



10.22.24 | 2-3PM ET
FREE WEBINAR

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Featuring:



S. Jay Olshansky, PhD

Professor, School of Public Health at the University of Illinois at Chicago, and Author - [*The Quest for Immortality: Science at the Frontiers of Aging*](#)



Andrew J. Scott, DPhil

Professor of Economics, London Business School, and Author - [*The Longevity Imperative: How to Build a Healthier and More Productive Society to Support Our Longer Lives*](#)



Moderated by

Steven N. Austad, PhD

AFAR Scientific Director, and Author - [*Methuselah's Zoo: What Nature Can Teach Us about Living Longer, Healthier Lives*](#)

Transcript

Steven Austad:

Hello, everyone. Thanks for joining us today, for today's webinar, “**How Realistic is a 100-Year Life Expectancy, and Why does it Matter?**”

My name is Steven Austad. I'm the scientific director of AFAR and an endowed chair at the University of Alabama at Birmingham, and my agent would hate me if I didn't have my latest book, [*Methuselah's Zoo: What Nature Can Teach Us about Living Longer, Healthier Lives*](#) [here](#) to plug.

This webinar is hosted by the American Federation for Aging Research. It's a national nonprofit that supports and advances pioneering biomedical research. That is revolutionizing how we all can live healthier and longer.

Our guests today are S. Jay Olshansky, Professor in the School of Public Health at the University of Illinois, at Chicago, and you can see Jay's latest book, [*The Quest for Immortality: Science at the Frontiers of Aging*](#) [here](#). And one thing I'd like to note about both of today's speakers, even though they have their professional expertise. Dr. Olshansky is a demographer by training. They also are some of our broadest thinkers in the field of longevity, and so we can expect the conversation to be far ranging.

Our next guest is Dr. Andrew Scott; This is his latest book, and I recommend it very highly, [*The Longevity Imperative*](#). Dr. Scott is Professor of Economics at London Business School on the Advisory Board of the UK's Office for Budget Responsibility and a member of the Cabinet Office Honors Committee.

So, let's go right ahead and get started.

First, a [paper that Jay recently published](#) is going to be the focal point of our conversation today, and that paper talks a lot about recent patterns in the future of life expectancy. I thought it might be worth starting off by simply defining life expectancy, because we've all heard that it was in the twenties/thirties/forties in the 1900s. But we all know of historical figures that lived into their eighties and nineties. So, I think it might help Jay if you just started off by telling us what exactly life expectancy is.

S. Jay Olshansky:

Life Expectancy is a population metric designed to estimate duration of life for a cohort of individuals of a given age. So hypothetically, let's say, life expectancy in the United States, for a baby born today is 80. It means using what are called period life tables, if death rates remain the same in the future. The death rates that prevail today would lead the roughly the average duration of life. For a baby born today to be 80 years. You can calculate life expectancy at different ages, but it's critically important to distinguish between the life expectancy of a population and the lifespan of an individual. And Andrew and I are going to be talking extensively about that.

Steven Austad:

Okay and would you like to tell us what the main conclusion of your recent paper is, and why we should care about that?

S. Jay Olshansky:

So, I hope you don't mind. First, I want to thank the American Federation for Aging Research, for sponsoring this and for making the paper open access. And you, Steve, of course you and I, go way back to 1990 and the original science article that I published on this topic. And Andrew, of course, is one of the reasons why we published this paper now. We were at a meeting in London 3 years ago, where this issue came up and that meeting led to this. So, if you don't mind, I just need a minute to give some context, because if all I do is tell you the results of the paper honestly, you will have lost the context of the entire argument.

So, and I'll be brief. Years ago, back in the late eighties, I came back from a conference run by George Martin where we discussed the issue of human longevity, and it occurred to me at the time that one way to address this issue of how long we can live was, instead of estimating how low death rates can go. I reverse engineered the question; how low would they have to go?

We did this calculation using data from the United States, and I can tell you that if you go back to our original science article, this was figure one. When we looked at this, we just couldn't believe what we were seeing. We replicated the analysis over and over and over again, and eventually it dawned on us that we were witnessing human biology in the life table.

We weren't the only ones to have discovered this. We went back and looked historically at people that had the same idea that came to the same conclusions. And we realized we were seeing something that was extraordinarily unusual. It was biology. It was not just a bunch of numbers in a life table. It led us to conclude that life expectancy for a population must slow down. I use the word must for a very specific reason. We basically suggested that if we succeed in pushing enough people out into outer regions of the lifespan, where they face the currently immutable force of biological aging. Then the gains in life expectancy must slow down in the future. We estimated at the time it was about 85 years, about 88 for women, 82 for men. That means that about 80% of a cohort will die between the ages of 65, and 95, about 14% will live beyond 95. Most will die before 100 and about 6% will die before the age of 65.

A lot of people didn't agree with us. They said "no", advances in medical technology will accelerate which, of course, we agreed with, but they said, it will drag life expectancy along with it. We said, it can't. We waited 10 years. We published another article in science in 2001, using data from Japan, the United States and France came to the exact same conclusion.

