

## Brown University Watson Institute | E75\_EmilY Oster \_mixdown

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SARAH BALDWIN: Hi, there. It's Sarah, host of *Trending Globally*. Before we start, I wanted to mention something. We are trying to learn more about our listeners, what you like about our podcasts at Watson, what you don't, and what you'd like to hear more of. So we created a survey and we'd love to hear from you. It only takes a few minutes to fill out and it will really help us improve the show, and you'll be entered into a raffle for a pair of Bose noise canceling headphones. A link to the survey is in our show description. You can even go fill it out right now. We'll still be here when you get back. Thanks. Now onto the show.

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From the Watson Institute at Brown University, this is *Trending Globally*. I'm Sarah Baldwin. Whether we're thinking about parenting, pregnancy, or public health, Brown economist Emily Oster likes to challenge conventional wisdom.

**EMILY OSTER:** People like different parts of the research process. That's the part I like the best, is like the moment when you find something that nobody else knows, and then it's like a fact that you know and other people don't know. That's very exciting.

**SARAH BALDWIN:** One of Oscar's most recent papers posted at the National Bureau of economic research is about a subject that's full of conventional wisdom, the American diet. Oster challenges how doctors and scientists create those studies we read about in the newspapers, the ones that tell us that kale's good sugar's bad, and red wine is somehow both. I spoke with her about where she finds inspiration for her research and about what it's like growing up in a family of economists. I started though by asking how she first decided to study the world of science and nutrition.

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**EMILY OSTER:** I think we all notice that there are a lot of health recommendations that come out. So if you open the New York Times, you'll see this week it's good to eat kale, next week it's good to drink coffee, the week after no coffee. And so I'm interested in how people react to those. And I had in mind the following idea. that say we tell people to eat kale. So we start, we say, oh, by the way, it turns out kale is really good for you. We want to think about who are the people who are going to start eating kale in response to that?

And one feature is those are probably the people who are doing a lot of other positive, healthy behaviors who are doing other things to help their weight stay down or help their heart health be better. And so then one of the things we rely on in science as we go forward is when you get more data, you will learn more about some relationship. But an example like this actually things may kind of work against you because what happens after you say kale is good is that a

bunch of people started eating kale who are doing a lot of other positive behaviors.

So then when you come back again and you say, OK, now let me study kale again now that I kind of already have the theory that it's good and maybe I'll find out that it's not good, in fact you probably will find out it's not only good but even better than you thought it was because the kind of people who are newly adopted kale are very sort of, as we would say, positively selected that are people who are doing other things.

**SARAH BALDWIN:** So it's sort of self-perpetuating?

**EMILY OSTER:** It's self-perpetuating.

**SARAH BALDWIN:** And socioeconomic status is a piece of this, right?

**EMILY OSTER:** Yeah. So when you think about when I say things like people who are selected, what I mean is things like socioeconomic status. So the people who newly adopt health behaviors tend to be higher education or higher income than others they tend to do other positive health behaviors.

**SARAH BALDWIN:** Do we know the why for that? Because I think we accept that and we go mm-hm, but why does that make sense? Does it make sense?

**EMILY OSTER:** I think in economics there's kind of two theories for that. One is that people who are more educated or higher income have kind of higher, we'd say, like lifetime earnings. And so their incentive to invest in their health and live longer is higher because they're richer. That's the sort of standard like neoclassical model for investment.

I think the other story that people tell which maybe resonates better as a person is that people who are more educated have a better sense of what is good for them. And so it's easier to understand what are the kinds of steps that you would take.

**SARAH BALDWIN:** And to avail themselves of those?

**EMILY OSTER:** And to avail themselves, right. And so last thing I would say is that there is also just a pure resource story, which is rich, you're more educated, people have more time on average. So in paper what I try to do is sort of take that kind of anecdote that I told about kale and I try to look for that in the data. And so ask in some particular context around diet, and in this case vitamins, whether we actually see these kind of cycles that I have described. Do we see that when we change your recommendations? Some kinds of people adopt those behaviors more

than others. And then do we see those differences in adoption show up in differences in, say, the relationship between these behaviors and health as we go forward in time?

