>> KATE KRAFT: Hello and welcome and thank you for joining us today for a discussion of the book "in praise of walking."

Before we begin we want to express our stand in solidarity with the black community. We admit we have very few words to offer except to express that we hear you and we mourn and demand justice alongside you to dismantle structural racism and inequality. At America Walks we are taking a hard look at how we can do better, and we invite you to join us and inform us.

In our webinar today, we will turn to brain science to help us better understand how and why we walk and we keep -- and we will keep an eye on how these revelations can help us heal communities. So thank you for joining us and let's get started. I'm Kate Kraft, the director of America Walks, and I'm joined today by my colleague Kelsey Card, operations and development manager for America Walks and our very own board chair, Kevin Mills whose day job is vice president at rails to trails conservancy.

We'd like to thank our sponsors listed on this slide or this screen as we cannot do any of our work without their support, and we are eternally grateful. Before I introduce our speaker in today's topic, I want to remind you that you can find a closed captioning link in the chat box should you want to use it, and we are very much interested in your questions to join us in this conversation. So please add your questions to the -- the GoToWebinar chat box. We will get to as many of your questions as time allows.

Now, it is my pleasure to introduce Shane O'Mara, professor of experimental brain research at Trinity College and is joining us from Dublin. He is the author of the newly published book or at least newly published in the U.S. entitled "in praise of walking."
We're going to spend about 30 minutes hearing from Shane as he outlines the key points in the book, and then we will continue the discussion with Q&A. So don't forget to send us your questions. Thank you, Shane.

>> SHANE O'MARA: Thank you. It's great to be here with you. I'm just going to show my screen. And get going. So as Kate said, I'm joining you from Dublin, which is the capital of Ireland. It's about 6:00 p.m. in the evening here, so we're a few hours ahead of you in terms of the approach of the evening. And I'm delighted to have the opportunity to speak to you about my new book "in praise of walking" which was a little bit of a labor of love for me because I so much enjoy walking as we will discuss over the course of this talk.

What I want to do over the next 25 or 30 minutes is just give you a sense of what this book is about. I dip into some of the topics that are in the book, and I would be delighted to have your questions afterwards. Okay. So let's set some context. And I am -- there we go. Okay. So I'm sure many of you recognize this character. This is the character from the ministry of silly walks.

Above it, I've placed a quote from the British anthropologist John Napier. He says that human walking is a unique activity during which the body step by step teeters on the edge of catastrophe. Look at him as he's walking. He undergoes very remarkable transformations of posture. Yet he'd able to nod and capture attention of somebody else walking by him, and we all have a good laugh at this. There's an element of truth to that we teeter on the edge of catastrophe, but mostly it's not correct, as I hope to demonstrate in a little while.

We're land dwellers and our primary experience of locomotion of course is on the land and it's natural to think that walking first evolved on land. And it turns out that that's not correct. Despite our bias towards land dwelling. And we know this from some very recent genetic studies. So let's just look at the ocean floor for a moment. There are lots of bottom dwellers that walk on the ocean floor. You have here on the left of the screen the batfish that has wonderful protrusions it moves along the ocean floor with. On the right, you have the almost transparent sea pig with obviously lots of limbs that allow it to move around on the ocean floor. There are many, many other creatures that walk along the ocean floor, millipedes and crabs and a whole variety of others.

Now, let's think about walking for a moment. On the left of the screen here you have a ventral view of the skate. You can see that it's moving along the bottom of this tank that it's contained in. On the right here, we have some mice running around. A natural question is, is there any relationship between the gene complex that controls the expression of the pelvis and these limbs in the skate and similarly in the mammal. These -- this is a cold-blooded creature that lives in the bottom of the water, and the mouse is a warm-blooded mammal that lives on land. They're very divergent in terms of evolutionary time. Somewhere around 425 million years according to the molecular clock.

It turns out when you compare the genetic program that controls the expression of the pelvis in the skate and the limbs in the skate that these are identical in the mouse. Indeed, they're identical in the human. With the interesting exception that when nature wanted more of something, it simply doubled this. So you have four limbs and behind limbs in the tetrapod, namely the mouse. In other words, the same gene complex supports the expression of limbs in both of these species who are divorced from each other in -- by unimaginable amounts of time. About 420 million years or so ago. In other words, the program for walking first evolved under water. It did not evolve on land or as had been formally taught at the margins of the water and the land.