We waited 20 more years for this paper. We now looked at multiple, long-lived populations and came to the exact same conclusion. The probability of getting these life expectancies much higher dwindles the longer we live. Keep in mind, this is a product of success, not failure. You have to live long enough to experience the consequences of senescence or

aging on a large enough segment of the population to slow down the rate of improvement. It doesn't mean we're not living longer; we are. Life expectancy, in fact, has been going up, but at a slower and slower pace, and we would suggest that that must continue, there may be some perturbations along the way, but we would suggest that unless we can find a way to slow aging to do something different or modulate aging. In some way this must continue, and the last point I would emphasize, and we published on all of this extensively in the last 30 years is that we anticipate an increase in frailty and disability among future cohorts of older individuals as well, for the same reason.

So, there are multiple implications associated with the observations made in the paper. It doesn't mean that we can't modulate aging. The last part of the manuscript is devoted to the argument, that's what we need to be doing. We actually need to be doing something fundamentally different from what we've been doing because of the longevity corner we've painted ourselves into. We got what we wanted; We got these longer lives. We've paid a price with heart disease, cancer, stroke, Alzheimer's and other diseases and disorders. Now it's time for something new, and that's the excitement of Geroscience, and that, by the way, is the short version. There is a whole hour-long presentation that I give that explores the entire history of thinking on this. And I think once the light bulb turns on for people. And you see what we saw in the late eighties. I think it's pretty obvious what's happening.

Steven Austad:

Okay, thank you. Andrew, you're a numbers guy, too, right? And I know that you probably have your own take on this and so how would you respond to what Jay has said?

Andrew Scott:

I mean, first congratulations to Jay on the paper and the coverage the paper has got, and this is a great topic we all care about. And it's this that brings it into the mainstream and we start to focus on the realities of the situation. So, you know I fully support Jay and what he said I couldn't disagree with anything. I think, he said, we've seen in the past an increase of 2 to 3 years every decade in various measures of life expectancy in some countries. And if you've got high income countries that isn't continuing, and it can't be expected to continue.

Secondly, the fact that the majority of people won't live to be over a hundred as a consequence of that slowdown in the trend. I think, Jay, I might disagree about how big the minority is whether it's 5% or 25% but it's a minority outcome rather than the expectation. And I couldn't agree more with Jay. In the leadership world and business schools where I'm based, there's a guru called Marshall Goldsmith, who tells people when they get promoted, "What got you to here won't get you to there?" and I think Jay and I totally aligned on that because while we've achieved this remarkable achievement around the world. Global life expectancy now exceeds 70. It's kind of worth just stepping back and going Wow! Anywhere in the world a child being born, you know, global expectation is over 70, which means the majority can expect to become old. So, the biggest challenge now is, how do we age?

I think what I would flip around, and it may be helpful because I'm not a demographer or a statistician, the big insight for me in understanding Jay's sort of punchline is a metaphor, and it's a metaphor that I don't know if it's useful, but it's the way I approach things. If you think about a telescope with multiple segments, you can make that telescope longer by

pulling out each of the segments and if you think about a telescope as life expectancy. Life expectancy is kind of the probability of getting from 0 to 20, 20 to 40, 40 to 60, 60 to 80, and 80 to 100. And over the past we've achieved gains in life expectancy by increasing each of those segments, we've improved the probability of 0 to 20, 20 to 40 as well as 80 to 100, but most of the gains have come from those early segments.

What is extraordinary now is how high the probability is in high-income countries of reaching 60 or 70. So those early segments are kind of fully extended, so the reason you're going to see a slowdown in the future is you're not going to get any contribution or very limited contribution from those segments. So, all the weight has to go on those 4th and 5th segments, and the trouble is to match the rate of progress in the past. You need to see those increase at a remarkable rate, which you know, unless something happens dramatic soon in Geroscience isn't going to be the case.

The only thing I would flip round in that is, I think, that means that all the life expectancy gains are now about what I would call longevity. They're about your probability of getting into your eighties and nineties in 100, and we can talk about whether you know hundreds, the most likely or the least likely outcome. But given the gains in life expectancy still increasing by one year every decade, I still think you're likely to see close to the majority of people hitting 90 and that's the challenge we've got. Because when life expectancy gains were about going from 40 to 60, those were years of relatively good health. We're producing resources to finance it, but now we're pushing life expectancy further and further out into years which are characterized by poor health and where we're not creating resources.

As an economist, that kind of puts a tax on earlier years because you have to work more when you're in good health to finance the resources you need at the end and really the punchline of all this, I think, is that whatever you think about future life expectancy trends. It's not the most important thing. The most important thing is to be as healthy for as long as we possibly can, and that's the issue that we've got to address. So yeah, that's my take.

S. Jay Olshansky:

So, the one point that Andrew raised, which I think is really critically important, is to emphasize how grateful we should be for the time that we have.

I would suggest that the vast majority of the population over the age of 60 is living on manufactured time that was created by public health, by medicine which works, that pharmaceuticals we take work, the surgical procedures work. We're living on time that was created for us by medicine and by public health, which means the natural limit to human longevity, if you extract all of this medicine and most of public health, would probably be behind us, which means as we're pushing out the envelope of survival, it's like stretching a rubber band. It becomes increasingly more difficult but recognizing that we're living on time that was created for us by medicine, one band aid at a time, for one disease at a time, it's worked. It's worked remarkably well. The question is, where is this leading us in the future? And it's the argument that we've been making for a while in Geroscience, on why, this one disease at a time approach won't work the way it has in the past won't work in the future like it has in the past.