**SARAH BALDWIN:** So what do we do with your conclusion? What do we do with your findings?

**EMILY OSTER:** So it's a little bit of what I would say like a negative paper because in some sense I start by saying that we sort of know if we take any individual point in time, that when we try to look at the relationship between something like eating a low sugar diet and weight, we know that we're already going to be contending with the fact that the people who eat less sugar are kind of different than people who don't and it's going to be hard to adjust for that.

This paper says that that problem is it's even worse because it is not static. So it isn't like in any moment the relationship is just a bit too high or a bit too low, but it's always the same amount, too high or too low. This is the degree to which that differs from the true effect is varying over time. So in the case of, say, sugar and weight-- this is one of the things they do in the paper. --if you look in data from, say, the early 1990s, actually people who eat more sugar tend to be a bit thinner. Not a lot thinner, but the relationship with weight is negative, with BMI is negative. When you then look at that and say, 2013, the relationship is hugely positive. So there's like a huge change in not just the magnitude, but the sign of the relationship because of these changes in selection and you can see that so we're very clearly in the data.

**SARAH BALDWIN:** So in a way the message is be cautious about what you think the data are showing.

**EMILY OSTER:** So I talk a little bit about this in the paper because I think you're kind of highlighting what is, I'd say, unhelpful or discouraging, which this is just a paper about, oh, we can never learn anything about don't just give up. And so I think that's not quite what it says. So I try in the paper to talk a little bit about whether we can use some of those changes in selection in a kind of formal way to come to some conclusions.

And the basic idea there is to say that we take the example of sugar and weight, we see one version of the world where there's less of a relationship between sugar consumption and education or income and one version of the world where there's more of a relationship between sugar and education and income, and we can kind of ask what's the real effect of sugar that would make both of those facts true? But I think there is something to that broad idea that we could use these data to kind of get to the truth even though the thing that we're seeing in the data is that in fact we're further from the truth or it's worse than you thought or however you want to take that.

**SARAH BALDWIN:** Yeah. And I don't think I was receiving it as negative information, but I was looking for the and therefore, and it's sort of not there.

**EMILY OSTER:** Yeah. So this paper is mostly about look, you might have thought this fact was true or not. And it is kind of true that we see these cycles. And I think the other thing, which is again not constructive, is that in a lot of the academic literature on this people tend to think, oh OK, well I understand that I'll have this problem, but it's fine because I'm going to control for things. And we always like you to say that we control for things, which really just means we adjust for some sort of basic variables like education, income, maybe race. And when you do that here, it basically makes almost no difference.

**SARAH BALDWIN:** Yeah. It's a little disorienting. You're used to sort of certainty. And this is like what is knowable?

**EMILY OSTER:** Yeah. I think about this all the time in the context of diet because I think our information on diet and kind of what works is so poor and a lot of it comes from studies of the kind that I'm sort of - picking on is the wrong word. --but of the kinds that I'm highlighting the limitations of here, which are these observational studies.

I think one thing people have said when I've given this paper a lot is does this just mean we can only have randomized control trials? This just says, oh, that's the only solution. And I think in some sense that is a conclusion you might draw. On the other hand, trials are expensive and if you want the answer to like, is kale good for your heart, you're not going to run a trial on kale. You're just not. Nobody's going to fund that. It's not going to happen. You couldn't get people to eat the kale anyway.

There's 1,000 problems. And so we really are going to be relying on these kind of data, which says we have to be realistic about their limitations, and I think really try to figure out what can we do? We knew that there were problems at any given time point. Now we know that those problems are dynamic and getting worse in some periods than others. How can we use that to make progress? I don't think I really have quite the answer.

**SARAH BALDWIN:** But when you think about studies that you read about and health recommendations in your own life, do you just sort of roll your eyes or do you think, whoa, I better stop drinking coffee right away?

**EMILY OSTER:** I would say this paper is largely motivated by my father who is a person who does all kinds of

crazy health stuff. He's like one of those people, he's putting the chia seeds in his orange juice, he's like having his fish oil. I mean, my father also has a PhD. He's also an economist. He is in some ways a very skeptical person, but he sort of really buys into some of these things.

And so I think about that a lot when I think about what kind of people who are adopting these particular behaviors. I mean, I tend to be pretty skeptical about any one off relationship. And I think that's something that a lot of people share. I'm probably also more skeptical even about pretty large scale kind of findings that are taken as received wisdom because some of them are just really not well supported. And there are some that are.

