

THE BROOKINGS INSTITUTION
FALK AUDITORIUM
DIVERGENCE IN AMERICAN LIFE EXPECTANCY
A HAMILTON PROJECT POLICY FORUM

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PARTICIPANTS:

Welcome and Introductions:

ROBERT E. RUBIN
Co-Chair, Council on Foreign Relations
Former U.S. Treasury Secretary

Framing Remarks: Emerging Trends in American Life Expectancy:

ANNE CASE
Alexander Steward 1886 Professor of Economics,
and Public Affairs
Director, Research Program in Development
Studies (RPDS)
Princeton University

Roundtable: Harnessing Public Policy to Increase Life Expectancy for All Americans:

Moderator:

DIANE WHITMORE SCHANZENBACH
Director, The Hamilton Project
Senior Fellow, The Brookings Institution

Discussants:

GARY BURTLESS
Senior Fellow and John C. and Nancy D.
Whitehead Chair
The Brookings Institution

DAVID CUTLER
Otto Eckstein Professor of Applied Economics
Harvard University

ANGUS S. DEATON
Dwight D. Eisenhower Professor of
International Affairs
Professor of Economics and International
Affairs, Woodrow Wilson School, Princeton University

706 Duke Street, Suite 100
ANDERSON COURT REPORTING
Alexandria, VA 22314
Phone (703) 519-7180 Fax (703) 519-7190

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PARTICIPANTS (CONT'D):

JAMES S. MARKS
Executive Vice President
Robert Wood Johnson Foundation

MARK B. McCLELLAN
Director of the Robert Jo. Margolis Center
for Health Policy
Margolis Professor of Business, Medicine and
Health Policy
Duke University

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PROCEEDINGS

MR. RUBIN: I'm Bob Rubin and on behalf of all my colleagues at the Hamilton Project we welcome you today to this discussion on divergence in American life expectancy. The framing paper, which is in your materials, discusses divergence, discusses change in life expectancy, and mortality rates across geographies and across demographic groupings. And its basic point is these changes with respect to both divergence and life expectancy, mortality rates, all of this is a function obviously of other factors in our society, economic factors, healthcare factors, and the like. And it also is a prism through which to look at policies in these areas.

As you can see from looking at the program we're going to have the opportunity to hear from truly outstanding people, economists, healthcare experts, in this area. So I'm not going to comment on the program itself other than to say the issues raised that we'll be discussing today are of enormous importance to our country, to our society, and to all of us. They are also issues that the Hamilton Project has focused on since its inception 10 years ago.

Having said that let me make three prefatory comments. Number one, this program epitomizes and embodied what the Hamilton Project was created to do. What we do is we bring together outstanding people, outstanding policy analysts and practitioners from around the country and our objective is to further policy analysis, the development of policy proposals, and serves as a purpose in policy dialogue. When we have commission papers, which we don't have in the instance of this program, they are rigorously peer reviewed just like they would be in any academic program. This mission, this mission of promoting seriousness of purpose in the policy arena, in my view at least, has become ever more important as what passes for policy dialogue in both the public domain and in the political domain has become increasingly political and ideological.

Secondly, we have had now, as all of us well know, for an extended period, a largely dysfunctional government that has failed to address the great predominance of our critical policy issues. And that, in my view, will continue until Congress reestablishes its willingness to govern. We're all obviously focused on the presidential election and that's very important, but beyond that I believe that the future of our country, the future of our economy, will depend on whether or not Congress reestablishes its

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commitment to governance, it's willingness to engage in principle compromise, and its seriousness of purpose about governing. Hopefully the continued development of serious policy responses to our challenges by being apolitical and non-ideological can help catalyze that willingness to work across party, political, and policy divides and in that way help our nation move forward.

I would also add that that imperative for our elected officials to focus on governance and on working together to move forward on the great policy issues that we face is especially dramatized by the subject of this afternoon's discussion since increasing life expectancy and decreasing mortality rates are literally life and death matters for all America.

Thirdly, as we focus on health policy, poverty alleviation, and the other issues relevant to today's program, in my view contextually we should always keep in mind, though it's not very popular to focus on this, that our intermediate and longer-term fiscal trajectory is unsound and unsustainable. And that poses multiple serious risks for all of our people. And those risks are likely to increase and the adverse affects of not meeting those challenges are likely to increase over time. We may be lucky and changes in healthcare costs and other factors may improve, but certainly the converse is also possible. In addition, there is the potential for serious increases, not recorded anyplace or not projected anyplace, in fiscal cost due to climate change, both with respect to emergency measures and adaptation.

Thus, as we focus on the immediate and pressing issues that we're involved with today we should also consider how to deal with the costs that are involved and we should encourage the political will of our elected officials to face our longer-term fiscal trajectory before we are forced to do so by its consequences.

With that, I'd like to recognize the extremely capable leadership of the Hamilton Project, Diane Schanzenbach, our director, Kriston McIntosh, our managing director, and Ryan Nunn, our policy director. They've put together today this terrific program. I'd also like to recognize the hard work and the enormous talent of the staff of the Hamilton Project, without which nothing that we do would get accomplished.

Our program will begin, as you can see from looking at your materials, with framing remarks titled, "Emerging Trends in American Life Expectancy" by Anne Case, the Alexander Stewart

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professor of economics and public affairs at Princeton University. Then we will have a roundtable titled, "Harnessing Public Policy to Increase Life Expectancy for All Americans." The roundtable will be moderated by Diane, Diane Schanzenbach, our director, and Diane in turn will introduce the participants in the roundtable.

In accordance with the practices of the Hamilton Project neither Diane nor I will recite from the participants' resumes. They are in your materials. But I will note, as you will see by looking at those resumes, that they are each extraordinarily distinguished in their respective fields and we are honored to have all of them with us today.

I'll make one exception to the practice about not mentioning resumes, and that is add our congratulations to those from the many others than he has undoubtedly received, to Angus Deaton for receiving the 2015 Nobel Prize in economics. And we are deeply honored to have him with us.

With that, I will turn the podium over to Anne Case. (Applause)

MS. CASE: Thanks, Bob. It's really a pleasure to be here today. I'm going to try to frame what's going to unfold over the next couple of hours here, and this work is actually very closely tied to work that Angus and I have been doing on changes in mortality rates in middle age in America.

When I give this paper, our paper, I usually like to title it this, and when Angus gives this paper he likes to title it that. (Laughter) But before I send you running from the room I just want to -- before we get started even -- there has been a remarkable long-term decline in mortality among middle aged and older aged adults in America. And that has been accompanied by increased health. So people have lived longer, healthier lives in the last century. And the gains that we've made are documented in series of CDC reports. That's all great. And these improvements actually play a really important role in discussions about policy reform and Medicare and Social Security. But that's not what brings us here today, because the truth is not all is well.

I will start by talking about mortality rates and tie it into changes in life expectancy, but let me set the stage this way. What you're looking at here is all cause mortality for people aged 45-54 in countries that sort of kind of look like the U.S., so France, Germany, the United Kingdom, Canada, Australia, Sweden. And this shows you from the late 1980s to the early 2010s what happened to

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mortality rate in middle age in these countries. In all cases they're falling at about 2 percent a year. If you named me a favorite European country I could pretty much guarantee you it would be falling at 2 percent a year. So with that as sort of a backdrop what does the U.S. look like? Well, if you look at U.S. non white Hispanics, which is the thick red line, in the 1990s mortality decline slowed and then actually at the end of the '90s turned positive. So we actually see mortality rates actually the wrong way. Depending how you cut the data, it's at best flat and at worst it's actually been increasing. Now U.S. Hispanics look much like Europe, falling at 2 percent a year. Very hard to distinguish it from Brits. And for African-Americans, who start at a much higher mortality rate, their mortality has been falling at an even faster clip, at 2.6 percent a year over this period of time. So something here is happening to white Non-Hispanics.

Now this paper that was published in the fall got quite a lot of attention and the CDC recently wanted to see how it tied in with their measure of life expectancy that they use. And literally in June of this year, a couple of weeks ago, they released a report that looked at increases in life expectancy at birth by race and by ethnicity, between 2000 and 2014. Now for all Americans taken together there was a two year increase in life expectancy over that 15 year period. Much higher for black Non-Hispanics, who gained 3.6 years in terms of life expectancy, a quite robust 2.6 years for Hispanics, who had the highest life expectancy of any of these groups, and a rather anemic 1.4 year increase for white Non-Hispanics.

Now life expectancy is an index number, it's a weird animal, right. And you might ask yourself, well what do these changes in life expectancy -- like more is better so this is good, right? And it's true, it is good. But it doesn't really tell us necessarily what we need to know. It doesn't tell us where the action is. So changes in infant and child mortality have a really big effect on this measure of life expectancy because if you make your way out of infancy or out of childhood you contribute to all those other years of lives as you move ahead. And changes in mortality in middle age carry very different weight in life expectancy than changes in mortality to old age. So you really have to unpack this. And also life expectancy doesn't tell you the causes of death that are driving these results.