Let's move from evolution to development and get up on your own two feet. It's very difficult for those of us who learn to walk early in life to remember just what
it was like to learn how to walk. It's interesting and surprising that we know so little about it. Karen Adolph said New York university has been doing marvelous work on the development of walking in infants and in toddlers over the past decade or two. And this paper of hers summarizes how you learn to walk. You make thousands of steps per day, and you have many dozens of falls per day. Now, how do you demonstrate that? Well, this is how you do it.

You take children to a walking laboratory with a gait map. And you track the movement that they make. You can see it in the pattern B here below in three dimensional space and you code how much walking they do, what type of steps, all of this kind of thing. Quite a complicated task to do. But what this shows you is remarkable. That locomotor experience in these children is absolutely immense. The average 12 to 19-month-old takes around about 2,300 steps per hour and falls approximately 17 times per hour. This is a remarkable thing if you think about the transition that a crawling infant makes to making these kinds of uncertain steps.

At around nine or ten months of age, you are able to move on four limbs. You're in a position of great stability, and you are very unlikely to fall over from that position. And around about the age of 10, 12, 13, 14 months, something like that, an obligatory transition occurs where humans start crawling, start pulling themselves up and they move into a position where they are now ever so slightly unstable, but their world changes. One of the major things that happens at this point is that their ability to engage social attention changes because they can now freely point to other places and have their caregiver or playmate follow the focus of their attention through their pointing.

So what you have here, of course, is what's referred to in the psychology literature as time distribution variable practice. And this is how we ordinarily learn to walk. And the transition we make is really quite remarkable. We become very, very fluid, in a way that robots and other artificial Walkers have not -- are not able to do yet. And we can do this. This is from Mary Hayhoe's lab. How we place our feet as we're moving around on very, very rough terrain as you see on this case here. The walker is carrying a mobile laboratory, one that measures his eyes so you know where he's looking and a laboratory on his back, which you can see also. He's moving at quite a speed and eventually comes to a terminal position. There are points on his limbs, elbows, knees, shins, that track the position that he makes in space.

Now, note the foot placement. You put your foot down on a rock without being able to know whether it's stable or not, so you have to make that estimate ahead of time. And this is how you do it. You adopt a slightly forward stance and you flick your eyes out and your eyes flick back. You can see that on the top left here. You do this in something like a fifth of a second. So your positioning of your feet has already been determined by the input that your eyes have received and the estimate that your brain makes about the stability of the surface you're about to place your foot on. It's really, really quite a remarkable achievement, and as I've said, we can't get robots to do this particularly easily, especially not with this sensory motor integration where visual input combined with movement and feedback from the feet regarding foot placement.

Now, it's often said that going for a walk is something that's very, very enjoyable. But that it may also act in some way to make you feel better. I know certainly from my own walking experience, one of the best ways of shaking off the stresses and strains of the day is to go for a good walk in the evening. Now, is that true? Do we have any evidence that it's true? Well, there's quite a bit of evidence, both from individual experimental studies and from population level epidemiological studies that activity through the form of walking in particular is a very good thing for you both for your body
and for your brain.

So this is a very elegant little study by Miller and Krizan at Iowa State University. They asked students to come to the laboratory and their job was to judge the beauty or otherwise of buildings around the Iowa State campus. So they were given pictures to look at or they were brought for what’s referred to as incidental ambulation. They go and have a look. They get feelings on how they feel about walking ahead of time. Event during incidental ambulation people's self-reported wellbeing goes up quite dramatically after they've engaged in a walk as compared with the group that are sitting.

You might reasonably ask is this a generalizable phenomenon. We have lots of data now from a wide variety of studies. I've chosen one here from Australia, but there are many, many others like this, looking at the relationship of taking some degree of physical exercise, typically going for a walk and how that prevents the likelihood of the onset of major depressive disorder, which is one of the -- the scourges of mental health in the modern world. And what they show in this study is that for every level of activity above the most sedentary in the population -- now, this is a population that has been selected for having no disorders going into the study, engaging in at least one hour a week of activity usually walking prevents about 12% of future cases of depression.

So this is quite a remarkable effect. And the effect size is approximately the same as you get for cognitive behavior therapy and for drug treatment. So a non-pharmaceutical exercise-based intervention. In other words, activity reduces the likelihood that depression will appear in this population. And there are many other studies which demonstrate this, that exercise appears to be a very good prophylactic against the likelihood of the onset of depression. And there are some more recent studies showing that even in the case of subsyndromal depression it has a marked effect in that population as well.