It doesn't mean we shouldn't be doing it. It just means that we must recognize that there are limitations to how much time we can manufacture by just going after one disease at a time. And I think that amplifies a point that Andrew was making about how grateful we should be for the time that we have, because it has been created for us by us.

Steven Austad:

Well, as the card carrying Geroscientist in the group here, I'm all behind what you say, Jay, and I think we'll come back to that. But one of the things I'd like to hear Andrew talk about is that the world is aging at this incredible rate and every time you hear about that it sounds like it's the most catastrophic thing that could happen to us and I know that you've got a slightly different view of this, Andrew, so could we hear about that?

Andrew Scott:

Yeah, it's funny, isn't it? I mean, picking up on Jay said. Whenever you mention the word aging society, no one pumps the air with excitement, and it is one of the greatest achievements of the 20th century. I mean, it's truly remarkable. Its fewer infants lost in early years, fewer parents snatched away midlife, more grandparents meeting their grandchildren, or we can say, "Oh, God, we've got an aging society." I mean, it's remarkable.

I think there's a whole bunch of issues there around the word aging, and I think as mortality has shifted ever more to later life, we associate old age with death, much more, perhaps, than we've done historically. So, there's a whole bunch of negativity. And in economics it's all over the place, this aging society story, because it's always couched as a health burden and a pensions burden, and the economy can't afford to support that. It sort of reminds me of those sort of Malthusian stories that say we're just always going to run out of resources to support the size of the population we've got. I think what was, you know, for me, interesting about Malthus is that he kind of got his projection wrong. Then the population was a billion. Now, it's 8 billion and there are clearly environmental constraints, but he didn't factor in the sort of innovation, new institutions, ingenuity and investment that came with industrial revolution that made us all more productive, so we could support more people and made us so much more productive. We could support our health and education even more.

I think that's the problem with the Aging society, we say not that there's too many people, but we're living too many years to support the resources we create. So, we've got to do the same ingenuity, investment, innovation and build new institutions to support the length of life we can now expect and that's never been worthwhile before when there's a tiny minority who make it to 90. Then I don't think it's worth thinking about how we structure society and the health system to support us when we get to that age. But, as you see, even more people making it to 80 and 90, then we've got to say, well, how do we keep people healthy for longer? How do we keep them productive and engaged for longer? And that's why I'm particularly focused on the length of life we can now expect, because I think if you sort of tell people "I'm 59 at 59, I can expect more years than my father and my grandfather." I've got to invest more in my future. I think that's the real issue here. How do we adapt to the life cycle? Because I remember, I got in this subject because I present a lecture to my students on an aging society, and it's all doom and gloom and then halfway through, there's a slide

that says, on average, we're living longer, and we're healthier for longer. That sounds quite good. How do we turn this only into a bad news story? And that's when you start thinking well, it is about time. If we can be healthy and productive and engaged for longer, this is a good thing, not a bad thing. But it comes back to, can we change how we age? Some of that is about behavior. You know, at 59 I can do different things even if my health is the same, I can think differently. But how do we change how we age? And for me, that's the key issue.

When I talk about big trends that change the future as a business school professor, there's fantastic conversation about AI and climate change. We talk about radical adaptation, radical adjustment, it's intellectually engaged, it's emotionally engaged. People know it's important and then the conversation meanders around, and someone eventually says, oh, a big trend is going to be demographic change. And I say, what's that? And they say more old people, and that's the end of the story. You know there's no radical adaptation. There's no radical adjustment. If there's any talk about adaptation, it's about care homes and adult diapers. Which it's like really, is that the best we can think about for this tremendous achievement? So that's my focus. How do we actually just invest in this and change how we age, increase our productivity, increase our engagement? When there's a 10% chance of something happening, you don't bother with it, but when there's a very high chance you've got to do something.

S. Jay Olshansky:

[Dean of Columbia University Mailman School of Public Health] Linda Fried, has referred to older individuals in our modern society as one of the most valuable resources that exist, and healthy older individuals are even more valuable. And so, whatever we can do to manufacture healthy survival time that's worth its weight in gold. And I think that's the direction this is all headed in.

Andrew Scott:

My trouble with the aging society stories is they're all about when people get old, and you know for me the big change is that the young can now expect to become old, not that there's just more old people. I think that's a mindset change that is really hard. I was teaching some Chinese MBA students at London Business School in the summer, and I was showing them China's demographics in 35 years' time and China's demographics are extraordinary. There's going to be 400 million fewer people, 45% of people aged over 65. And I said to these Chinese students in their early thirties, how do you feel about this? And they say, Well, it's a problem. I said, why, they said, well, all these old people that get ill, and they need a pension, And I said, who are these old people, and they said, well, what do you mean? I said, well, who are these old people? I said, "They're you. You're now 30, in 35 years' time you are going to be these over 65-year-olds." And it was remarkable how, you know, they hadn't got that point. I think that's the problem for me with speaking of an aging society, it just says, what do we do when we have lots of old people? The real change is longevity, and you know, as Jay pointed out, we may not be on course for radical life extension, but still creeping out at one year's every decade, and we're not equipped to deal with a life of 75, let alone 85, or 95, and maybe 120.

Steven Austad:

Many have been predicting for quite some time that anyone born in the 21st century can expect to live 100 years. And I know you disagreed with that 30 years ago, Jay, and you disagree with it now. Can tell us something about what you think the practical harm of predicting that kind of longevity might be?

