Welcome. You are listening to a UC Davis Center For Poverty Research Conference Podcast. I am the Center's Deputy Director, Marianne Page. In January, 2014, the Center hosted the War on Poverty Conference. The conference hosted top poverty experts from across the country to discuss the U.S. safety net on the 50 year anniversary of the War on Poverty.

In this presentation, Kenneth Che discusses how the 1966 Fair Labor and Standards Act, which expanded protections to some farm workers and increased the minimum wage, impacted hospital costs, employment and Medicare. Che is a professor of economics and community health at Brown University. As well as a research associate with the National Bureau of Economic Research.

>> So, I'm, I'm gonna show you results on some of the pricings on this actually. On weapons we found on that MediCare has done since the since it was first passed all the way up through. We're gonna stop around the 80s, cuz Medicare gets even more complicated after that.

Okay, this is just background. You guys all know this. Medicare was passed in 1965, and it took affect a year after signing, in July of 1966. So it covers everyone age 65 and over at the beginning, and at the beginning, there was only part A for hospitals, and part B for outpatient services.

And 19 million people enrolled almost immediately. It took a year. They, they spent that year between signing and pass, and implementation to track down everyone they could. Okay, now, so you know that's not everyone who's eligible. But it turns out it's about 93%, which is better than other government programs have been doing recently.

As, as you might know, they. Someone told me there was a conference on the ACA here recently. They're hoping to enroll 25 million new insured over the next ten years. So this is pretty remarkable what they did. I think these guys are heroic in a lot of ways.

If you read the literature on what the Medicare administration did. So there's this huge bureaucratic effort to get all these people enrolled. Just so you know, Medicare's first started becoming more complex in 1973. At the beginning of 1973, Medicare was extended to everyone who was under the age of 65, but disabled.

As, for example, having been on SSDI for 24 months. If you're on SSDI for 24 months, you're automatically eligible for Medicare. Some people might know, today, if you have renal problems, or renal failure, you're automatically eligible for Medicare. So starting 1973, there are going to be people under the age of 65 also eligible for Medicare.

And I'll, I'll discuss that some. So, since this is really about the war on poverty, and I don't want to just talk about health, even though most of this talk is about health, here is the classic quote that Lyndon Johnson passed on signing of the Medicare legislation. You can see he, he's not just talking about health here.

He's also talking about the poverty and the destruction of savings among the elderly. And actually he even gets into the destruction of save, savings among the children of the elderly. Now I, I looked up as many statistics as I could find on poverty. This is gonna get into health very soon.

But I think we can infer, even though someone should say this much more carefully, that Medicare alone also reduced poverty, not just social security. Because when you look at poverty rates after for people age 65 and over there's a, a paper out of Columbia recently that's been cited by Fox and welfare and a bunch of other people.

they, they just do projections, okay? But in those projections, what you see is, in 1967, in the absence of all programs that existed as of 1967, they project that the poverty rate would have been 60% among the elderly. The actual in 1967 was 35% and I think one of the conclusions, that's likely mostly due to social security.

But then what you see is the official poverty rate for the 65 and older fell by a half in just six years, which in 67 and 73, and it's actually been incredibly stable since then. That's almost surely got to be due to Medicare, because we

collected all the data on social security too as a competing hypothesis.

The social security changes can't explain those changes between 67 and 73. The expansions weren't that big and they weren't for just the 65 and over. So, someone should sell you this pretty carefully. The paper doesn't talk too much about that. But now let's get into what we're gonna study.

We're actually gonna study trying to evaluate this major health insurance program at the time of its introduction. There are a lot of things that can go into this. I, I'll focus more on what Medicare did, but a lot of reasons this interesting to study. And it's historical, so I'm not saying if you did the same thing today you would get the same effect, okay?

This is what happened in 66 and 67. But the marginal on which insurance is changing is actually, and you'll see, is all on the extensive margin. That's a big chunk of it. It's a big growth in the number of insured. Okay? Whereas a lot of the other like, grand health insurance experiments or other experiments we've done, the margin's been very different.

It's either been changing the quality, the prices for healthcare some, like the recent stuff in Oregon is insurance but it's for a particular group. So one thing you're gonna see throughout this presentation is the effect of health insurance changes depending on what the margin is. Of who's affected.

That's incredibly clear. And not just the margin of who's affected but what's causing the uptake. Is it a supply change or a demand change? Okay, you'll see that here also. Now the other thing that's advantageous about the fact of selling Medicare when it was first passed. Is we're gonna observe all the patterns and every outcome before Medicare was passed.

Okay, that's often not the case with studies that do what we're doing which is trying to use variation by age. Some people call it an age discontinuity analysis, which is when people tend to look at when eligibility shifts in a very nonlinear way based on some kind of criteria.