Now, it's been known for perhaps thousands of years that walking is something that facilitates creativity, or at least that's been asserted. If I might come locally -- and I hope you will indulge me here, this is William Rowan Hamilton, a mathematician at Trinity College. He invented quaternions. They're used widely in physics, particularly in computer gaming and computer graphics, but also remarkably enough in electric toothbrushes to solve the problem of joule rotation in an electric toothbrush. Hamilton was a renowned walker. He used to walk approximately two hours from the observatory in north Dublin, because he was the astronomer for Ireland at the time, to Trinity College at the center of Dublin. A walk of about two hours. And he would think about quaternions. And one day, he finally hit on the equation, having thought about this for many years. And had forgotten to bring his paper with him. All he had was a tobacco knife. So he cut the equation into a broom bridge so that he wouldn't forget it and then came back and wrote it down later.

And there's the equation. [ Reading the equation ] in his auto biography, he wrote this sentence "here there dawned on me the notion that we must admit, in some sense, a fourth dimension of space for the purpose of calculating with triples, an electric circuit seemed to close, and a spark flashed forth."

Is this something peculiar to Hamilton, to mathematicians, or something we can all avail of. That walking can promote creativity. I chose a study by Marily Oppezzo and Daniel Schwartz. This is a very, very clever experiment where they look at creativity and the effect walking has on creative idea generation.

The standard approach to studying creativity in the lab is to ask people to come to the lab, hand them household objects and ask them to generate alternative
uses for those objects. And if you carefully match the amount of walking that people do -- so you bring them for a walk or you make them sit for a period of time -- and then look at the number of uses that people are able to generate, what you typically find is that having walked, you generate about twice as many divergent uses for common objects compared to having been seated. So there's an important lesson there. Getting up and moving actually facilitates thought. They were very clever in this study. They did versions on a treadmill where you had to sit on the treadmill and this kind of thing, and they got exactly the same kinds of results. In other words, movement and walking in particular facilitates creative thought.

Now, let's turn to a different topic and just think about how we get around in the world when we're moving. It's natural to think that perhaps vision is the most important sense for navigating the world. And this has been disputed within psychology and neuroscience for many decades now. Here's a famous paper by Jack Loomis at the University of California a number of years ago. What they did, a very clever task. They asked people who were blind from birth, people who became blind as a result of accident, so visually impaired, and people normally sighted but wearing blindfolds to complete try angles. They would be walked along two limbs of a triangle and their job was to walk back to the origin.

It turns out performance across people who are visually impaired either from birth or people who became visually impaired later in life and normally sighted but blindfold it is approximately the same. People are very, very good at doing this task. And what they show in -- claim in this paper is that the results provide little indication that spatial competence strongly depends on prior visual experience. So how can this be? Well, there is an answer, which is here in the vestibular system. It's an end organ contained in the head whose job it is to detect the movement of the body through space and to remember the movements that the body makes through space. And it does this remarkably well.

So I'll just focus on a study by Alain Berthoz and his colleagues. They take people and put them in a wheelchair, blindfold them and make them wear earmuffs. They imposed on them velocities. Your job is to move the robot through the velocity profile that you have just been exposed to. It turns out people are remarkably good at doing this. When they're given a stimulus or a movement of a particular type, the response mimics that very, very well. Here's a triangular wave form, and these are attempts to reproduce the triangular wave form, trapezoidal and it gets input from the visual system, but it can operate independently of the visual system in order to allow you to represent three dimensional space as you move through it. The point at which these two systems converge provides important information to the brain about whether or not you're moving correctly in space or not.

Now, if we ask what happens when you're asked to walk in conditions of whiteout, either in the desert where you don't have access to the sun or through a dense forest in conditions of fog or on an airfield, what you find is when people have no distant landmarks or distal landmarks to look at, they start walking straight, they start walking in circles. The vestibular system represents straight lines up to a distance of perhaps about 80 or 90 meters and then it becomes progressively more miscalibrated. It needs an input from the visual system, but it can just as equally be from any of the other systems, a sound source, for example, can help localization. And the brain is remarkably good at putting together these different types of signals in order to generate a corrected motor movement towards a target.