S. Jay Olshansky:

I've been invited to speak at numerous conferences and in front of insurance companies and pension funds, and in front of actuarial groups. The implications are profound. I mean, imagine an insurance company that is operating under the assumption that most people are going to live to a hundred, and they're assuming people are going to be paying those insurance premiums for you know for many, many years that they're not likely to be paying into that system. Pension funds will have a different angle on this as well. But how about wealth management? Look, I'm 70 years old, like a lot of individuals in this age range, we're thinking about how to make sure we could fund the remaining part of our lives, however long that may be, but if you have to plan to live to 100 on a high probability that it's going to happen, your planning is totally different than if you pick something that is far more realistic. You likely will change the way in which you work. How long do you have to work, how much money do you have to set aside? Basically, it's profoundly bad advice to give somebody a gross overestimate of how long they're likely to live and this applies to the companies involved in any sort of life estimation at all.

So, it has major implications for multiple organizations across the globe that have built in these one to 2% annual improvement factors extrapolating things out into the future in a linear way, without thinking about the underlying biology that drives those mortality statistics. So, it will have a profound influence on multiple industries there. I'm guessing that some of these organizations are scrambling now to go back and re-evaluate how they're doing things, because these operating assumptions are based on most people surviving to a hundred which they can't. It can't really happen in this century.

It doesn't mean that a lot won't, by the way. It doesn't mean that a lot more people won't live to, you know, in their eighties and nineties and 100, you know. Andrew points out in his book and in multiple publications that the prevalence of the older population is going to explode in this century. We already know that the absolute number is going to go up. I'm going to give you the year when the largest increase in the number of centenarians will begin. It will be 2042, 2046. How do I know that? It's the 100-year anniversary of the baby boom generation. So, the absolute numbers are going to rise dramatically. I would reconsider the rise in the prevalence of older individuals with the rise in life expectancy. One can go down. Life expectancy and prevalence can go up. That's exactly what's happening in the United States. So yeah, lots of implications associated with using exaggerated assumptions about human survival.

Andrew Scott: Can jump in?

Steven Austad: Yeah, absolutely. He's treading in your field here, Andrew.

Andrew Scott:

I mean, I think this is where we get to a really interesting issue. So let me pick up on a few things. So, what I find interesting as an economist coming to this area is we sort of adopted the demographic story of an aging society which is purely about a change in the age structure of the population. And I think for me, what's key about a longevity society is changing how we age rather than changing the age structure of the population. So, I tend to focus on the length of life because it says, if you've got more future do things differently. I do think that's sort of a simple headline, oh, there's just a change in the age of population, it's really important. I think once you start to sort of think about the different parts, which is the fall in fertility rates and increases in life expectancy. You start to get a much richer story coming through, which is, I think, where we need to think if we're going to look at adaptation and I think the headline problem here is a really interesting one, because I completely agree everything Jay said, about the problems of assuming that everyone's going to live to a hundred. I've got a book called [*The 100 Year Life*](#), so, I've sort of got to think about this, but the challenge also is, if we underestimate how long we live, that's also got lots of problems.

Then you end up not investing in your health, not having the skills, nor the relationships, and certainly that's the way society is set up at the moment, and you know the majority of people do still underestimate their own life expectancy, and I think part of that is the use of period measures. So, I think I sort of come at this in a couple of ways. The first is, when I first got involved in this topic, I remember talking to a mathematical demography on life expectancy, they hate the concept, and I really couldn't understand it because everyone relates to life expectancy. But you know, when only about 3% of people die at the average life expectancy, you start thinking, oh, actually, this might not be the most important variable to think about. It's also one that's really hard to understand, because there's lots of variation around the average and some of that is about inequality, and I do think that's a really important issue, because, you know, we're looking for ways to slow down aging. But we found ways to speed it up, which is to give people not much in the way of resources, and they age very quickly. It's kind of the strongest proof that we have that age is malleable. Then there's, you know, just variation, not socioeconomic damage, just the risk. And then there's a point that Jay focuses on, which is uncertainty around the average length of life and Jay's point is actually that the uncertainty is less than we think, because that trend is slowing down, so, you know that's there's less to worry about on that. But there's still all the other stuff and if I think about people's planning for the future, how they deal with that risk is the key thing. You know, Jay says, the upper bound of 15% of people living to 100. That's still, how do I deal with that? How do I deal with that risk? And we lack the financial institutions to deal with it. Just working or just saving on itself isn't going to solve the problem. So, for me those are sort of the issues we have to tease out. So, it's not that life expectancy isn't an important variable, it really is, but in some ways, it's digging beyond that and recognizing its probabilistic nature. That is the key.

Steven Austad:

This is very interesting. Now, some people have described Jay's model as a glass ceiling of life expectancy. Some people might think of it as a steel ceiling. As a geroscientist, I can tell you that we used to think that a mouse that lived 2 and a half years was a really old mouse, and now we can make mice that live 4 and a half years because we've developed drugs and diets and genetic interventions, and a whole mess of other things that are completely

different. What we call healthcare, a lot of field people in the longevity field call sick care, and maybe what we need to do is alter our entire approach to how we think about taking care of people's health. What do you think about that, Jay?