So when the CDC decided it wanted to see how mortality rates increasing in middle age for whites affected live expectancy, so they're going to focus on Non-Hispanic whites in this data brief,

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they have to unpack it, and they're going to unpack it first by causes of death and they're going to unpack it by which age group is actually contributing what to the change in life expectancy.

So looking first at causes of death, these are the top 10 causes of death in the U.S. What contributed to the increase in life expectancy of 1.4 years? Well, we've made real progress in heart disease and cancer and stroke. Those have all added years to life expectancy. But pushing against that -- you know, two steps forward, one step back -- pushing against that are hypertension, chronic liver disease, which is basically alcoholic liver disease and cirrhosis, Alzheimer's, suicide, and what they call unintentional injuries. Now for those of who aren't fluent in CDC speak, unintentional injuries is the bin into which they put drug overdoses. And this is mostly a drug overdose that's actually pushing down on life expectancy when looked at in terms of causes of death.

And then if you want to look at like what ages are doing better and which ages are we not really doing so well, if you rank them from the people who are doing the best to the people who are doing the worst -- so it's not chronological in terms of age, it's chronological in terms of who's contributing -- the elderly are doing very well, thank you very much, and the near elderly are actually doing well. Children are actually making progress. But the people who are not doing well are middle aged people. For those people actually they're depressing the increase in life expectancy.

So this work that Angus and I did, which really focused on alcoholic liver diseases, suicide, and drug overdose, and the focuses on middle age people. We actually were targeting the groups that are weighing down on life expectancy.

Now I just want to make one last thing on life expectancy here, which is that recently also the CDC announced that there was no improvement, no change at all in life expectancy in the U.S. between 2013 and 2014. But that kind of masks the fact that for black Non-Hispanics that gained a tenth of a year, Hispanics gained two tenths of a year, and for the first time in over 20 years white Non-Hispanics saw a decline in life expectancy. So this is big news. I mean this is big enough to actually turn life expectancy negative for a large part of the population.

Now in the work that we did we focused on people aged 45-54 because it was going to a journal, it has to be precise, you want to make sure everything is just precise. And so 45-54 was our

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target. But if you broaden that out a little bit the upper left corner here shows you what happened to people age 35-44 over this period relative to the comparison countries, which the U.S. white Non-Hispanics still in red there. For older middle age, 55-64, that's in the lower left panel there, and you can see that mortality rates flat lined for people 35-44 and they have not kept pace either in the 55-64 range.

So way back in 1990 the U.S. looked like the U.K. in terms of mortality rates. But the U.K. kept making progress and we've just left the herd. So the first question you might want to know is why is that the case. And indeed, much as I just foreshadowed here, in the past 15 years the biggest increases in death rates were for drug overdose, for suicide, and for alcoholic liver disease and cirrhosis.

I just want to point out transport, we spend a lot of money on transportation safety and it's just not an issue relative to these things that are probably being underfunded at this point.

A little bit more on some of these. There's no time to talk about this in detail, but I can tell you what the facts are. The facts are among the elderly suicide is falling. Among middle age people suicide is rising. It's happening for both men and women. It looks quite a lot more dramatic for women, but that's because they kill themselves at much lower rates than men do. And it's happening in every U.S. state. So this is not concentrated in one part of the country, this is throughout the country we're seeing hits happen. And it's not happening in other rich countries. I have a little asterisk here, French men in middle age, it's going up, but take any other European country, take men, women, it's not happening elsewhere in the rich world.

This is my only nerdy slide, and I'll explain to you what you're looking at here about drug overdoses. It's a little hard to tell because of the shading on the board here. This is death rates from drug overdoses from 1979 through the '80s, across these first two rows here down all the way to 2013. And there are two lines on each one of these charts which looks at on the y-axis there that's going to be the death rate from drug overdose, graphed against age at death. And what you see is two lines, blue for men and red for women, and back in 1979 we had a drug problem in America. It was young, it was male, it was urban. If you move through the '80s, across that first row and then through the '80s more in that second row there, you can see a moving toward middle aged for men. And then it stubbornly remains middle aged for men. It doesn't exit stage right, so it's not like one birth cohort moving through, it just

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becomes a middle aged problem for men. And then the early 1990s just almost imperceptibly at first you see the women's rates begin to rise. It was always a middle aged problem for women, and the problem gets worse and worse and worse until you get down to 2013.

The CDC, just to give you a few statistics reports that in 2008 there were almost 15,000 prescription painkiller deaths, which may not seem like that many, but when underneath everyone of those deaths were 10 treatment admissions for abuse, 32 ER visits for misuse or abuse, 825 non medical users, meaning in 2008 about 12 million people were using prescription painkillers for non medical uses. From 1999 to 2014 165,000 people are estimated to have died of prescription painkiller opioid overdose. And more than 1,000 people a day present at the emergency departments in the U.S. for a prescription opioid related incident.

When we started doing this work we saw that suicides were rising. We also saw the accidental drug overdoses were rising and we wondered like maybe you can't tell the different between them. So if by census region you look at suicides along the bottom -- at the x-axis and drug overdoses on the y-axis, on the Northeast, Midwest, South, and West what you see is that they're rising in tandem. So look at the Midwest there, '99, 2000, 2001, all the way up to 2013, and that's happening everywhere in the country. And we really got the idea that suicide, alcohol related liver deaths, drug mortality, may all be part, all be symptoms of a deeper problem here, that we sort of call in our house deaths of despair, just to give it a shorthand.

And now this is where the real work starts. Now we really have to go back into the weeds and look at putting these pieces together by cause, race, age, sex, country, geographic region, education, socioeconomic status related variables here. And I'll give you just a few facts since I know my time is short and I want to make sure that I stay on my timeline. Fact number one, it's happening for all five year age groups from 30-34 year olds up to 50-54 year olds. This is the mortality rate you're looking at from drug overdose, suicide, and alcohol related liver deaths. And you can see that in all parts of middle age, from the late 1990s to 2014 you see increases in death from these causes.

Fact number two, that was white non-Hispanics, it's not happening in the African-American community. We don't really understand this yet. There's a lot more we need to know, but you

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can see among black non-Hispanics in their 30s these lines are flat. These are all done on the same scale as the one I just showed you for white non-Hispanics. For African-Americans in their 40s these rates are actually falling. The only group is in late, late middle age you do see a rise, but that looks very different from this. So if it was just strictly poverty we don't have an explanation that says why this should be happening for whites and not for blacks.

Another fact, pushing back in time now, so what I had been showing you was from 2000-2014. If you go back further in time you can see U.S. Hispanics flat for deaths of despair for people age 45-49, for U.S. non-Hispanic blacks falling. This crisis began before the introduction of Oxycontin. So this is not just an Oxycontin phenomenon. So whatever it was there was pressure moving in this direction. So that's fact number two there.

Fact number three, and we think this is incredibly important, this is a problem that has landed on the heads of people in the lower part of the education distribution. For people 50-54, white non-Hispanics, about a third of people during this period of time had a high school degree or less, about a third of the people had some college, and a third of the people had a four year college degree or better. We're looking at men and women separately. And what you see is that men and women with a high school degree or less are the people who are being hammered here. So suicide, drug overdose, alcohol. And actually the excess mortality coming from these deaths of despair is about even between men and women. If I didn't have the high school degree or less people here I could make a big deal out of the four year or more of college. This is actually increasing, but it's just the increase is very, very small relative to what's happening to people with a high school degree or less. So this is where we're going to drill down in our work.

Another fact, the drug overdose problem is a U.S. phenomenon. Here's the U.S. white non-Hispanics, these 50-54 year olds here. I've highlighted Canada, Sweden, the U.K., Germany, and the rest of the other countries are down here at the bottom. Now Canada has a drug problem. You can't really see it because the U.S. dwarfs it, but if I got the U.S. out of the picture what you can see is that it has risen quite dramatically for Canada and for Sweden and for the U.K.. Canada in 2012 delisted Oxycontin as a drug that would be reimbursable, which sent Purdue Pharmaceuticals scrambling to

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reformulate it for the Canadian market. They're right there, they're ready -- I mean -- and Canada does have a problem, it's just it's not of the same order of magnitude as what's happening in the U.S.

I also want to mention this, which is that there is something else going on in the U.S. that's not going on elsewhere. This was also highlighted in the Crimmins and Preston National Academy Report, which is the U.S. has pulled away from the herd in terms of heart disease in middle age. So you can see other countries continue to make progress on heart disease mortality and the U.S. has flat lined. This is 50-54 year olds, this is 40-44 year olds, 45-49 year olds. The picture is very similar if you look at men and women separately, although women have actually borne more of this burden than men have. The Crimmins and Preston Report makes a very strong case that that's because women started smoking later than men and stopped smoking later than men. So that that mortality bulge caused by smoking is still making its way through the system. And that is going on here in the background. If we had continued to make progress on heart disease it would have masked what's been happening in terms of these deaths of despair. But the fact that the heart disease mortality has more or less flat lined has caused the deaths of despair to actually be able to rear its head far enough for people to ask what the heck is going on here.