Now, I want to talk about cities for a moment. This is a picture of our urbanizing world. And you can see Eurasia at night is very, very lit up. And the share of
people living in urban areas is well north of 55 or 60%, so a majority of humans are now living in cities and towns, which is something that has only happened recently in our presence on the planet. Only since 2017 or so. And this is a remarkable experiment that we're undertaking. What it means is that by definition, most of our walking will be urban. In other words, it will be in our towns and cities. And I want to add to this something that sometimes forgotten, that everywhere you look people are living longer. So these are -- this is data from Information is Beautiful going back from 1960 up to 2015. And you can see that there's been an extension in average life expectancy everywhere you look. With the Japanese currently living the longest on the planet at about 83 or 84 years on average.

This brings with it a challenge, and a challenge that I think has been forgotten by town planners. When you think about how our towns and cities are designed, they're typically designed for the movement of people who can walk 1.2 meters a second at crosswalks. And it turns out when you actually look at the speed that older pedestrians are able to cross the road at, that they walk much more slowly than this. And typically crosswalks are not designed for this older population despite the fact that this population are going to be the majority population or at least a substantial fraction of the population over the coming decades.

So this is just one study demonstrating this by Laura Asher and her colleagues in the UK. They studied about 3,000 adults, age 65 plus. And they showed that 84% of males and 94% of females tested had a walking impairment. And that the vast majority of the adults that they tested walked below the necessary speed to cross the street. So this is a design feature of our towns and cities that traps people who are not able to move at the same rate as people who are younger. This is my hometown on the west coast of Ireland. And a recent freeway design we call them motorways, but you call them freeways, shows the intersection of the motorway with the edge of the city. And what they've done here is built a system that requires an abled bodied person 14 minutes to circumnavigate. There is an older person's home on the top right and a shop on the bottom left. What has been overlooked completely are people who have mobility impairments.

These can arise from many varieties of reasons, from aging to visual impairments and to many others. But a street design of this type does not take account of the needs of individuals with these kinds of problems. Now, let's ask a question about street design. How much do you walk? This is a very nice study by Tim Althoff at Stanford University. They've grabbed smartphone data. There are two conclusions to focus on here. The Japanese walk the most and people in Saudi Arabia walk the least. This is not because of the heat. It's because they're very poor sidewalk provision in Saudi Arabia and of course Saudi Arabia does have migratory tribes. In the western more generally we walk comparatively little. Somewhere around four and a half or 5,000 steps a day. 100 years ago the average workman in London walked about 10 miles per day. So there's a huge difference between what we used to do and what we do now. We've designed movement out of our world.