S. Jay Olshansky:

Oh, goodness, yeah, how about taking care of our own health? Look, if there's one thing you noticed from figure one in this new [Nature Aging paper](#). You're going to see a pretty dramatic decline in the rate of improvement in the United States especially since 2010. And so somehow, as Andrew of course correctly pointed out, you know, there's pretty definitive evidence that we can manipulate aging. We can shorten our lives, and we're really good at it. In the United States, you know, we've become experts, and it may not be due to any social inequality. You know differences in the social determinants of health.

You know the rise of obesity, this is something we published on [in 2005 in the New England Journal of Medicine](#), suggesting this will be the first generation of children that live a shorter lifespan than their parents, and we said it would take about 10 years for the latent effect of this obesity to play itself out, and it took a little bit less than that, but it happened. And so somehow, we've managed to adopt these unhealthy lifestyles. Now, what have we done? We've created medical interventions to deal with the consequences of our harmful lifestyles, it's sort of like when you have antacid instead of stop eating the foods to begin with, we take acid blockers instead, so we could keep up the unhealthy lifestyles. Well, it's really the same thing. Many of us are looking for exercise in a pill when we should be exercising. To me is the only equivalent of a fountain of youth that exists today. So, there's lots that we can do today. There's lots of low hanging fruit, especially for subgroups of the population, to improve their health and quality of life, and their statistical probability of making it into these older age ranges. I would suggest that again, there are limits to how much this can do, but its influence on healthspan, I think, is enormous.

And, by the way, that language on glass ceiling or glass floor, if you're talking about mortality rates, is in the paper. We're the ones that see it, as we actually believe that we broke through a glass ceiling in the middle part of the 20th century, when life expectancy was somewhere in the sixties, and we broke through with medical technology. It's been absolutely remarkable. And so now we've squeezed out a lot of life that we can manufacture through medical technology.

And so now, what else can we do? How else can we approach the consequences of success? You know this whole line of reasoning for those of you who are students of history, is going to sound hauntingly familiar [to Ernest M. Gruenberg's Failures of Success article from the 1970's](#). It's a very similar argument, where if you succeed in one area, you create a problem in another. And that's essentially what we've done. There's a lot that we can do to influence health and quality of life without any geroscience that would certainly help. Would it influence life expectancy that much? I don't think nearly as much as many people think, but it certainly would have a profound influence on social inequality, prospects of surviving to older ages and healthspan.

Steven Austad:

Andrew, I know you've got a lot to say about this, so.

Andrew Scott:

You know Jay's right to pick out just how different life expectancy trends are from many other countries, although sadly not my own, and a lot of it I think, is to do with inequality. Even when life expectancy fell a little bit in the US before Covid it wasn't life expectancy of 65 that fell, it was life expectancy at birth. So actually, the US, I think, can increase its life expectancy because it's behind many others and it can do it because the probability of getting to 60 is distressingly low for a large segment of the population in the US. But I think your question about changing the system is spot on. I spent a lot of time with people working on prevention, I said, what are you trying to prevent? You're trying to prevent disease. Why not call it maintenance? You're trying to achieve health. It's quite extraordinary how deep seated that disease model is, and the big punchline I get from Jay's paper is, we've got to do something different if we want to expect life expectancy to continue up, and whether you do or not, when life expectancy continues something has to change for me.

I'm sort of focused on, wow, it's still going up one year and one and a bit every decade, your chances of hitting nineties going up, and people fear getting old. They fear outliving their health and their wealth. So, we've got to change and make sure that we're healthier and well-resourced the older that we get because we're now more likely to become old. And so, I go back to that statement, you know, what got you to here won't get you to there. We must fundamentally change, and this is where I think, you know I'll do my own plug for a paper which I know Jay liked a lot, which is the paper with David Sinclair and Martin Ellison in [Nature Aging](#). To me, what's interesting there is applying an economic model and what that model says is right now, the most important welfare challenge is to get healthy life expectancy to match life expectancy, to fully compress morbidity. It's more important to fully compress morbidity than just get any other increases in life expectancy and given what's happening with health, that compression morbidity is going to have to be tackling aging rather than individual diseases. But of course, once you've compressed morbidity, once you've got healthy life expectancy up to life expectancy, I'm then interested in living longer, you know. It's because the quality of life is high, and I want more of those years, for me that is.

And then Jay's written about this sort of new era, there's something really interesting about the whole of geroscience, aside from just its intellectual fascination, but when infant diseases or infant mortality were our biggest health challenge, there's a hump in incidence at early ages. If you squash that, you lower it, you're no longer interested in it because people are living to midlife, which is the sort of the failures of success story. Then there's a hump in midlife mortality and if you can compress those and squash those, you then start worrying about aging related diseases. But what's so interesting about the aging related diseases is that's a line that slopes upwards, it's not a hump. So, the better we get at aging, the more we will hopefully push that line back but it's still there. So, I think, unlike sort of past focuses this is one where the better we get at aging, the more we're going to want to age even more, and for me, that is a very profound moment in human history. Now, whether we can change how we age there are people far better out there than I to comment on that, but that is what makes this so very interesting. Now, the failure of success means this is the dominant health challenge globally, the biggest health challenges right now are aging

related diseases. I've done calculations that even in a low-income country, and that's very low income, the biggest lifetime health challenge of a newborn child will be aging related diseases. And that is just going to get bigger and bigger.