One slide on morbidity. This is all about people dying, this is body counts, that's easy. But underneath this -- and this period of time as well for white non-Hispanics in middle age, year on year there were self reports of health falling, their level of pain is rising, they report more sciatic, more chronic joint pain. And it's those people who report pain who also report more social isolation, that they have difficulties with their activities of daily living. The N Haines allows us to look at their liver tests and the liver enzymes are off the -- have gone up quite dramatically for white non-Hispanics in middle age suggesting more liver damage. And in those series of questions that they're asked there is a significant rise in the amount of serious psychological distress in this group.

So we have deaths of despair, we've got reports of health that are tumbling. I mean we really need to know what is going on here. So the proximate cause -- one of the proximate causes, a big one that's getting a lot of attention is deaths from prescription opioid pain relievers. And you can see the dramatic increase in this. Now it's possible that they did slow it down a little bit in 2012 and '13, but in 2014 it's right back on trend. So this is going to be a very hard problem to do something about. One of

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the reasons it's hard to do something about this problem is that people can switch into the other form of heroin, the real heroin. So where I work people call Oxycontin hillbilly heroin. It's basically heroin in pill form and it's legal. When they can no longer get drugs people turn to heroin, which is cheap, pure, you don't have to inject it, you can smoke it, you can snort it. And a lot of people who might not want to put a needle in their arm might be willing to snort it or to smoke it. People will come to your house and deliver it for you. One of the reasons perhaps why the heroin epidemic has gotten to be quite as bad as it has in suburbia and in rural areas is that the transportation system for delivery is also right there. People tell me that it's cheaper than what we would have called pot, but now you call it weed (laughter), but it's cheaper to buy heroin than it is to buy weed. It still hurts me to say that.

Also big increases in deaths from benzos. Now benzos are anti-anxiety drugs, Halcion, Xanax, Valium. By themselves they probably wouldn't kill you, but if you mix it with enough alcohol or if you mix with Methadone, which people are taking now coming off of heroin, those can be fatal. And so actually the death rates from those have been rising quite dramatically as well.

So the proximate causes are drugs and alcohol and the flat lining progress in heart disease, but underlying causes -- and this is where the work has got to go -- declining prosperity for working class Americans, fear of downward mobility, disappearance of good jobs for high school graduates, lack of an adequate safety net, lack of social connection. These are all hypotheses that we need to go out and actually see what the data will support and what they don't support. Why hasn't this happened in other rich countries; they've lost a lot of their manufacturing jobs. Those jobs went to Cambodia and Vietnam. Why hasn't this happened there? We don't have an answer to that yet. Why haven't blacks and Hispanics faces whatever has landed on the heads of white non-Hispanics? We have ideas, we don't have answers yet to that either.

But let me tell you a little bit about how we're planning to look for some of the answers, which is we've begun to do work that actually looks at mortality by cause and economic conditions by small geographic area in the U.S. And these areas, we call these Kumus for reasons I won't go into because we don't have time. They're smaller than states but they're generally bigger than counties. But they should be big enough to give us reliable evidence on what's going on here. And just to give you one

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slide on this, if you look at the Kumas -- so that's like think of it as a mega county -- employment to population ratio for people 25-64 in the Kuma, and then you look at deaths of despair from drugs, alcohol, suicide for people age 45-54, white non-Hispanics, you get a really strong negative relationship between employment population ratios and deaths. If you want to use unemployment instead, this is view three, ages 25-64 unemployment rate is the Kuma, you get a very strong positive relationship between unemployment and these deaths.

Now this is just in the cross section. When we look in the time series you can actually look -- you can control -- for the economists here, so two seconds if you don't worry -- you can run regressions with state fixed effects and year effects and state interacted with the year effects, you can run these with Kuma fixed effects, meaning within a small area over time in this area. When the e/pop ratio was higher the deaths of despair were lower. So this gives us kind of a framework within which to think about at least drilling into some of the possible explanations for what's going on and using really the kind of rich data that are available that thankfully got collected at the national level to try to see what's consistent with the data and what isn't. And then we move abroad and we try to figure out why the other countries that we think of as being in our comparison class, this hasn't happened there.

So I just want to leave you with what is probably our favorite cartoon, which we've now become -- you know, you feel like you get your 15 minutes of fame if you get a cartoon. So this was the one I'll leave you with (laughter), which is -- so that's what I bring.

Thank you. (Applause)

MS. SCHANZENBACH: So thank you Anne for that terrific but extremely depressing presentation. I'm Diane Schanzenbach I'm the director of the Hamilton Project and let me introduce our panel here today. Seated to my left is David Cutler who is the Otto Eckstein professor of applied economics at Harvard. He served in the Clinton administration and served in key roles in healthcare policy. His most recent book is "The Quality Cure: How Focusing on Healthcare Quality Can Save Your Life and Lower Spending Too."

Next to Davis is Mark McClellan. He is the Robert Margolis professor of business, medicine and policy and the director of the Duke Margolis Center for Health Policy at Duke University. He

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was formally the administrator for the centers for Medicaid and Medicare services and formally was the commissioner of the Food and Drug Administration.

Next to Mark is Angus Deaton. The Dwight D. Eisenhower professor of international affairs and professor of economics and international affairs of the Woodrow Wilson School and at Princeton University. As Bob mentioned he won the 2015 Nobel Prize in economics for his work on consumption, poverty and welfare and this is a Hamilton project. First he was recently named a knight bachelor by Queen Elizabeth II of England which I think is extremely cool.

Next to Angus is Jim Marks. He is the executive vice president of the Robert Johnson Foundation. He was trained as a pediatrician in public health. He has published extensively in the scientific literature on public health.

Next to Jim is Gary Burtless. The John C. and Nancy D. Whitehead chair and senior fellow here at Brookings. He has also published widely in public finance, aging labor markets, social insurance, I could go on and on.

So now that you've met the panel let me just give you one order of business, a little bit of housekeeping. Underneath your chairs there are index cards. The way we like to do the question and answer time here at the Hamilton Project is when you've got a question you can write it down on that card. Our staff will be going up and down the aisles collecting those and then they'll bring them up to me and then I'll be able to ask the question. We've set aside the last I think 15 or 20 minutes to cover your questions. You know write those down and pass them along as they come to you and bonus points for writing neatly because it is hard to read. I might need to start bringing my glasses which is another hazard of middle age I suppose.

So Angus, let me start with you. So you were careful to explain to me earlier that we really want to keep a distinct life expectancy and mortality. Anne described this a little bit but tell us a little more. How are life expectancy and mortality different?

MR. DEATON: Well one sense is cheerier than the other and you said you were very depressed. It is nice to think about life expectancy it is not so nice to think about death. But I want to argue that there is a lot of danger of people getting confused here. I think people like life expectancy

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much better than they like to think about mortality. I think the reason for that is they think they understand it. Unfortunately, they don't. And life expectancy is a very, very, very odd concept. Life expectancy is people think what it means is if you take someone at 40 and you say what is the life expectancy at 40, it is the number of years you can expect them to live and typically that's not true. Because what life expectancy is it calculates how many years you would live if today's mortality rates were to remain in force. Today's age specific mortality rates were to remain in force for the rest of your life.

Now the reason we're all here today is because the age specific mortality rates are changing. So if you calculate life expectancy at birth now or you calculate life expectancy at 40 now you're going to get it wrong. And you're almost going to certainly be too optimistic about it because those mortality rates are getting worse or at least that's what we've been talking about today. Now of course next year they may turn around and so on but, you know, we've lived in an age in which life expectancy at birth typically understated the number of years you could expect to live because mortality rates are improving all the time. If we know move into this behavioral world in which bad behaviors or difficult behaviors are causing us to die sooner mortality rates (inaudible) then we're going to be living in a world in which the life expectancy measures we look at are actually too optimistic. So I'm cheering you up in the wrong direction I'm afraid.

The other thing which Anne mentioned but is worth emphasizing again is life expectancy -- the other reason people like it is because there is one mortality rate for each age which is, you know, there is a probability of death at each age and so you have to carry around a hundred of these things and it would be much easier if you just carry around one number like life expectancy. So it is sort of like an index number problem. But saying that life expectancy is going down because mortality is going up is sort of like saying the CPI has gone up because the prices of peas have gone up. It is mortality rates and specific age and you have to combine them. And life expectancy combines them in a very, very strange way which gives all the weight to the beginning of the constellations. So if you're taking life expectancy at birth it depends incredibly heavily on what is happening to kids and hardly at all on what is happening to old people. And life expectancy at 40 it depends a lot on what's happening when you're 40 or 41 and not so much at old age. But for a lot of the policy issues we're interested it is old age that really matters

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about these things. So that's another reason for sort of fixing switching I think mortality rates.

Let me say one other thing. We like to think about changing patterns of life expectancy by different education groups or by different income groups or by different parts of the country. I actually think it used to be 20 or 30 years ago when I first started thinking about people didn't think about these disparities very much or changing patterns by different groups. I think one of the reasons that what Anne and I found had not been noticed before was because people were paying so much attention to inequalities between different groups and not enough attention to people actually dying.