And you can see this by focusing on the difference between high walk able and low walkable cities. High walkable cities are cities where the facilities of everyday life are close by. You can walk out your door to your local shop or whatever it happens to be. Low walkable cities require a car trip. You can see this across the course of the day in a high walkable city, people walk more. And that's true during the course of the weekday, but it's also true at weekends. People walk more in highly walkable cities compared to cities that are relatively less walkable. I want to talk about city design just for a moment. These are two very ancient cities. I've had the pleasure of visiting
I've never been to Irbil. You can see the design of these cities is densely packed allies, shops, intersecting corners, all sorts of things are going on all at once. And by contrast, you have a vision given to us by Le Corbusier for the Ville Radieuse. Very, very spread out buildings separated by wide boulevards. They got a chance to build this in northern India. What I want to do is mention briefly the effect of urban design on health. Glasgow is a city in Scotland, in the UK. The Glasgow effect gets a Wiki page of its own and the World Health Organization bulletin. It is the worst health status of any city in northern Europe. Even when you account for deprivation, if you take Manchester or Liverpool, what you find is that deaths for all categories of disease are greater in Glasgow compared to deaths in Liverpool and Manchester, which are similarly poor. And it's true even for -- accounting for levels of relative deprivation or affluence. There's quite a remarkable difference. This has been studied for many years now. An interesting conclusion has been come to that, first of all, even in the -- the most affluent suburbs in Glasgow, you have higher levels of death in those cities -- in those areas. And they have done many papers that have looked at this have concluded something else is going on. It's not just socioeconomic deprivation. And it -- many people have suggested that it's actually the urban planning decisions that have been made. And what I want to blame Le Corbusier just for a moment. Glasgow is probably the city that went the furthest in the UK in terms of adopting the Le Corbusier model. It cleared out its inner city and built new high-rises. And the result has been the destruction of social capital and the destruction of social networks, the kinds of things that people were able to do prior to the destruction of their cities. This is Tarmina in Italy. This is my preferred vision of a city, and I will admit it is just mine. What I want to do is suggest that all our towns and cities should think about design principles that allow people to move whatever way they can around those cities. And I've suggested the acronym EASE. Our towns should be easy to walk, but they should also be accessible to all. That means designing in -- to our towns and cities facilities that allow everybody, including mobility impaired, people with visual problems and all of the rest of it, to move safely around. And our towns and cities of course should be enjoyable for all. Paris is experimenting with this, with the so called 15-minute city where cars are being removed from the city and the idea is that within 15 minutes of stepping out of your door, you should be able to find your doctor, you should be able to go to get your food, all of those other things. Now, what I want to do is switch gears and come back and talk about the brain for a moment. You've probably never thought about this: Why do you have a brain? If I put this a different way, what problem does having a brain solve for you? Maybe slightly more comprehensive way of putting it. If you think about it trees don't have brains, grass doesn't have brains, the hedges don't have brains, there's something about having a brain that's important. This is a sea squirt, and I'm going to talk about the sea squirt for a moment. The sea squirt, very beautiful picture as you can see. When it is a larva, it has a spinal cord. It has a brain and it can tell up from down. Here's a cross section. You can see it's cerebral vesicle. It's in the same file as we humans who also have spinal cords, but it transitions. It makes a remarkable transition where it sticks itself to a rock and gradually over a period of a week or two, it transforms itself from being able to swim, being mobile to being cecile. It absorbs its own proto brain as a meal. In other words, if you're not moving, you don't need a brain. So the brain does solve a particular problem for you. Here's I suppose a small hero of mine, Homer Simpson in his preferred pose. If you like doing a homer
dose which is to sit around a lot, it's important to understand what it might do to you. This is why I think we need to try and build movement back into our lives. This is a study by Remi Demangel in France. They've looked at dry immersion. You're placed in this water bed. You don't move for a couple of days except for breaks to the restroom. And what they find is that after three days in healthy, young adult males in their late 20s that muscle volume decreases, muscle strength goes down, and muscle viscoelasticity drops. It has malign rather than benign outcomes. There's feedback from muscles to the brain and vice versa through these wonderful molecules known as myokines that regulate resilience in body as well as resilience in brain and help maintain muscle mass. In other words, I hate to say it, but being Homer Simpson is actually bad for you.

And this is what we should be doing, sitting less and walking more. I'll stop there. Thank you very much.

>> KATE KRAFT: Thank you, Shane. There's a lot to unpack there. So we're going to get started with some questions, but can you talk a little bit before about what motivated you to write this book? It doesn't -- it's not in keeping with so much other of the work that you've done.

>> SHANE O'MARA: Yes. And I'd be delighted to. Let me just share my camera here so you can see me. The reason I wrote this book is very straightforward, actually. I love to walk. And it wasn't obvious to me that I should write such a book until my literary agent said to me I should write a book on walking. I had done a big walk just prior to that in London. I felt like the right fool when he said it to me because it was obvious that that's what I should do. I knew the literature. I had been interesting in understanding spatial mapping in the brain for quite some years. And I got the chance -- I thought this is something I should do, nobody has told the story, it's a remarkably interesting story, and it's one that really should be told.

>> KATE KRAFT: Great. Thank you. Just a quick reminder, do send your questions from the -- in the question box that you see on the screen there.

You know, we're a network of walking advocates. And you do mention in your book that neuroscientists, brain researchers should be part of every city planning and development team. So tell us exactly what the neuroscience brings to that team. Why should you be at that party?

>> SHANE O'MARA: Well, there are two reasons I suppose really. One is neuroscientists are citizens just like everybody else and we have a right in that sense to have our voices heard. But the other key point really is that neuroscientists know lots -- I haven't talked about things like cognitive mapping, how we understand the move in our world. We know now lots about the impact of design decisions on our mental health and on our physical health. And these typically aren't part of the conversation that is being held and is being had about how movement should occur in our towns and cities.

If you look at development plans for the various towns and cities and see what proportion of the budget is being spent on sidewalks and on making streets into beautiful destinations, you'll see that it's comparatively little, even though it's quite clearly the case from everything that we know about brain function that we need to incorporate elements of green design. So things like trees and all of those kinds of things into our cities, and we need to make our cities interesting so that people find them as desirable places to want to be and to want to live.