So I think things like the Mediterranean diet, that's something where we do have some randomized data suggesting that it is a good idea. So I think there is sort of a few things there and there's a sort of broad sense in which I think we know that like eating a diet exclusively made up of like Doritos and potato chips and soda is like probably not good for you. But the distance between like exclusively eating Doritos and soda is bad for you and like you should eat chia seeds and this particular dandelion greens, that's a wide gulf and understanding where and there is something we sort of know and where is not I think is really hard.

**SARAH BALDWIN:** Well, that brings me to your work in general. There's such a variety of subjects. But often health related, vaccines, babies, pregnancy myths, what about health questions is interesting to you as an economist?

**EMILY OSTER:** So I will say I've always been very interested in health even before I was an economist. So I thought I would be a doctor. That is a longstanding interest. I think in particular with a lot of these recent projects, I am really interested in information and how people think about information and process recommendations and the times in which they don't do the things that we think that they should. And I think in some ways that's sort of very deeply steeped in economics because our economic theories tell us one thing and we look at the world, often behaviors are very different than we expect.

**SARAH BALDWIN:** Give me an example.

**EMILY OSTER:** So theory would say that when you get diagnosed with a metabolic disease where if you lost a bunch of weight you would not have that disease, that you would lose a bunch of weight because we tend to think that we have other information suggesting that people value their life and they like to live for a long time. And by not losing weight you are implicitly accepting a

lower life expectancy. And yet, people do not do that.

So I have some work that basically shows that like you diagnose people with diabetes they make very, very, very minimal changes to their diet, even though that is a huge part of living a healthy lifestyle with diabetes. We see all kinds of things. People don't take their medication when they're supposed to, people don't get the kind of genetic testing that we think that they should, they don't get the flu shot. There's sort of tons of things where people are not doing health behaviors that economists would think are optimal. And I think that understanding those deviations, and are they systematic, and what kinds of theories do we need to understand them? I think that is very steeped in economics.

**SARAH BALDWIN:** Is that how you come up with your ideas for research? I want to find out about that because someone has a curious behavior that might be explained in economic terms.

**EMILY OSTER:** Yeah. I mean I like the idea that now everyone I know is going to be like, oh, are you watching me for weird behaviors? Yeah. I mean, I think that I get a lot of ideas from sort of looking at behaviors, not necessarily of the people around me, although sometimes the people around me. And in particular in this sort of work that I've done lately, which this is sort of a piece which is kind of about methodology, I think a lot of that has been motivated by some of the work that I've done studying sort of the health literature and pregnancy and pediatrics, just sort of thinking about some of the differences between that literature and what we do in economics, and sort of thinking about the limitations of our approaches and limitations of their approaches and how we can use techniques across disciplines to try to improve what we can learn from data.

**SARAH BALDWIN:** You said your father has a PhD in economics and your mother is an economist as well. So you were sort of raised in this ecosystem of economists. Were you raised as an economist? Were you raised to see the world a certain way or to ask a certain kind of question or to look at information and data a certain way?

**EMILY OSTER:** I mean, I think probably, yes, we're always raised in these ways what if we don't know. I think the thing that really permeated my childhood that I can remember very vividly is some of these sort of basic concepts from like microeconomics, which I now teach, were kind of a thing that you just talked about in your everyday life.

**SARAH BALDWIN:** Like what?

**EMILY OSTER:** OK. Like mom, why do you get your groceries delivered instead of going shopping like everyone else? Well, my opportunity cost of time is very high. Like that, yeah.

**SARAH BALDWIN:** Interesting.

**EMILY OSTER:** Yeah. And that wasn't like let me teach you about opportunity cost, that was like that's the answer to the question.

**SARAH BALDWIN:** Got it.

**EMILY OSTER:** And it was like oh OK, yes, I understand that's the answer to the question. And so the other one I remember is my father we used to give him a hard time about not changing lanes aggressively enough at tolls. So you're waiting for the toll and sometimes one line seems fast and then it would be like, why don't you get in that line? It's faster. He's like zinno arbitrage condition. It's like none of the lanes can be faster than any of the other lanes, which is just to be clear, patently false about toll lanes. definitely not right.