So let me emphasize I mean you can imagine a world in which life expectancy was going up for all groups but it is going up much faster for some groups than other groups and that might really worry you and it is certainly something we should pay attention to. The CDC in recent years has paid a lot of attention rightly to the fact that black mortality rates are falling much more rapidly than white mortality rates so the black/white gap is falling and this is just terrific. But in the same reports they didn't seem to notice that the reason the black/white gap was falling was because white people's rates were going up. So this is just another question of relative deprivation of different groups in a world that's getting better, this is a world in which people are dying who should not be dying. One of the last slides Anne showed that's 165,000 people would arguably be alive today if opioids have never been invented. I mean those are people who are dead because of these prescription legal drugs, heroin in a pill. And that's just the opioids.

So I think focusing on mortality is very important and we should not make life easy for ourselves by focusing on life expectancy, thanks very much.

MS. SCHANZENBACH: I was going to come back to you for one more question before going to the rest of the group. So Anne talked a little bit about some of the hypotheses that you have but I wondered if you could expand a little bit more on those and also just talk about how big these magnitudes are.

MR. DEATON: Well I mean the numbers are big numbers. I mean any time a mortality rate turns around you're not talking about just the bubble but you're talking about something. And, you know, we've all grown used to the fact that mortality has been falling for all of us in all age groups and the

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little things come along but the number of people who have died because of this is sort of comparable to the number of people who have died of HIV/AIDS in the United States, not worldwide.

I think I don't have much to add what Anne said. I think teasing out the causality here is really hard because there are too many things going on at the same time. There has been a lot of bad economic things happen to these groups. The Washington Post did a terrific thing and correlated our data with the people who are voting for Donald Trump and a very, very close relationship there at all. So these people are upset, they feel they haven't seen much economic growth, they haven't seen any economic growth for a really long time. Their children's education may be collapsing. I think they're seeing other racial groups, blacks and Hispanics doing relatively well and they feel they're not getting a progress at all. They are seeing bankers and other people -- I mean I think is in the sense in which inequality has been a problem that these people have seen very little for themselves for a very long time and yet they are seeing other people who are doing extraordinarily well.

Now I mean all of this sounds great when I say it but that's different from having a much more precise scientific sense of whether the patterns match that. I remembered too that in Europe there was a lot of people who faced a lot of economic distress. A lot of jobs that used to be in Europe that are now in Vietnam or in Cambodia or (inaudible) in the U.S. This is not happening in Europe or nothing like the same scale and we I think find it hard not to implicate the opioid epidemic as part of that.

MS. SCHANZENBACH: Mark I'm going to turn to you. Can you talk about some of the policy implications for health policy and the healthcare delivery system.

MR. MCCLELLAN: Yeah Diane I want to talk about healthcare and its role in this and just as Angus asked you to think differently about life expectancy I want to ask you to think differently about the role of healthcare and population health and maybe be a little but more optimistic, I don't know.

The background paper talks a lot about the huge improvements in life expectancy with declines in age specific mortality rate just about every age over the past century and it highlights a lot of the role that healthcare may have had in that. Declining infections, declining rates from heart disease and so forth. What is important to know behind those numbers though is that most of those improvements were not due to breakthroughs in medical technologies but due to other factors. So a lot of decline in

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mortality rates from infections happened before the antibiotics came along or due to things like cleaner water, more sanitary food, better dietary habits, less stressful and physically straining environments that came along with economic development and other things kind of beyond healthcare. In more recent years we've seen some declines in age specific mortality as well where healthcare may have played a roll. Some declines in cancer, continuing declines in heart disease though there too behavioral factors things like smoking rates which are still playing through as Anne highlighted in her remarks still playing through and higher rates than we'd like to see for women and cardiovascular disease is still an issue.

So medical care has been important but it hasn't been the main driver of these trends and Angus talked about some of concerns about the opioid epidemic and crisis related to that. I kind of think that even if we did have more success and prescription drug monitoring programs and sort of very medically focused approaches there too traditional medical focus there too I'm not sure that's going to reverse the trends that we've seen and Anne's own data showed these rates of increase and depths of despair for these age groups going back to the early 1990s.

So what might make more of a difference. Well I think it is time to rethink the way that we view healthcare policies more generally. There has been a substantial increase in healthcare spending that's gone a long with these trends over past decades, clearly had a I think a favorable impact on the decline and mortality rates for younger children, for infants and for minority populations. But despite all of that these overall differentials and overall age related risks are going in the wrong direction in some cases. And even though we've had a big expansion of health insurance coverage in this country, I think Gary some of your work showed that this was the biggest redistribution in terms of economic impact to lower income American's in 40, 50 years. I don't think that by itself is going to change the trends that we've seen.

What are some hopeful signs in healthcare, well one is there are some reforms being taken in healthcare systems in places around the country now that are making more of a difference in addressing some of these root causes of healthcare declines and increased mortality. Some of these examples in places like Hennepin County, Minnesota, in Denver where Denver Health is providing some remarkable treatments for substance abuse and other health problems. In new kinds of programs for

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people who are eligible for Medicare and Medicaid including some of these vulnerable populations. They are doing it by changing the way that they deliver healthcare in a more fundamental way. So not focusing so much on treating the health problems when they occur but trying to intervene earlier by going at root causes. For example, a program in Camden, New Jersey focusing on hot spotting and in this effort they've tried to look at the root causes that were caught leading to hospitalizations and emergency room visits and accounting for a lot of healthcare costs they found that in most cases there were underlying pressures that were outside of traditional medical care. Things like underlying behavioral or substance abuse problems. Things like not having a home or having social or physical stresses at home or not having a job. And by shifting resources to more personalized supportive approaches that focus on these root causes they've been able to both reduce healthcare costs and reduce some of the underlying risk factors that I think are related to the kinds of trends that Angus and Anne were describing.

The problem is it is almost impossible to support those kinds of programs in the traditional way that we've financed and delivered healthcare. All the programs that I mentioned have had a vision for a new way of delivering care that has been led by healthcare providers working with social service systems and trying to address these underlying issues in new ways. But they've been accompanied by different ways of financing health care. Not just focusing on paying for the medical treatments but more global payments where financing streams for Medicaid might be combined with financing streams locally for substance abuse or for educational programs. And what the healthcare providers involved taking on overall accountability, not having open ended fee for service payments for traditional medical care but taking on more accountability in return for having more flexibility in how there are supporting the individuals who are facing these challenges in their lives.

And that kind of change I think can lead to both steps in the healthcare system to address some of the challenges that we've talked about today and also steps to bring down overall healthcare costs. And that's the second way in which we need to rethink some of these policy issues. By spending more on healthcare we've undoubtedly increased access to a lot of traditional health services. But for just about every state in the country and certainly for the federal government the increased spending on healthcare has been accompanied by reductions or tightening of spending in programs like pre-K

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education. Social service interventions to help build more of a community network and supports for individuals who are struggling in their lives. And that kind of shift has made it more difficult to address the kinds of problems that Anne and Angus have talked about.

So for two reasons healthcare reform I think is fundamentally important to addressing these trends. Even though we do need to get some more evidence one is to reform healthcare to put a much greater focus on how healthcare systems can and do impact the lives especially vulnerable populations. And second is to bring down overall healthcare costs so that we have more resources that can go into these other very important programs to address some of the social challenges that we've talked about today.

MS. SCHANZENBACH: Undoubtedly we'll be talking more about that on the panel. David Cutler can I turn to you. You've done some fascinating recent work on area based differences. In fact, we highlight some of that work in the framing paper. So can you talk about what are some of the characteristics of places that have good outcomes for mortality rates.

MR. CUTLER: Yes I'm happy to. I'm always sad though when I have to be the optimistic person so I'll try and do my best. I've been doing work as you've point out in the background paper on life expectancy with apologies to Angus. Life expectancy both nationally and across areas let me just give you just a brief taste for what we've done. We know people's income because we have access on IRS data on incomes for people of a roughly 15-year period from the late 1990s to just a year or two ago. So about 1.4 billion observations and the IRS needs to know if people are alive or not to know whether to expect an income tax return from them. So they actually get it from the Social Security administration. So we have matched data on individuals where we can look at their income and then their mortality rate. And so we can see for 52-year-old men what is the income and mortality and we sort of put people in buckets, into 100 percentile buckets where we know exactly what percentile the distribution you're in and mortality rates (inaudible). And so we then have those, we can then string them together over time to say someone who started at age 40 in a particular income percentile what do we estimate their life expectancy would be.

So in addition to being able to tell you what Anne showed you about differences a little bit

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by education and certainly by race and ethnicity we can also look at the income level which turns out to be extremely important here.