>> KATE KRAFT: Thank you. Kevin, are you going to join us? I know you have questions that are coming in from the transom. You may be on mute. Okay.

>> KEVIN MILLS: Thank you. So Shane, with COVID-19, more Americans are walking for exercise and mental wellbeing, though often with anxiety about encountering
others along the way. How do these competing emotions balance out? And how will physical distancing guidelines impact your findings and recommendations?

>> SHANE O’MARA: Yeah. So a paper has come out literally today on the impact of COVID-19 on walking. Really great to see. A colleague of mine in Trinity, but also some colleagues in the USA. What they found is that initially when you track movement, people’s level of walking fell and general level of activity dropped, but as they -- the people have adapted and this is something we shouldn't forget, humans are remarkably adaptable creatures, walking levels have started to rise again.

So there is the anxiety about meeting others when you're out walking, but we know that outdoors, the load of the virus is likely to be exposed to is very limited to -- to nonexistent. So keep the 2 meter guideline, sachet quietly around the other person. I think walking is much nicer now we're actually attending to each other rather than little screens in our hands.

>> KEVIN MILLS: So -- so one question that came in is: How do we design cities for seniors to be safe and independent? You had mentioned about crosswalk timing, but maybe you can elaborate some on that.

>> SHANE O’MARA: Yeah, I think there are really two things to think about here. One is the design charter that towns and cities have. Is it baked into guidelines at the start that your towns and cities must -- where -- when money is being spent on adaptations that they are designed for this population. So I can't speak to the U.S. experience. I'm sure it's different from state to state. But our laws here in Ireland require that parts -- what we call footpaths, what you call sidewalks, are adapted for the needs of the visually impaired and they're also adapted for the needs of people -- of the elderly. So crosswalks in the cities are raised. They're at the same level as the footpath. So you don't have to step down. So that reduces the fall risk.

The button that you must press, which I love that you have to do that, but is large and makes a noise so the people that are visually impaired can hear the amount of time they've got to get across the street. I think it's building in lots and lots of small features that enhance individual autonomy, but you have to have the budgetary -- the budget available to do this and you must bake into your design principles at the start that you are going to do this. So it's a requirement under the city codes that this happens. If you don't do that, the rest of it is just talk.

>> KATE KRAFT: In your book, you spend quite a bit of time looking at the evidence of walking in nature and what it does in terms of the restorative nature of that. Can you just tell us a little bit about that and you talk about the different types of nature or the different types of outdoor walking.

>> SHANE O’MARA: Yeah. So I'm sure you have the expression the leafy suburbs in the U.S. Leafy suburbs are expensive and concrete suburbs aren't. There's a great study on mental health in Germany looking at people randomly assigned to apartment blocks by the town council. And people on one side have a view over a park versus people on the other side have a view over a freeway. What you see is that people who have lots of nature in their daily lives, who are randomly assigned to it, have much better levels of mental health. There's much less prescribing of prescription drugs and all of that kind of thing to that group versus the group randomly assigned to the other side of the building.

So nature exposure is important. The question is how much and what other variables kind of impact on it. So we know a little about this. I don't think we know anywhere near enough, but they -- the data that we've got suggests that being exposed to nature for as little as two to four hours per week is sufficient. What you're exposed to probably doesn't matter a lot. A nice city park, if you have access to that, is probably
fine. But seeing green, seeing trees, seeing all of those kinds of things, birdsong and all the rest of it, are all vital components of it. And people self-report when you measure these things using a smartphone that just the mere experience of walking through a city park makes them feel much better. But I think we kind of know this. This is why people golf. Or play golf.

>> KEVIN MILLS: So, Shane, how -- so there's been some increased interest in walking of late. We're interested in how we maintain that increased interest in walking as life returns to normal for more people. And perhaps related to that, there's also a question about how might we lead more people to walk for utilitarian trips.

>> SHANE O'MARA: I'm not going to ever suggest we should blame individuals. We need to blame our built environment. If walking is easy for you, you will walk. If it's the default, you will do it. So a simple example, building a work end, when you walk in the door, the elevators are in front of you. To get to the stairs, you have to walk through three fire doors, which means that the default is that people take the elevator, they don't take the stairs.

The same principle is true everywhere else. You know, if cars have primacy, people will take their cars. If it's not safe to walk, people will take a car. So this is actually a big job of reconstructing how we think about our built environment so that it's easy for people to walk. And probably you've got other issues. You know, it used to be in city zoning meant that you had a business district, you might have had a district for shopping and then you have a district for living. And actually mixed-use districts facilitate people to move around much more easily than they would have done. But, again, these are big, you know, almost century-long, certainly decades-long jobs where redesign is concerned. But, you know, you got to take the first step.

