even as prices rise, and the only buyers who adjust are the ones who really have another option.

**Michael Klein**

So these higher prices make it more difficult to feed your family. You've been involved in a big project that estimates the cost of providing a healthy diet to a family both in the United States and around the world. Will, what have you found in your research on this topic?

**Will Masters**

This has been an amazing journey for me as an economist, longtime interest in agriculture and food markets and trade, and then now that we know enough about nutrition, what we've done in this Food Prices for Nutrition project, it's funded by the Gates Foundation and British Foreign Aid, is to match items to their nutritional composition, what's in the food, and match that to

nutritional requirements, and get the cost per day of a healthy diet, and we've done that for the first time. No one had ever been able to do this before because we're matching many, many thousands of retail items and their prices every month in many places around the world. So we've calculated least cost diets, the least expensive foods to meet human requirements for health, hundreds of thousands, even millions of times around the world, and the big discovery is that these costs are really similar around the world, around three to four dollars a day, and that doesn't vary very much because of the cost of bringing these healthy foods to the market.

**Michael Klein**

But of course, incomes are very different around the world, so three to four dollars a day in the United States means something very different from three to four dollars a day in Mali.

**Will Masters**

Exactly, and so his diet costs are varying by a factor of two, while incomes are varying by a factor of 20, or internationally a factor of 200.

**Michael Klein**

So looking again at the United States, government support during COVID helped lower the poverty rate even as the economy went through a very steep, but short-lived recession. What was the government's support to fight hunger during this period, and is there evidence that this support helped lower the rate of food insecurity?

**Will Masters**

Absolutely, yes. So compared to other countries, the United States was remarkably generous, and remarkably fast in its response with expanding the food stamp system, the EBT system of SNAP to pandemic EBT, and expanding school use of school meals, and expanding access to food. So we were able to get through this mass unemployment, unprecedented mass unemployment, with almost no increase in reported food insecurity. As you mentioned at the outset, food insecurity is when people report having skipped a meal, gone to bed hungry, and so forth for lack of money to buy food. We had almost no increase in that because of the generosity of our safety net at that time.

**Michael Klein**

So you used some acronyms here. I know some of them. Can you just describe what these are?

**Will Masters**

Yes, so the most important American safety net for people who lose a job, have periods of illness, and their income and their wealth qualifies them for assistance, the most important of those assistance programs is the Supplemental Nutrition Assistance Program, SNAP, which formerly was food stamps because it was an actual stamp. Now it's a debit card that you can swipe at a grocery store for any food except hot prepared food.

**Michael Klein**

And how do these programs in the United States compare to what's done in other countries?

**Will Masters**

So COVID sparked a big burst of effort to innovate in social protection and social assistance, these kinds of safety net programs. Other countries experimenting with cash assistance that could be spent on anything, also experimenting with lots and lots of vouchers for specific kinds of food, but the U.S. SNAP system of a debit card for any kind of grocery is just unusually robust. It really works because people have different kinds of grocery stores in different neighborhoods, but it does allow low income Americans, people experiencing a period of hardship, on average people are on SNAP for less than a year, when they need it, it's been a remarkable safety net in this country.

**Michael Klein**

But as of the end of March 2023, the government stopped supplemental amounts available through these programs. Is this likely to increase food insecurity in this country?

**Will Masters**

Yes, there is a very close relationship between the level of SNAP, that is its adequacy, and the ease of going on and then off SNAP with food insecurity. So when people experience hardship in their family for some reason, being able to go on SNAP quickly and then the benefit level makes a huge difference that's been seen over and over again. And in addition to the cuts in benefit levels that we've already seen, there's significant threat that people will have more restriction on applying, and that could also increase food insecurity in the United States.

**Michael Klein**

So these are federal programs, but there have also been efforts to address food insecurity and malnutrition at the local level. Here in Boston, the new mayor, Michelle Wu, has a food justice agenda. And in New York, Mayor Eric Adams has published a cookbook called Healthy at Last. And in some cities like Philadelphia, there's an effort to tilt people's choices towards more healthy alternatives by taxing sugary drinks. Why are big city leaders taking up this issue and do you think they'll successfully address issues of malnutrition, obesity, and food insecurity?