So first before giving you the good news I'll give you some of the bad news. What this chart shows you is by 100 percentiles by single percentiles of the income distribution what is life expectancy at age 40. So the blue line is for men and the red line is for women, so women live longer than men at all incomes. The lines are upward sloping so that is higher income people tend to live longer it is not necessarily causal but it is certainly correlational. There's nothing new about showing this chart that is we've known this chart for a while. The couple of things that are of interest here, one is there is no income above which higher income is not associated with longer life. So if you thought like, you know, at \$500,000 a year earning \$600,000 a year can't possibly be associated with living longer the answer to that is you're incorrect. And similarly if you thought that below a certain income there had to be a safety net that supports people and so they don't live shorter the answer to that is you're incorrect also.

And in fact the differences here are big so the difference in life expectancy between the top and the bottom is about 10 years for women and about 15 years for men. To give you a couple of ways to think about that 10 years is roughly the difference between smoking and not smoking so it is as if every low income woman smoked and no high income woman smoked. And just put it in another metric. If we were to cure cancer in the U.S. average life expectancy would increase by about three years. So these gaps are about five times the impact on U.S. population of curing cancer.

So we sort of have that as a backup. We can then because the IRS does know where you live or at least 1040's gets sent to you or other forms we can actually figure out what is happening in different areas of the country. And somewhat interestingly that the change in mortality rates particularly say for the bottom quarter of the population which is what we're looking at here there is actually quite a lot across the country. So some areas of the country -- so this is sort of the good news to the extent that Diane I can give you some good news which is that it is not an immutable fact that high income people live longer and low income people or live less long. There are areas of the country where low income people seem to be living longer and then there are areas of the country which are just very, very, poor, very, very bad for low income people. The areas where low income people live longer are California and

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then particularly throughout parts of the Northeast down a little bit the Atlantic seaboard. The middle of the country is areas where low income people are living less long. It is not all just growing areas. So for example you can see some areas that are not growing rapidly which are not having increases in life expectancy for low income populations then some areas such as Florida that are growing quite rapidly where low income people are actually doing very poorly in terms of their health.

Just to give you an example of how hard this is to predict. I want to give the audience a quiz which is which of these two cities has a better health profile for the low income population? Tampa, Florida or Birmingham, Alabama. Birmingham, Alabama is of course the correct answer. That is life expectancy is high and getting higher in Birmingham compared to Tampa, Florida. So the question is sort of what are these associated with and that is what do you learn from this? These are clearly associated with changes in behaviors which goes back to a point that both Anne and Angus raised which is what Mark McClellan did as well. Which is if you sort of overlay on these maps of smoking and obesity and exercise and so on it would look very close to this. There's not a lot else in terms of what you think of as traditional medical care that these are related too. It turns out not to be extraordinarily related to the share of people with insurance coverage or other kinds of things.

What it does seem to be related to in addition to the behavioral components is what I think of as a sort of upper middle class area. So if you look at the correlates between various factors, various socioeconomic factors and life expectancy for the low income population it is highly correlated with the percent of the population that is foreign born. By the way that is controlling as best we can for the ethnic mix within the areas so it is not just that foreign born people live longer than native born people. It is correlated very strongly with median house prices with the density of population and with the share of college graduates in the area. And it is correlated quite strongly and positively with local government spending.

So to put it another way areas where low income people live a long time in New York, San Francisco, Los Angeles they are not particularly homogenous areas. They are not areas where rich and poor live in the same neighborhoods but they are areas where there is kind of robust middle to upper middle class. I'm not saying why that is the case but there is at least something about that kind of area

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which turns out to be very healthy. At a minimum what this suggests is that we should be able to learn from the darker green areas and try and transport that as best we can to the more reddish orangeish and to try and see what has been relatively more successful that we can copy.

MS. SCHANZENBACH: Thanks. So Jim turning to you given your work at the Robert Johnson Foundation we were hoping you could talk about should we be looking for some sort of a longer term solution here? How should we be thinking about health investments across the entire life course contributing to mortality.

MR. MARKS: Thanks Diane. We've already talked a lot about the depths of despair and it has been a panel of discouragement. I'm going to talk a little bit about where I think there are some opportunities. But I want to sort of summarize in broad brush strokes where I think we are. So this is from the National Academy of Medicine report that's called Shorter Lives in Poor Health. What this is is the ranking of U.S. men and women by for 17 countries by remaining life expectancy at each age. As you can see we are dead last or maybe second last at every age up to about 70. And then we really zoom up so that by 95 we have the best life expectancy in the world. That is after most of us are already dead we live the longest. And it suggests that our healthcare when people really need it is actually quite good. But it is the earlier ages where we've got to look for solutions.

Now this is one that specifically looks at women and this is a little different but picks up on what Anne said. This is the likelihood of a baby girl living to age 50. In 1980 we were doing very badly and then rapidly got worse. So we were second last in 1980 and now by the early 2000s we are further from second last the second last is from first. So you might say where do we have to put our energies? We have to put it at the younger ages. And that's what I want to talk about briefly. I think the key points there are we are seeing biologic science and social circumstances and their implications start to come together. I'm going to touch on this just a little bit. We know that children born in poverty and the stresses they experience in those households affects their brain development perhaps permanently. There is plasticity at the earlier ages, there is plasticity in the teenage years especially. But that's where there could be great opportunity for improvement.

The second part of it is there are in fact some randomized trials of children that were in

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good quality child care whether it is pre-K or earlier and then followed the longest up until about age 40 the most recent paper followed a different group up to age 25. They found that those children that got good quality childcare at the youngest ages in fact did better. They did better in that they were more likely to graduate from high school, more likely to graduate from college, less likely to have substance abuse. Huge effects. And the parts that correlated the best were how they interacted with others. That is could they share with others well, could they show empathy and care for others and their feelings. The non-cognitive skills turned out to be the most affected. In the most recent study asked kindergarten teachers to rate their children on an 8-point scale. This was done 25 years ago, highest to lowest (inaudible).

What we've seen in other areas that besides the building of interpersonal skills there was a randomized trial where low income families were given vouchers that allowed them to move to higher income neighborhoods. This picks up on what David said. And in fact children and the families did better just by moving. Lower rates of diabetes for example.

So we're finding that these connections between the social circumstances and the biologic are supporting each other. So I would argue that if we are serious about improving our life expectancy the places we ought to be making our investment are in young children because they'll do better with relatively short term interventions. In fact, there is other randomized data on nurse home visiting when young mothers, low income young mothers get nurses to visit them it turns out it affects up to age 2 the visits. It lowers the child abuse rates, it increases the likelihood that the children would do well in school and lowers the likelihood that those children up into their twenties lowers the likelihood that they'll be involved with juvenile justice.

So we have interventions that can work but they may not be thought of as Mark was saying classically in healthcare and they may not be ones that we would have thought of because of the age effects. The other part that those studies have shown especially the nurse home visiting but a few others is that the mothers do better. So you have if our diagnosis is deaths and despair we've got to find ways that we provide treatment that is hope. And helping mothers with their children, giving them good quality daycare so they can go back to work or go improve their education, those things I would argue are

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probably our best shot at where we should be making more investment as a nation. That doesn't mean the opioid epidemic is not serious, it is. But right now I see that epidemic and other substance abuse as symptoms more than root causes.

MS. SCHANZENBACH: Thanks. And Gary turning to you I know you talked a lot about these pieces but I was going to start by asking you about this important recent work that you've done thinking about the impacts of these trends for Social Security. I know the recent Institute of Medicine panel built off of your important background research on that. So how should we be thinking about social security reforms in light of the divergence in life expectancy?

MR. BURTLESS: Well before turning to those policy conclusions it is probably useful to tell you something about the work that my colleagues Barry Bosworth and Con Jang and I did. This research was partly supported by the Social Security administration and partly supported by the Sloane Foundation. What we wanted to was to estimate statistically the link between people's earnings in the middle of their life and later longevity. At what ages did people die later on and over time over a 30-year period how fast was the reduction in mortality at given ages depending on whether your midcareer earnings were high or low. So we had information on 85,000 people in one of our samples and about 30,000 people in another sample and we could follow these people for up to 30 years and see when they died and their death records were matched to their Social Security earnings records and through a very sizeable interview questionnaire about their behavior in midlife.

What did we find. Well our results are prefigured on the handout, this framing paper. There is a picture, figure three on page 4 of that that those aren't our results those are the results of the National Academy of Sciences but broadly they show what we find too. We find that mortality rate declines after age 50 have been noticeably fast, noticeably fast for high income Americans. Whether men or women they have been practically nonexistent for people near the bottom of the income distribution and this is particularly true for women where we found in the bottom one-tenth of the mid-career income distribution we found no improvement over a 30-year period in their mortality age. Whereas there were fairly sizeable gains in the mortality rates of more affluent women and more affluent men.

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So what do these results mean for Social Security. Well before touching on that I should say had we known of Anne's and Angus's research, results before we lost our access to these confidential government records we would have done our research somewhat differently. We would have examined these trends as best could within racial and ethnic groups. What we noticed was once you examined trends by income or by educational attainment the mortality rate gaps between different ethnicities shrank dramatically. So just including people's mid-career incomes did account for a lot of the ethnic differences. But remember what their results showed that there has been much faster progress in Hispanic Americans and in African-Americans compared with white Americans at least in the middle of life and we could have had had we known this result we certainly would have organized our research differently. But anyway what did we find that is relevant to thinking about Social Security policy.