S. Jay Olshansky:

Hey, Steve, can I emphasize one thing here? So, I did love [Andrew's paper in Nature Aging](#). If you recall, I commented in the journal itself that it was a brilliant analysis, and I don't remember the exact number, but it was something like 38 trillion dollars for one year of healthy life. So, look the Geroscience world out there that may be listening to this or watching this, if you combine these 2 lines of reasoning: Andrew's paper, which was a brilliant analysis of the economic value of healthy life, of manufacturing healthy life and you combine it with our analysis, basically suggesting that we're on this unusual trajectory of a slowdown in the rate of improvement in the effects of traditional medicine requiring that we do something different. The combination of these 2 lines of reasoning together to me is the most powerful argument that exists today supporting the need for geroscience.

And it's not just something that we would like to see happen. I would actually suggest it has to happen. We must make this come to pass because of what we've done to ourselves. I mean, we've succeeded so remarkably in making us live these long lives and now there are huge benefits, both to us as individuals and to societies from an economic perspective of extending healthy life. And Andrew and I have talked about this, that 38 trillion is probably an underestimate. When I testified before [Congress on this](#), a couple of years ago, there were a couple of issues that came up on how we may be able to use the consequences of a successful gerotherapeutic in other aspects of society. For example, in combating the consequences of infectious diseases for older individuals that have compromised immune systems. I think the value is even greater than what they estimated several years ago. So, the combination of these 2 lines of reasoning, in my view, should be merged together and used as the foundation and the basis for supporting this new effort going forward on combating senescence, aging and the development of Gerotherapeutics.

Steven Austad:

An interesting note on this is that for years now, in what's now called the Geroscience field, we've been able to compress morbidity to virtually 0 in experimental animals by restricting the amount that they eat. They suddenly become not only longer lived, but they're healthy, they're healthy, they're healthy, then they're dead, and that's kind of what we would really like. Now, whether that will translate to humans, we're not sure at this stage, or whether something else does, but it's not an impossibility that we could really shrink the period of morbidity at the end of life to something very, very tiny, which is, of course, something that we all would like.

Now we have some questions from the audience that are quite interesting. One of them is about differences between men and women, and how long they live and how long they stay healthy, and this has enormous consequences. Certainly, right now the older and older and older you look at people the more and more female biased the population becomes and I'm wondering what the economic issues are surrounding that, Andrew, do you have some ideas?

Andrew Scott:

Oh, well, there's plenty, and of course part of that then goes to sort of how much of this is malleable. So, you know one of the really big problems is, women tend to live longer, but go into poor health earlier, so they have a much greater proportion of poor health and if there is anything be done about that the welfare gains are absolutely staggering. I think there's a lot of interesting work around supporting menopause as a key issue that helps our future health, which I think is a really important priority. Then, of course, all of this feeds into the bigger problem, which is, if we live longer but we're not healthier and not productive for longer then you have a big challenge. Although thankfully, the gender pay gap is narrowing, it's still there, so if you're living longer, but you have a lower wage and you work for fewer years, then you've actually got huge problems. So, I think that's a really big issue.

What is interesting about all of this is how do we adapt the nature of work for everyone to support longer careers. In the 20th century, as life expectancy increased, we just took more leisure after retirement. I do think we will see people working for longer, but we'll probably take more leisure this side of retirement and that requires part-time working, perhaps, as your last job. It may be starting work later, but much more flexible career paths for everyone. I think that's going to be the key way in which we can try and support health and also finance it for longer.

S. Jay Olshansky:

One other thing, Steve, and thanks for raising this point. Look, these gender differences in longevity are quite important for planning for the future. If females are outliving males by 5 years on average, depending on where you are in the world, and you're planning for the future there's going to be a likely survival gap between a couple if they're different genders, and that survival gap needs to be planned for when you're thinking about the future. It's usually the female that's outliving the male, so the male may be cared for by their partner but who's going to care for the woman when she's older and the partner is gone? The probability of that happening is greater, so there's all kinds of challenges associated with this gender gap in longevity. And of course, the reason why it happens is a question for you, Steve, because you've answered it so you may want to provide some insights to the listeners on why there's a gender gap in longevity.

Steven Austad:

Yeah, well, I wish we really understood that, because it's a deep part of human biology. It's so deep that it even extends to prenatal life where prematurely born infants are more likely to die if they're male rather than if they're female, and we don't really understand that at all, but it's really important to understanding the rest of our lives.

I would say part of what Andrew brought up was about changing the nature of work, the trajectory of life, I mean, we've had this sort of idea about what the appropriate trajectory of life is for quite some time. As we now have more healthy years, we have more unhealthy years, but we do have a lot more healthy years than we used to have. That leads to something, I think, Andrew, in your book you called the Evergreen Agenda, and could you tell us a little something about what you meant by that?