But it was sort of things like that. So you kind of pick up those things. I mean I'm not the same kind of economist, like the same subfield as my parents. So it isn't quite like I learned what they do, but I think this basic vocabulary, it permeates.

**SARAH BALDWIN:** You looked at so many recommendations, negative, positive, in the New York Times, in the Washington Post, in Science Magazine, or the Journal, and then all these different kinds of food, berries and pineapples, and then somehow all that turns into these equations, Roman and Greek letters that are quite upsetting to look at for someone who is not at home in a math setting. So has that always made sense to you? I mean, do you just love to change information into symbols and equations?

**EMILY OSTER:** No. I will tell you something, no.

**SARAH BALDWIN:** Oh, really?

**EMILY OSTER:** What I like is the pictures. I like graphs.

**SARAH BALDWIN:** You like graphs?

**EMILY OSTER:** I love graphs. I like when you can see your results in graphs. That's what I like. I am not a person who does a lot of that kind of theory. And so you are not the only one in this podcast who doesn't find that to be the favorite part of the paper.

**SARAH BALDWIN:** That's a relief. I actually pulled all those off. But you're talking at the back with the--

**EMILY OSTER:** Yeah. Yeah, the graphs with the thoughts.

**SARAH BALDWIN:** Yeah. So many graphs.

**EMILY OSTER:** Where you can sort of see things going. And then you can sort of explain, OK, I'm looking in this graph for the two series to be moving together. And I think that's something you can see. Then you may ask the question why do I have all that math if I don't like it and neither do you? Case so the particular thing that's sort of run out in the math in the paper is to sort of try to understand when we would expect to see dynamics like this and when we would not.

So the example that I always give is about tooth brushing. The dynamics in this paper require that when the behavior is suggested when something comes out as a good health behavior, the people who adopt it are kind of healthier than the people who don't.

Then the tooth brushing example you can say, well, what would happen if all of a sudden a study came out that said it's really important to brush your teeth once a day? Well, say that changed some people's behavior. Well, most of the sort of otherwise healthy people are already brushing their teeth at least once a day. So the people who would be sort of newly brought into tooth brushing by that will actually probably be sort of negatively selected, people who are otherwise less healthy because the healthy people are already doing this. So then this kind of dynamic that I'm talking about is not going to happen. In contrast to if we all of a sudden had a thing that said, actually it's really important to brush your teeth three times a day, who would be the first people like dragging their toothbrushes to lunch? It would be the people who are doing all the other stuff.

**SARAH BALDWIN:** They're brushing twice a day anyway.

**EMILY OSTER:** Exactly. So I think what the math actually illustrates is that there are situations in which you'd expect to see these kind of cyclical dynamics and situations which you would not. And that kind of comes out in the math.

**SARAH BALDWIN:** I know how as a writer I see that I interpret the world maybe in clauses or adjectives, and you maybe see the world as pattern or numbers.

**EMILY OSTER:** I mean I see the world as data I guess is how I would say it. So some people in economics will

start with the model, they'll start with the math. I start with the data and I sit down and I basically made some pictures, made some graphs in the data and sort of then pretty quickly say OK, actually it does kind of look like there's something here, and then of course it's a long way from that to a paper. But that's the thing I like the best. So if sort of people like different parts of the research process, that's the part I like the best is like the moment when you find something that nobody else knows and then it's like a fact that you know and other people don't know. That's very exciting.

**SARAH BALDWIN:** Emily, this was a great conversation. Thanks for coming in today.

**EMILY OSTER:** Thank you for having me.

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**SARAH BALDWIN:** This episode of *Trending Globally* was produced by Dan Richards, Jon Maza, and Alex La Ferrier. Our theme music is by Henry Bloomfield. I'm your host, Sarah Baldwin. Before you go, don't forget to fill out our listener survey. There's a link in the show description for this episode. You can fill it out on your phone right now. It's really short and we'd really appreciate it, and you'll be entered to win a pair of Bose noise canceling headphones, which will make all your podcasts sound even better. You can subscribe to *Trending Globally* on iTunes, Stitcher, or your favorite podcast app. Thanks for listening and tune in next week for another episode of *Trending Globally*.

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