Well affluent Americans continue to see very rapid gains in life expectancy. So I imagine for most people sitting in this room actually the news is cheerful we're giving you. It is not cheerless it is cheerful because most of you are probably in the parts of the income distribution that had seen very remarkable progress. David's research with Rhaj Chetti and co-authors shows exactly the same things in the 15 years covered by their research findings. There were very rapid gains in mortality rate reductions among the most affluent Americans. We find the same thing if we are looking at people's mid-career incomes, mid-career earnings.

Current law in the United States is currently reducing the amount of Social Security benefits you can claim if you claim them at 62 or 65 or 67. Because the retirement age for full benefits has been going up in the United States and it has the effect of reducing the available benefits to you if you claim them at 62 or 65. On average of course Americans have been living longer so the fact that you have to wait longer for a full social security check seems consistent with the fact that you are in better health at later ages. But Americans at the bottom of the income distribution on average have not been seeing any improvement in their expected lifespans at age 50 or at age 60. So that means that if we comp the benefits that they can obtain at age 62 or 65 or 67 by let's say 8 percent or 10 percent we are cutting their lifetime benefits by exactly the same percentage. That is not true for people in my position in the income distribution. Compensating me for the fact that I have to wait longer to get a full social

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security pension is the fact that I can expect more years past age 65 than I was in the past. Remember your lifetime benefits are simply the number of months that you're going to receive benefits times the monthly benefit you receive. Social Security's benefit formula for the monthly check is very redistributed in the interest of low income Americans, low income contributors to social security. But that redistribution in the monthly benefit formula is being gradually offset by a rising gap in life expectancy at age 65 between people who are affluent in the middle of their life compared with people who are low income in the middle of their life.

So it strikes me that everything else we know about the situation of social security and its reform adding this fact about the growing discrepancy, the growing gap in life expectancy between low and high income contributors to social security should push you in the direction of thinking we should preserve benefits, a relevel of benefits for lower income Americans at age 62, at age 65, at age 67 because they unlike their more affluent compatriots are not sharing in the gains in life expectancy that the rest of us are enjoying.

MS. SCHANZENBACH: So don't forget to write your questions. They are going up and down the aisles. But I'm going to open it up to the whole panel. So I think my next question is okay there is tons and tons of unknowns here as we've seen and I think we're going to be talking about unpacking these results for at least a decade, probably longer. Should we wait 10 years before we think about policy solutions or what are we ready to say in terms of we need to do some acting here? Who is ready for a policy solution or do you just say let's wait until everybody dies of old age in the first place.

MR. MCCLELLAN: It is too much of a softball thing. You have to add it. It is sort of like if you have cancer --

MS. SCHANZENBACH: But what do you want to do?

MR. MCCLELLAN: If you go to an oncologist he or she has to act with what they know now even though they know more research is coming.

MS. SCHANZENBACH: So what do we know enough of?

MR. MCCLELLAN: So I've suggested the areas of support for young families and their children as an area where the evidence I think is strong and some might say it take too long and they are

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certainly going to have to short term adjustments where the cost issue is in other areas. But I think as far as long term that's where I would place my bet.

MR. MCCLELLAN: And I've suggested already some shifts in the way we think about healthcare. So making healthcare spending --

MS. SCHANZENBACH: How likely do you think that is?

MR. CUTLER: Well I think there actually is a fair amount of bipartisan support between the big surface issues like the ACA for changing the way that healthcare payments work and I think for giving people more control over how healthcare resources are used on their behalf. So less payments that are tied to just getting treatment in the emergency room or the hospital when they have a complication from a chronic disease or an overdose and more shifts in payment towards the treatments and out of hospital services, nontraditional medical services. Things are like what Jim was talking about, they can prevent it. Now those typically are too expensive to provide just in the same way we've been doing it. Adding in more and more spending for more and more covered services. So the most promising ways to do it have been about shifting the payments from paying for specific services towards paying on behalf of what people need most. That means more accountability for healthcare providers in terms of keeping overall costs down as they make these shifts in services and also maybe more control for individuals about how they get resources on their behalf. And many of these programs giving lower income people more control over getting assistive services at home or other things like that can substitute for a lot of spending on healthcare.

MS. SCHANZENBACH: Angus.

MR. DEATON: Yeah I'm very much with Jim about the kids and I'm with mark on the different ways of paying for things too. But one of the troubles about thinking about the kids and I really do think we need to do something about the kids and focus on better education so that I think that one of the causes for the despair of these people that we certainly may need to spare if my life hasn't worked out as I thought it would that's bad enough. But if thought that was going to be the same for my kids that I think would make it worse. So I think it benefits not just the kids but also the parents to do something like that.

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On the other hand, you have to be conscious of what you're doing if you do which is your sort of saying okay we're giving up on this generation and we're just saying okay there is nothing we can do for you. We're going to write you off; we'll try to do something better about your kids. So I think we've got to do something for this generation and the immediate thing that we can do is we've got to explore treatment options and better treatment options and make it easier for doctors to do things that don't involve the cheap and easy and in the long run neither cheap nor easy solution of prescribing opioids for people in pain for example. Treating addiction is incredibly hard and we need to know a lot more about that.

But finally I'd like to broaden this a little bit and maybe I'm not supposed to do this but I think this class these people in the middle these relatively uneducated people also feel that they have a complete lack of voice in this society. I don't think they think that either political party is listening to them at all or that they have any effect on either, you know, forty years ago they would have been a natural constituency for the Democrats. They've become a natural constituency for the Republicans. Neither party is offering anything for them, they are turning to people who are offering solutions that will not solve anything at all. The thing you have to ask is to why these people think Congress is so unresponsive to them, why indeed it is so unresponsive to them and I think you have to put issues like campaign finance reform on the table as making it possible for these people to reenter civic participation in a way that they've really lost over the last 30 to 40 years.

MS. SCHANZENBACH: I'll go to David and then to Gary.

MR. CUTLER: So I in my mind distinguish between technological solutions and social solutions. And so technological solutions we tend to be better at a couple of different kinds. One is medical interventions and I think Mark was very well laying out some of the ways that we could use the medical system to improve the health of people before it is an absolute emergency.

The other example of technological solutions is in public health when we set our mind to it. So if I would have told you 40 years ago that Americans would drive faster and more miles than they drove and yet automobile deaths would plummet you would have told me I was nuts. And I would have told you 50 years ago that smoking rates would fall in half and that half the people who ever smoked quit

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you'd tell me I was nuts. But we sort of come up with technological solutions of both medical care in the public health measure to these sorts of problems.

I think where we have a hard time is where you take the Anne and Angus view that no really what this really is is all about despair just seeping out in one form or another. And so if you make it harder to kill yourself driving people will find some other way to do harm to themselves. And if you make cigarettes harder to get there's always alcohol. And if you make alcohol harder to get where there's always some form of heroin and so on down the list and you'll never get through and will always worry about the next crisis after the next one.

If you have that then you come back to where Angus was which is what is the social issue that how does one address the underlying economic specifics or social aspects of that. I asked my favorite director of the Hamilton Project what we know about how to improve the economic status of people who are not at the bottom or you could think about the minimum wage (inaudible) tax credit or whatever and people who are above that toward the middle of the distribution and really help them out a lot. And what I got back when I asked was we're not exactly sure exactly what to do and there are some ideas but there is nothing you can kind of lay out that would --

MS. SCHANZENBACH: And I should add to this if I can that in our last set of facts on food insecurity that the Hamilton Project put out, something that we saw was that food insecurity which used to be something really concentrated much more among very poor people, people who are eligible for SNAP, for WIC for the school meals program has spread up the income distribution in a quite alarming fashion such that two-thirds of all food insecure families have incomes above poverty. This is a part of the income distribution that the safety net is not helping. What we need is job growth and wage growth.

MR. CUTLER: That to me is the harder solution because it is not like there are things out there that we sort of generally agree ah yes this is a four-part strategy that is going to pay high dividends.

MS. SCHANZENBACH: I had a follow up question to you. So you mentioned safer cars and you mentioned declines in smoking. Are there other technological solutions in the public health realm that are promising for the next 10, 20. Because it doesn't seem like we're winning the war on obesity.

MR. CUTLER: The easiest thing in the public health world, the thing is very clearly that

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people respond to prices. So if you raise the price of tobacco people smoke less, if you raise the price of alcohol people drink less, if you raise the price of sugar sweetened people drink few of them. So people are very, very responsive to prices. So if you can find a way to change the prices for obesity which is sort of leveling off because we're increasing some of these prices and so on then you can reduce that. And if you find a way to increase the price to people of opiate meds currently they switch into heroin, if you find a way to increase the price of everything people will find a way to switch out of them. So people are extremely responsive to prices and they're also responsive to information when presented in a way they can handle it. So there are some forms of information that people will totally ignore, completely ignore about cigarettes and there are pieces of information that people will say okay this makes me really determined to try and quit next week. And it is things that --

MS. SCHANZENBACH: Next week, yeah.