Andrew Scott:

So trying to pick up on the themes we talk about so often when I present and I talk about longevity society adapting to longer lives and I'm trying to say this is an opportunity, the Evergreen Agenda. If we can unleash the advantages of healthy life, it creates resources which are good for the economy. It's just good for us, it just makes life better if we are living longer. We do have to generate more resources if we're not each year being worse off, but then what will follow me is probably a consultant who does exactly the same charts and talks about the silver economy, and they say, you know, invest in cruise ships, invest in adult diapers. There's a quote I give in the book from Simone de Beauvoir, who says, if all we achieve is people have a hobby and a warm house and some money in retirement. We've missed the really big opportunity, which I kind of agree with her, so to try and downplay this notion of a silver society of everyone aged over 50 or 60. Whatever age you want it's exactly the same and they just want to go cruise ships or whatever it might be. I think we have to talk about the evergreen economy, because if we're living longer lives, the most important thing is now to age well, however you interpret that health, productivity, engagement. And that starts early, but we all want to remain evergreen. We want to remain relevant and be able to do the things that we want to do, whatever that might be. And that's the sort of the way we've got to think about it, because I will spend a lot of money if I get dementia to be cared for, I *would* spend a fortune to avoid getting dementia. I think that's the way to sort of think about this, to remain evergreen. And that puts a focus on all of life, not just the end of life. For me this is one of the big challenges to the aging society. We assume we can't change how we age; we think about how we support people at the end, all of which is incredibly important, but it's really hard to change how you age. If you start when you're 80, it's got to happen earlier.

Steven Austad:

Jay mentioned obesity as an issue earlier, and we now seem to have a cure for obesity on the horizon with these GLP 1 agonists. And I'm wondering, Jay, what do the existence of the GLP 1 agonists potentially mean for our health and longevity?

S. Jay Olshansky:

Well, so I'm going to invoke the answer, which is the first answer I teach my students to give, which is the correct answer to most questions, as I always point out, which is, I don't know. And the thing is that nor does anyone else right?

So, these are drugs that are being introduced now that it looks like they're very successful at reducing obesity. It does remind me of my childhood when my parents removed butter from the diet and replaced it with margarine. That, of course, was loaded with trans fats, and they didn't know that it caused heart disease. I don't know what the consequences are, I'm not saying that this cause heart disease, what I'm saying is that we don't know what the long-term effects of the use of these drugs. Do people have to stay on them their whole life? I don't know. There's a lot of I don't know when you introduce a new drug like this, if indeed, we can lower the risk of diabetes and all of its consequences then absolutely that's a good thing. But I will tell you that personally I had an issue with excess weight and my doctor was going to put me on a Statin, and I said, no, I do not want to go on a Statin, I do not. They work, of course, but I'd prefer not to go on it. So, what did I do? I lost weight. I didn't use a drug. I ate less and exercised more, it actually was not rocket science and

people are always looking for exercise in a bottle or a pill when exercise itself works, and it's free.

So, the answer is, I don't know, and I don't actually think anyone else knows yet, either, and I would be reluctant to draw any conclusions about the long term either benefits or harm associated with another drug that's being added to the armament that we have. Now keep in mind, if you recall from what I said earlier these drugs have saved our lives. These drugs have extended our lives, you know, statins work and blood pressure medication work. They're remarkable in their ability to restore our mortality risk to something that is more beneficial, but often we don't know what the long-term consequences are of introducing something new like this.

Andrew Scott:

Wow, I mean, it's fascinating, isn't it? And I completely concur, we don't know. I do think for me there's three really interesting things coming out of it. I think, for anyone in the space that we're in it's a really interesting example of a biomarker that seems to affect multiple diseases, that health systems are prepared to get behind. Of course, there's other things that affect those biomarkers, but it's a really interesting example of changing people's mindset. Where one intervention can potentially affect multiple diseases, and that seems to be what people are getting very excited about.

The second thing I think is interesting, is one of the sorts of knockbacks I hear about longevity and investing in your future is people just aren't forward looking, the prevention and sort of keeping healthy. People worry about things when they get ill, but not ahead of time. So, they don't spend enough on these things, you know. Wow! Everyone loves these obesity drugs, and you know, maybe not selling the health advantages, but just sort of saying, "hey, do you want to look like this rather than like that". That is the way to sort of win people over from the public point of view if you've got to do something now that has benefits way into the future.

Then the third thing I'll add is Jay's point about we don't know. I see a lot of work saying if you can reduce obesity then you'll get people back to work, and you'll save all these things. I think we really don't know about that, because obesity has many causes. Of course, overeating is one cause of it. But why do people overeat? And if you've still got the mental health challenges or stresses that trigger certain behaviors, you may still struggle. And I think that's the other thing that's really important in this longevity field to recognize it's about mental health, too. It's about how we keep happy and fulfilled for a very long period of time, and being physically healthy is part of that, but actually, there's lots of people who aren't physically well, who are very happy, and we've really got to focus on the mental side and not just the purely biological side.

Steven Austad:

So, we haven't really talked too much about the possibility of a dramatic breakthrough that, of course, is what a lot of us in the Geroscience community are working towards. But I think all the points you raise Andrew would still be there if we did, let's imagine had a magic pill, and it allowed us all to live to 100 or 110 years old. How would that change the way we think

about the trajectory of our lives? Or what about our mental health? think it? Yeah, I think it would change everything.

Andrew Scott:

Yeah, I think it would change everything, basically. I came across [a book by the chemist, C. P. Snow](#), an English author who actually asked the book to be pulled because he didn't want his reputation to be ruined. But it's exactly what happens when this breakthrough pill arrives, and what's interesting is that society might adapt mentally to this quite quickly. But for me, I hope we make breakthroughs quickly. But, my goodness, society isn't dealing with the life expectancy we've got at the moment. So, the notion of radically changing it is going to be a real challenge. You know, we can't have hierarchical institutions if we want people to work for longer because it blocks up promotion and opportunities for the young.