**Will Masters**

It is a fascinating story how this has become a local issue and local food systems are such a big focus. You mentioned Mayor Wu here in Boston, Eric Adams, famously a vegetarian seeking to have meatless Mondays in schools in New York. And I think it's really demonstrates how the epidemic of obesity and diabetes has really gotten people's attention. I think there's a lot of issues that can only be done at the national level and people are sometimes recognizing that the FDA, the F is silent. The F has been silent on so many food issues and so trying to take up the slack with city and local policy. And sometimes that does work in terms of having a regulatory environment for the city in terms of zoning and so forth that can help improve access and provide a certain amount of safety net funded by the city or the state.

**Michael Klein**

We have an earlier EconoFact memo by Jan Gerson about taxing sugary drinks and talking about the efforts in Philadelphia, and how within Philadelphia the taxes are there but not outside the city. So, sometimes people are just going outside the city to load up on their Mountain Dew or Pepsi or whatever. There's been a lot of discussion about the effects of good nutrition on health. And in fact, the American Society for Nutrition cites a report that I found really striking. They said that one of every five deaths across the globe is attributable to a suboptimal diet. And that's more of a risk factor than anything else, including even tobacco. So is there an effort to experiment with sort of like food as medicine to prevent, manage and treat illness?

**Will Masters**

It's a great point. First of all, that we've succeeded in addressing other causes of illness, leaving diets as the single biggest modifiable risk factor that we could actually change. When we say food as medicine in United States, we're referring particularly to the use of use of food and vouchers for food and nutritional advice about food as part of our health care system, meaning that there's a diagnostic code for reimbursement in the first instance from Medicaid and Medicare, but also private insurance potentially for dieticians to give advice and for potentially vouchers to buy additional food so that when someone presents with diabetes, hypertension, which we cannot now get insurance reimbursement for dietetic advice and for prescriptions for food, we could begin to do that. It's a very interesting movement.

**Michael Klein**

What about these new drugs for diabetes and obesity? They've been in the news lately, like Ozempic and Wegovy. Will these have an effect on the food system in the United States?

**Will Masters**

It's such a great question. So the big headline in many takes in the media has been that people will just eat more and then take a drug for it. What it does seem to be doing is changing the culture and having us really pay more attention to this, not as something that people have just chosen, but that's something that's happened to people, that unbeknownst to them, because of eating refined grains, added sugar, high sodium, that causing illness so that unwanted weight gain wasn't a choice, and it becomes something that you can reverse. So I believe that if these are rolled out in a responsible way, we could actually treat the unwanted weight gain and its consequences in terms of diabetes and so forth and reduce the harm that this problem of unwanted weight gain and diabetes and so forth is causing.

**Michael Klein**

So finally, another issue about innovation. You can now have a hamburger without eating meat or you can have a glass of milk that doesn't come from a cow by buying something like Beyond Meat or almond milk. What are the economic and nutrition-based forces behind these innovations and what are their implications?

**Will Masters**

It's a fascinating world in terms of the grocery store environment. 50-60,000 distinct items with new items rolled out every week and in particular in this low interest rate environment that we've had for the past decade or so where huge amounts of investor funds flowing into kind of story stocks and glamorous ideas and the idea that you could have cellular meat or you could have meat that comes from high-tech processing of plant-based ingredients has been super attractive. The early rounds have not been as persistent, if you will, in people's preferences. People have tried, experimented, bought, but often not continued to buy the first generation of product, and the first and most important thing to know about that is that's true of so many foods. So it takes a lot of refinement to get it right, and it's early days on a lot of these new foods. It's a really interesting environment. I just encourage people to try, experiment, and see what they like because there's lots of new foods in the grocery store.

**Michael Klein**

So maybe I'll take you out for an almond milk milkshake and a Beyond Beef hamburger after this, Will.

**Will Masters**

There you go. And the plant-based milks have been a lot more successful than the plant-based meats. It's an amazing story of where the niche has been found for these innovations.

**Michael Klein**

Well, thank you very much for joining me today, Will, about these really important issues and issues that touch everybody's life as well. And I really appreciate your insights and sharing your expertise with us.

**Will Masters**

My pleasure. It's great to be talking with you.

**Michael Klein**

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