MR. CUTLER: So it's things like very subtle things that we kind of know behaviorally how to nudge people to do the right thing. I would say we're more confident in our knowledge of how the price impacts than the other things. So if you said to me what one thing would you do that's where I would concentrate on. But I think there are things that we could do along this path.

MS. SCHANZENBACH: Right and I guess we're starting to see real policy innovation in that so Philadelphia just passed the large sugar sweetened beverage. Are there results in Berkeley yet?

MR. CUTLER: I haven't seen any good convincing results. But if you look at kind of what happens when beverage prices increase people clearly consume less of it. But also what I was saying there are things you can do. If you point out the kind of immediate impact so if I say to you by the way if you smoke you'll die younger, nobody much cares everybody vaguely knows that. If I show you a picture of someone who can't walk a block without oxygen and what all of that looks like, then people will decide they want to quit smoking. If you put signs in little grocery stores where adolescents go saying this big of a soda takes you five miles to walk it off, then people buy water.

So you can sort of do smaller we know of a bunch of things like that that really seem to well that you could then say okay we're going to really run with that.

MS. SCHANZENBACH: Gary.

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MR. BURTLESS: It would be amazing if you had a panel containing this many researchers and none of them mentioned the possibility of doing more and better research. But I think Anne Case did mention specific kinds of comparisons that would shed light on the underlying sources of these trends. One thing that has always interested me is how does the United States compare with other countries? I mean has the income gradient of mortality difference risen in some of the rich countries even though as we can see in midlife all of the other countries continue to have these improvements in mortality rates. Are there other countries that have this phenomenon in which there is an income gradient so that some lower income people are not seeing improvements in lifespans whereas higher income people are. I repeat, this news is not gloomy if all you care about is your own longevity and you have high income. The evidence actually is very, very promising for you and the question is being there other countries that have at least some degree of this kind of trend. So I think that there is research that actually would help us decide where to put public policy dollars to improve the circumstances of lower income people.

MS. SCHANZENBACH: Thanks. I've got a lot of really great questions from the audience and they keep bringing more so I'll weave those into some of my additional questions but I think this one partly for Mark McClellan but anyone else. Do we have a sense of what evidence or information is needed to help providers help weigh the pros and cons of prescribing opioids?

MR. MCCLELLAN: There are better resources around for doing that as well as other I guess you'd call them technological solutions, restricting access, prescription drug monitoring programs and the like. I think as David and Angus both said though healthcare a lot is often about episodic brief encounters with patients who increasingly have chronic issues that are not easily dealt with in episodic format. If it's a chronic pain issue or a mental illness issue probably the most effective interventions are just of a different kind. You can impose some restrictions on opioid prescribing but I think the more promising approaches are ones that ship care to more of a team basis especially for patients who are at risk for mental illness, depression, suicide and the like. There are some successful models of doing it. It is hard and it is not the way that most physicians are trained. It requires a different kind of financial structure where you're putting money into services that traditionally don't get reimbursed like social

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workers or people out in the neighborhood who can just help make sure that patients are following up on treatment or sticking with an effective substance abuse program and that gets back to the big challenge a lot of healthcare providers are facing today. They'd like to do something about it, they feel pretty frustrated too in terms of what is coming into the emergency room or into their offices and while there are some successful models of doing it differently requires approaching healthcare in a different way and it requires paying for healthcare in a different way and it has some different expectations on patients as well about engaging not just with their doctor when they get sick but being part of a system where their providers and they too are kind of accountable for taking healthcare in a new direction.

I think the optimistic thing for me is that this can be done. It is happening in places around the country. You look at some of David's early and future work that Anne talked about. We will hopefully find out more about what is happening in these communities that are doing well. I think the answer is not simply just expanding access for traditional healthcare that didn't look very correlated with David's chart up there earlier. And what I think some of these reforms in healthcare are doing and the places where it is successful and it will be interesting to see if this plays out is that you have more community engagement, you have pediatricians spending time with social workers helping with early interventions and at risk kids or working with school nurses around preventing teen pregnancy. Steps like that that really do have longer term outcome impacts it is just hard to do in the way that we've financed and paid for healthcare up until now.

MS. SCHANZENBACH: And you think that there are some -- we know that we don't sort of wholesale changes very often but you think there are some incremental changes?

MR. MCCLELLAN: Yeah I think there are plenty of examples around the country of this happening. I think where there might be some bipartisan interests in Congress is in programs like Medicaid and social service programs at the state and local levels. We're not saying that all this needs to be supported by block grants but a shift from paying for traditional services to giving states or local communities more flexibility and some accountability along with it to show that you're doing better on things like pre-K participation or kindergarten readiness or things like that. That could really I think help provide more support for some of these programs that look like they're working in certain places but are

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really hard to do.

MS. SCHANZENBACH: David Cutler there is a question for you too. Sort of piggy backing on this. Low income areas are often rural with low access to care and services. Do we need a different way to tackle these problems in rural areas?

MR. CUTLER: Yes we do although it turns out that the distinction between urban and rural is not the key one that's going on here. That is when I tell you Tampa, Florida is doing very poorly it is not because Tampa, Florida is a rural area. So it is actually not particularly correlative. Yes, many of the things that one might think about like for example the impacts of let's say local governments are making it very difficult to smoke. Many big higher income, upper middle income cities it is virtually impossible to smoke indoors anywhere which means that it is very difficult to smoke at all. So that's one likely reason why smoking rates are lower in those greener areas that I showed you and why life expectancy is higher.

Now it is much more difficult to think about that kind of an intervention in a rural area because you're not doing -- so you're going to have to think about something else. What is interesting to me is that some of the public health interventions that have been successful have actually been quite successful in rural areas. So for example it is very difficult to have a fatal motor vehicle accident in Washington, D.C. You're just never driving that fast. Whereas in rural Virginia you can have a fatal motor vehicle accident and if you look the decline in fatal motor vehicle accidents will be much larger rural areas than in urban areas. So you can do it but you probably need a different sort of strategy, that is the strategy of hey take the subway. It is great in Washington, D.C. it doesn't work --

MS. SCHANZENBACH: Actually it is not so great in Washington, D.C.

MR. CUTLER: Being in parochial Boston it is an okay substitute. So you're just going to need to do it in different ways and that might require different types of interactions between cities and rural areas it may require different sorts of policies and other kinds of messaging.

MS. SCHANZENBACH: So another common question is people want us to talk a little bit more about the economics of despair and that hypothesis and things we can possibly do and so for example did free trade get us here? I would love any of the economists on the panel to respond to that.

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MR. BURTLESS: Well I think freer trade contributed to the trend in earnings, growing earnings disparities. There are things you can do to reduce the effects of growing pretax earnings disparities by shoring up the incomes at the bottom. One of the things that Barry and Con and I found we tried to examine what has happened over the last 35 years by narrow age groups in the amount that inequality has risen. And what we find is that we started at about age 45. There is a much bigger increase in inequality in the middle of life and once you get to age 62 and people can claim a social security pension the gap between the bottom 10 percent and the middle income person just did not increase nearly as much as it did at younger ages before people become entitled to really the most generous of the income distribution programs that the United States has. So past age 62 the growth and inequality was evident it just was much, much smaller compared for the people under 62. And I think that that is entirely traceable to things that economists I think we've studied the income distribution, widely agree on and that is that is earned income inequality that has made by far the biggest single contribution to the overall rise in income inequality. I know that many people are talking about capital in the 21st century and how capital inequality is contributing to overall inequality and that's true, I don't deny. It is just that from a practical standpoint most of the populations income especially the population under age 62 comes from labor earnings and labor earnings inequality has risen quite a bit. And part of that rise is due to freer global markets that do make it possible to import things from very low wage countries with very little impediment. I don't think it is the biggest single contributor to rising earning inequality and I don't think a lot of other sort of middle of the road economists think it's the biggest single contributor but it has contributed.

MS. SCHANZENBACH: Anybody else want to make a defensive of free trade? I think neither presidential candidate is in favor of it so maybe it doesn't have any love for that in this room.

MR. MARKS: I like quiz questions so I'm going to give you one more quiz question. So people in New York live longer than people in Detroit. Divide the population in thirds by income. Upper third, middle third, lower third. In which third of the income distribution is the gap between New York and Detroit the highest?

MS. SCHANZENBACH: Well I know the answer because it is in our framing paper but

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you all can guess.

MR. MARKS: The upper and the middle are virtually the same life expectancy in New York and Detroit. It is all in the bottom third. So it makes me suspect that what is going on here is probably not just a consequence of things like trade and the killing of the manufacturing industry which has been a very big deal.

MS. SCHANZENBACH: Because that is more middle.