>> KATE KRAFT: I want to give -- we had mentioned to folks who were attending that we would be giving away some of your book or a thank you to publisher for making that available. So I -- we did a random selection of folks who are attending the webinar. And Kelsey, you want to tell us who's getting -- who will be getting a book?

>> Sure, thank you all so much for attending. Our special winners today are Herminia Rodriguez and Sydney Sepulveda. We will reach out to you via e-mail for your physical address.

>> KATE KRAFT: Thanks. We wanted to make sure we did that before we got too much further along. Kevin, do you have any more questions --

>> KEVIN MILLS: Sure do. One just came in about how walking may or may not help in the effort to reduce obesity levels.

>> SHANE O'MARA: To reduce obesity levels?

>> KEVIN MILLS: Yes.

>> SHANE O'MARA: So there's kind of an important context to -- to put here. I -- I don't want to engage in too much advertising, but chapter two of my book deals with it in great detail. If you look at humans who are living what are known as ancestral life styles. So they're in south Africa or in Africa rather or South America, what you see is they typically walk very large -- very large number of steps per day. They would walk perhaps ten or 12 or 14 kilometers or something like that over the course of the day, but their energy consumption does not vary very much compared to people like us who are living in a much more sedentary world.

And that gives us an important clue. Which is that the problem is that we think by exercising we're going to burn off the excess calories from the food, especially ultra processed foods that we're eating, and we won't. Another issue which is that as we evolve, food sources have always been historically rare. It's only in the modern world that we've solved the problem of food collusion. There's food everywhere now. You can
get cheap calories very, very easily. Our tendency is to eat and reserve energy. That makes sense if you're in a resource poor environment. But we're in a resource rich environment. We have to shift away from ultra processed foods to foods much less processed. We need to reduce the amount of calories we eat per day if we want to tackle obesity.

On the other hand, walking is good for you independent of all of those things I just said. It's good for every organ system in the body. We're built to profit from regular movement, unlike our closest primate relatives. This is not often thought about. Chimps around for most of the day, the great apes sit around most of the day. The food they eat and the metabolism they have is designed for this. Ours is designed for movement. If I ask you to look around the room that you're in, how many chairs can you count? I hate to do it in a room that I'm sitting in, but there are too many. We have designed opportunities for lack of movement into our environment, designed opportunity for movement. And this is because our brains are very good at taking shortcuts.

[Laughter]

>> KATE KRAFT: Kevin, I understand we've gotten just lots and lots of questions. So I don't want to use our questions when we have people --

>> KEVIN MILLS: What about walking and talking? So one questioner had said in their own experience they feel like that adds to the health benefits to have a good talk while you're walking. Does your research back up that perception?

>> CAPTIONER: Please post questions into the GoToWebinar question box.

>> SHANE O'MARA: You can walk for cardiac health, which is -- means you're walking at a speed where it's difficult to talk to somebody. Clearly, if you've got a problem to solve, if you have a relationship with somebody or whatever, you walk at a different speed, and the synchronization that you engage in when you're doing that movement is quite different to the kinds of synchronization you engage in if you're walking for health. If you look at people who are walking, take a short legged and a long legged person. What you typically see is the long-legged person gait shortens and the short-legged person's gait lengthens a little. It's a work of passive aggression if one person walks too fast and the other walks too slowly. This is one of those things you shouldn't do. It's a social synchronization which is good for us and social walking is of course one of life's great pleasures. So, yes, walking with another person is a great thing to do.

>> KEVIN MILLS: Okay. So what about folks that work? Someone wrote in that, you know, in their workplace, people get plenty of breaks, but nobody's using that as an opportunity to go take a walk. What might they do to, you know, help inspire their coworkers?

>> SHANE O'MARA: Again, I'm going to blame the environment. I'm not going to blame the individual. You know, there's a new generation of walking desks coming in. There are quite a few designs out there. So you can build in movement into work spaces there is a kind of a social inertia. If the someplace that you're working in involves everybody sitting down, getting up and breaking the social norm is a hard thing to do. If you have an office to yourself, in my case, I do. I have an alarm on my laptop that goes off every 25 minutes and I get up and I go for a walk in order to do that. I think it has to just be normed. The leaders of the organization have to make this a normal thing to do. It should be okay to have walking meetings, to have standing meetings, to have a walk around the corridors and work at a board in the corridor or something like that.