We've got to make sure that innovation happens from being intergenerational, and that requires a bit more flatter institutions. And then there's just really deep ageism, and I don't think that would quickly disappear. I'm always nervous of you know, business school professors saying we live at a time of unparalleled change, because in general it's nonsense, but as Jay and I have both been saying, something really remarkable has come to an end.

A first longevity revolution where the young can expect to become the old has now happened. A second longevity revolution must begin where we change how we age. And oh, my goodness we've got a millennium of cultural baggage to deal with, let alone our own social norms and current institutions. So yeah, I sometimes think it might be easier to change biology than it will be to change society.

S. Jay Olshansky:

Reminder for everyone that Steve and I testified in, I can't remember it was something like 2002, before Leon Kass's committee under President George Bush. Both of us came to the exact same conclusion, that if this happens it changes everything about society, and I'm not saying it's bad. I'm just saying it will change every aspect of society from marriage to education. You know everything changes. If we succeed in extending lives the way we're proposing it doesn't mean we shouldn't be pursuing it. It just means that we need to be cognizant of what the consequences are of success.

Steven Austad:

Okay, well, we're rapidly running out of time here. Maybe I could ask each of you to tell us 2 or 3 things that you think everybody needs to understand about aging and longevity. What would those 2 or 3 things be? And maybe I'll start with Andrew and let Jay have the last word.

Andrew Scott:

Well, let me tell you what I'm trying to do, because I'm trying to influence Ministers of Finance. This is very much about how we get this agenda happening within governments. In the labor market people drop out from the age of 50 onwards, and that's all sorts of reasons, but a lot of it is to do with health and the early signs of those age-related diseases. I personally would like governments to make the retirement age depend upon some

function of healthy life expectancy. I think if there's one metric that government should adopt, given how long we can now live, it's healthy life expectancy.

And then I think you'd start to see people getting interested in keeping people healthier for longer, because you're then going to get the economic benefits from it. How you're going to keep people healthy for longer, some of it will be about more traditional prevention, but it's going to be about the biology of aging. I'm trying to make the case that if you could halve the rate of decline, people dropping out of the market between 50 and 65, that's a 4% increase in GDP and that's economically and socially palatable. Getting people to work for longer and longer has all sorts of political problems but just saying, you know what, from 50 onwards we're already seeing problems of aging and health, if we can improve the health, we can improve the economy then you start to get some alignment.

Steven Austad:

Thank you. Jay, I'll let you have the last word, unless I decide to sneak in a couple myself.

S. Jay Olshansky:

Look, I did an interview with a reporter not long ago, where the emphasis of what I was saying was about the excitement that I have going forward on all the work that's going on in the world of aging and aging science. They said, God! I thought you were a pessimist. Everyone is telling me that you're a pessimist about the future of aging and longevity. I'm going, yeah well you have got to read the papers, because in the manuscripts that I've published it's in general a recognition of the fact that limits exist, but there are things that we can do to improve our health and quality of life. And, by the way, before I forget, the one metric I would add to Andrew's metrics would be reductions in social inequality. Imagine, if you combine the metrics of a reduction in social inequality with improvements in healthspan, and you've got an amplification of the effects on a population.

The main point I would want to get across, Steve, is that I'm so happy that Andrew and I came together on this particular platform under [AFAR](#), and that's because the message, in a way is very much the same, that we have to do something different. And it's not that we should do something different, or that we should be thinking about doing something different, we need to be doing something different because of what we have done to ourselves because of the success that we've had in manufacturing these lives.

The three of us probably wouldn't be here having this discussion, if not for medicine and public health. We're in the prime of our careers, you know, maybe the prime is ahead of us. I would like to think that. But you know, centuries ago many people didn't live this long. The doors were not open to extended survival and now we've relaxed the selection pressures on individuals making it out to older ages. What does that do? It means that you see a lot of very, very healthy older individuals and a lot of very unhealthy older individuals that you ordinarily wouldn't have seen because they were restricted from living that long in the past.

So, I'm going back to the very point that we started with Andrew's message, and that is we have to do something different because we are in a different world today and it's one that we are happily living in, that we happily created for ourselves. But there's a consequence of

what we've done, and we need to look forward in a fundamentally different way than in the past. And hopefully, Steve, you're going to mention our bet at some point.

Steven Austad:

So, as many people listening to this might know Jay and I have a 1-billion-dollar wager, and a reporter has been asking me if Jay's latest paper changes anything in our bet. And I said, no, I'm still convinced that I'm going to win, and he's still convinced that he's going to win.

Well, I'd like to thank you both for this fascinating discussion. I wish we could go on hour after hour because it's a great topic and we haven't begun to really exhaust the possibilities of where it leads us, but unfortunately, we have to close up now.

I'd like to remind everyone that the paper that we've been talking about is [available open access](#).

I would also like to remind you that today's discussion was recorded and will be available soon. Thanks so much for listening.

And please don't forget to support the very nice work that AFAR does in trying to find geroscience breakthrough to help us all stay healthy even longer.

Thanks again, everyone.

Watch a recording of “How Realistic is a 100-year Life Expectancy, and Why does it Matter?” webinar [here](#).