MR. MARKS: Because that is much more in the middle class. Now we do know from other work that when people are laid off their health suffers. So it is very, very clear that people's health suffers when they are laid off. It is also clear that in a recession people's health tends to improve a little bit, probably because they're spending less on alcohol and tobacco and things.

Overall I don't know enough to say for sure but I am somewhat skeptical that we can lay a lot of this at the feet of free trade.

MR. DEATON: Yes I agree with that. And also you always have to remember that free trade brings a lot of benefits too. We're getting a lot of really cheap stuff that we didn't use to get. And poor people benefit from that as well as rich people. I'm a little worried about these special comparisons partly because for me income has never really been the variable to look at here and that is because income is deeply affected by whether you're sick or not. And if you look at the bottom of the income distribution a lot of it was people are disabled (inaudible). So thinking about it just from the causation running from income -- I mean David has never said this and the paper doesn't say this but nonetheless is always presented that way and that's the way your attention tends to go. But if you think of things like health insurance for instance better health insurance makes the gradient smaller. Because if you don't have health insurance and you get sick it cleans you out financially too and so it pushes you down to that bottom part of the income distribution. And so better health insurance can have the effect of making those inequalities smaller though it doesn't really seem obvious. Better unemployment insurance would have the same effect too and we have lousy unemployment insurance compared with European countries. So that sort of stability would help work on the gradient.

Health savings accounts are another example of something that propels the gradient

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upwards. Because if you get sick you lose money as well and if you stay healthy you gain money as well so it is projecting these things out. So that's one of the things that when you look at this compared with other European countries it is not quite so obvious how to do that. Because there are so many of these other policies that are in there.

The other thing that I worry about is if you compare Detroit and New York because these life expectancies are calculated you're holding people in the same income group all the time too. Now I talked about this with David and Rhaj and they say well there is a limited amount of changing around incomes groups but that is not really true when you get sick because you could lose your income as well as losing your health.

So when you look at these people at the bottom income distribution they're not going to be there for the whole rest of their lives or you hope they're not going to be there for all their lives and they may be there because they're in a temporary episode of sickness. And so if could be the differences between Detroit and New York is more to do with income ability or how hard it is to get a job. Which don't seem like they ought to be in the gradient but they really are. I don't have a very easy way to propose this. I mean you can look at it all by education but if you look at education across different European countries that is a mess. Because the numbers of people in various education bins the proportions are so different across different countries and it is clear that high school education doesn't mean the same thing in Estonia from what it means in the U.S. for example. These things are quite hard and I just coming back to what Gary said I think there is a lot more room for good research in here. This is a really hard set of problems.

MR. BURTLESS: Just to add on to this point I don't think it was what Angus was saying but I would be careful about the limits of health insurance and being able to address this problem. I mean it is true that it can limit out of pocket spending after you get sick but part of the underlying problems here as you all pointed out is that there is kind of a cycle of this and a higher risk of lots of health risk that health insurance is not at least as we're doing health insurance and healthcare that it buys now is not really addressing and the greater spending on healthcare that results from just plugging these gaps after they happen means probably few resources available to spend on things like job training program, early

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education and programs and things that could. I think if you asked a lot of the people in these groups they would probably rather have especially for their kids if they're looking down stream and thinking about the future they'd probably rather have spending on that.

MR. MARKS: Can I just make two observations if my co-author Barry Bosworth he would probably be upset if I didn't make this point. When we look at the relationship between midcareer income and earnings and subsequent mortality experience we're not simultaneously looking at someone's income we're looking at their income at a fixed point in their and then over the following 30 years seeing when they die. So it is not removing this associating that Angus talked about. And then second we also replicate our findings almost exactly when we use relative educational attainment within for people born in a given year. What was your position in the educational attainment distribution and we get very similar results in terms of the implications for social security policy. In other words, we're trying to use things that are predetermined before we're measuring people's mortality experience. And I think as I recall --

MS. SCHANZENBACH: It is two years before right?

MR. MCCLELLAN: But that's not the issue. The issue is it is this life expectancy business which is if you do life expectancy by education that's okay because your education doesn't change over time. But if you say someone at the bottom of the income distribution what is the life expectancy you're using percentile specific mortality rates at all points future. That's not the only way you can do. If you build a transition matrix and have it move around.

MR. BURTLESS: We sort of explored that some but the correlation between your percentile and when your percentile rank is 10 years off it is point seven or point eight. So it just wasn't going to do anything and even when it is different it's not that --

MR. MCCLELLAN: It would be nice to have the life expectancy figures calculated the other way. Because your percentile is going to change when you retire and it is going to change when you are sick and you have those numbers. You have the transition for both.

MS. SCHANZENBACH: Yes Jim.

MR. MARKS: I wanted to comment a little bit on this. The issue of mobility in income is also tied to the issue of hope. There is a lot of discussion of are we losing the American dream, the right

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to rise, all of those tie to that. And if whether we think there's a lot or a little mobility doesn't matter so much if the people in the midst of it feel differently. And that's part of what we are seeing and if we are going to be responsive in a policy way it's got to be responsive to those feelings or that we do a better job of saying what is going on. I know that I've been the one who's been pushing a little bit on the kids.

I want to comment a little bit on social security trustees. By 2030 there will be two workers for everybody over 65 meaning on Medicare perhaps on Social Security. It used to 8-to-1 or 11-to-1. Those workers in 2030 are all alive now. They've got to be well educated, have great jobs and care about old people. We've got a lot of work ahead of us.

MS. SCHANZENBACH: We do. I've got a bunch more questions and I know we're running short on time. One that I definitely want to raise. Mark this is probably for you. So should hospitals and health systems be worried about these divergences and mortality rates and if so what should they do?

MR. MCCLELLAN: I think so. It means more people have these serious health problems, probably more limited reimbursement despite Medicaid expansions. This is still a cost loss area for many hospitals and healthcare systems. The other reason they should be worried about it is this is where all the money is going now. The kinds of resources that could be put in to some of the other programs that we've heard about here today are going to these hospitals and health systems. So just from a standpoint of building a better community that the more that they can do to invest those resources, to keep a focus on improving the health of their communities the more we'll make progress on these issues. I do think this community level focus work is very important. It is rebuilding some of the social ties and support networks that many of these individuals aren't feeling. This is not easy to do but there is so much state, federal, local resources going into healthcare that if we don't rethink how we're doing that it is going to be hard to make progress.

MS. SCHANZENBACH: I have a couple more. One is the trends in obesity and poor nutrition would suggest that maybe we should be seeing mortality rates look less good for populations that have high rates of obesity. How much has the increase in obesity and poor nutrition contributed to mortality? I don't if anybody has a good answer to that, David?

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MR. CUTLER: So a few different answers. One is if you look over the past 20 years or so the impact of rising obesity on life expectancy is a bit smaller but not too much smaller than the impact of the reduction in smoker on longevity. So it is a pretty big issue. Now that much said the impact of obesity is probably falling over time because technologically we've developed ways to reduce its impact. So when Anne showed you the picture on cardiovascular heart disease mortality I can't remember if it was the broader or the narrower category one of the things that probably went through your mind is how can that be happening with the increase in obesity since the long list of risk factors for the other. And the answer at least part of it is that we have many more preventative medications to prevent the heart attack that follows from the obesity and the treatment (inaudible) lot better too.

MR. MCCLELLAN: Despite the fact we're spending a lot on it they do work.

MR. CUTLER: That is happened in the U.S. as it has happened in other countries as well. So it is something where we've taken a social problem and come up with a technological solution to it which, you know, you sort of on the one hand that is find on the other hand you think gosh why didn't I just solve the darn social problem in the first place. I think for some of these others we've seen is we haven't been able to develop the technological solution (inaudible)

MS. SCHANZENBACH: Jim.

MR. MARKS: I wanted to come on a little bit of a -- David is right regarding longevity and mortality but there have been real changes in the prevalence of diabetes. Very costly. Treatable, manageable but very costly. I trained as a pediatrician. I never saw a case of what used to be called Adult Onset Diabetes as a pediatrician. Now about a third to half of the cases in children are Type II Adult Onset Diabetes. The most rapid ages of increase in diabetes diagnosis thirties and forties. So there is a huge cost and a wave coming. So we haven't seen the worst of it but we are paying in the most expensive way for being able to manage these conditions. That's where I think Mark was going.

MS. SCHANZENBACH: Yes thanks for bringing more depression back to the --

MR. MCCLELLAN: But if you're rich you have nothing to worry about.

MS. SCHANZENBACH: Actually that transitions I would have loved to ask Angus this and I'm sorry that he had to step off. Someone asked I'm highly educated but low income entrepreneur.

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In a horse race which matters more that I'm highly educated or that I've got a low income? I think it is a fair question. Of course we don't want to interpret any of these statistics about individual people because you could, you know, there are a lot of things that could happen.

MR. MARKS: Are we allowed to call in Anne?

MS. SCHANZENBACH: Exactly I think we've got good causal research on what happens with increased education is that right? So let me repeat that for those of you who couldn't hear or you could do it again.

With that we have to close this. Thank you so much for joining us.

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