And, again, this comes down to kind of leadership. But, you know, some of the buildings that you look at, the Apple building has apparently I've never been it, but I
hear that it has a marvelous walking corridor. Microsoft's European headquarters is not very hard from where I live with? There are stairs everywhere and people walk all over that building. The design of the building that we're in make a huge difference.

>> KEVIN MILLS: Great. So what would you suggest be the fundamental mindset for transportation planners, right? There's a -- often a fundamental goal of moving, you know, vehicles more quickly through -- through a city. What -- what would you suggest as a -- as a reform in the way transportation planners think of their job?

>> SHANE O'MARA: Everybody will hate this, but I think we should abolish parking. If you have nowhere to park, there's no way to have a car. That's kind of a flippant remark. The investment in safe mass transit is something that has lagged behind public demand everywhere you looked. There are very few countries that have got ahead of this. Singapore have done a great job on this. And people where I live, we've done half a great job and a half bad job. So we've put in a wonderful tram system, but we haven't built enough of it and demand on it is enormous and we have a very good light rail system that I take to work every day or I used to until the disaster befell us.

But we've spent an awful lot of money on freeways, which means that people commute for maybe two hours to the center of Dublin, which is ridiculous in a small country. So mass transit, clean, safe, reliable, all of those kinds of things, that needs to come and then just abolish parking.

>> KEVIN MILLS: How can we use the mental health benefits of walking to advocate for more walkable cities and would your recommendations on that differ by country?

>> SHANE O'MARA: So how can we use it? I think, you know, again, this comes to kind of the policy demands that are -- that are placed upon our -- our towns and -- town planners, our city planners, but also upon our politicians. You know, so you can mount a utilitarian argument if you want, which is that we will spend much less mental health services and much more economically intensive cities with happier people if we have that kind of density that allows people to -- to interact with each other. I think that's a perfectly good argument. I think there's similarly a perfectly good argument from how we are built and designed as humans. We are designed to move around and optimum design of our towns and cities should reflect our ability to do that and allow us to profit from it, but that's, again, a complicated problem.

You know, who's going to listen to you? You'll know whether they've listened depending on how they reallocore their budget.

>> KATE KRAFT: Okay. We are kind of getting to the end of our time here. I'm just wanting to give Shane and Kevin both a chance to make a final kind of closing remark and then I've got a couple of things to end us with. Kevin, do you have any observations or thoughts?

>> KEVIN MILLS: Shane's research is really fascinating. I appreciate the opportunity to learn why walking's so enjoyable, stress-reducing, productive. That's -- and, you know, fundamental to who we are as a species. I really think we can use what we've learned here to be better advocates.

>> KATE KRAFT: Thanks. Thank you, Shane. Any closing remarks?

>> SHANE O'MARA: Just to say that walking is our unique adaptation. We walked out of Africa some hundred, 150,000 years ago and we spread all over the planet. And we did that in family groups of tribes, not one person walking off into the wilderness with a spear. At our core, walking is social, and walking is very good for us in ways that we know and in many ways that we simply don't know.

>> KATE KRAFT: Thank you. I want to get back to my slides and once again
thank our sponsors for -- for supporting this work. Thank Shane for bringing his wisdom and being -- doing this later in the day for him. We really appreciate you doing that. Our sponsors for making it possible. I want to thank all of you for participating and what an amazing group you were. We got lots and lots and lots of questions and we'll do our best to try and get them answered. I want to thank Kevin for joining me today and helping manage all of the questions you sent in.

Just to give you a preview of a few things that are coming up, we have on June 10th, our next webinar, enhancing walkable places through public art. So we hope you can join us for that. And also at the end of June, we're going to feature tribal transportation planning and pedestrian safety. This webinar will provide an overview of tribal transportation planning that will be followed by the return of our walking for justice series later this summer when we'll discuss missing and murdered indigenous women and girls and the role of accessibility in walking.

So thank you once again for joining us. Please complete the survey that you will get at the end of the -- of the webinar. We do use that information to help us improve what we do and to make -- and help us decide on future topics. So with that, thank you all and hopefully we'll see you in a couple of weeks. Bye.

[ Webcast concluded at 1:00 p.m. ET ]