They tend to only have the data after the program was passed.
>> Mm-hm.
>> Okay, so it's only like what we call a cross-sectional analysis. And there's no kinda factual for what it looked like beforehand. You'll see how we try and use the data beforehand to actually do projections of what Medicare did even away from the discontinuity, away from age 65.

Of course that requires assumptions. But visually you'll see whether you believe those assumptions, that's key here. Everything I'm doing is trying to be as transparent as possible. Okay. So that required getting age-specific data on everything we wanted which was hospital insurance, utilization and health outcomes. And it turns out no one had done that for this period.

Okay. Don't ask me why. And when I say age, they'd done age categories before. But usually for things like, health outcomes like mortality, and we'll show you how getting finer age data is very helpful in ruling out competing hypothesizes such as Social Security benefits and Medicaid. The pre-Medicare patterns, the patterns in 1964 and 63, etc.

Are also as I said, hopefully it can help us infer the effects of Medicare further away from the discontinuity, because age 65 is also a different margin than if you extend health insurance to people in their 70s and 80s. Okay? So a lot of figures are gonna look like this, okay?

So I'm gonna spend a little time on this, and then everything should flow from this. Okay. So, this is the first, well, first time meaning, I first presented this class four years ago. But before we presented this, this was not done, apparently. This is, literally, from National Health Interview Survey data.

They released the, what happened is, they finally released the pre-1968 data about four years ago. This is the percent self-reporting that they have hospital insurance, insurance for Medicare, I'm sorry, what will be part A, at over age 65 by age. So the x-axis is age, there's a red vertical line that's 65.

I actually prefer not put to red vertical lines there, I did it. Because I wrote this, you know, I did this four years ago. I'd like you guys to figure out where the red line should go. And the dotted line is hospital insurance rates by age in the 1963 fiscal year, so about four, three years before Medicare was passed.

The solid line is in the year right after Medicare was passed, so the 1968 fiscal year. Okay. For better or worse, the National Health Interviewer Survey only asked the insurance question every about four years, okay, not every year. Fortunately they asked the utilization question every year, okay. Now just as a point of comparison, I could have done it for every four years.

I'm showing you 1986 because you'll see that things change a lot in the late 70s through the mid-80s. That's the gray line up top. Now, if you look at it, it's pretty clear, if I, yes, great what you can see. Okay, first of all what you see is that in charts it's been growing over time.

Okay, that's if you plot the lines. But let's focus on the dotted line and the solid line. That's before and after Medicare. What you see is the patterns by age are very similar in hospital insurance other than a mean shift, right? Generally speaking they're almost parallel. An account attrition write that, would write that down as a time effect, right?

A time effect shifts everything for, at every age.
>> Mm-hm.
>> There's only point at which there's no longer a parallel shift. Oops, my fault. It's at the vertical line. You got, you get the point. Okay. So, now what the analysis will do is if I only have the data after 1965, so I have 1968, you would try and fit some kind of polynomial to this age-specific data, let's say in in above ages.

And say, okay, I would project out that hospital insurance would continue to decline at some kind of quadratic rate, and this is the effect. A lot of studies even just focus on just around here. Okay? What we're saying is that is true. Oh, gosh. But we also think that we're learning something from the dotted line.

It looks a lot like a parallel shift. Now of course, there's an assumption underlying this that the solid line would look like the dotted line with a time effect in the absence of Medicare. But you at least know what we're assuming. If, by the way, we feel very comfortable about this is the insurance effect at 65.

But once we start looking at what's going at age 70, 70, you're gonna start wondering, would this line continue to look like that at age 70? And that's what you're doing when you do a discontinuity. When you're only gonna use the discontinuity, you're often just willing to do inference right near the threshold.

But that's a very narrow effect, okay? So, I think that's transparent. You can decide for yourself. Okay, now, this is already getting into how things change even by the mid 80s. As you can see the, the so-called cross-sectional discontinuity at age 65 is much smaller by 1986. It's about 8% increase in, in health, hospital insurance between age 64 and 65, and it's very different from right after Medicare was passed.

We know from the data that a lot of this growth is both Medicare for the non-eldery, and Medicaid actually. Okay? So when the studies that tended to use data from the 80s and 90s, they're gonna get you a different effect. Well, I'm also gonna show you something else that's driving utilization there too.

This is just insurance, but. The, the utilization margin is going to change also. The other thing you'll see, and this came up in the ACA thing I'm sure, is do you notice this aging out of insurance? And the length of time it takes to get back into insurance is growing.

So, so, so okay I'm not doing this anymore. I'm not using the thing. Okay, I'm just gonna. So it, it's growing. And as, as you can guess today, this, this, I don't know what they call it these days. It's not a donut, but it's gotten bigger. And that's the group that benefits the most from the ACA in the short run.

Okay, but the main thing I wanna point out is that discontinuity, even by the mid-80s, has changed. Okay. Now if I

just take the difference of the post-data and the pre-data, which is just difference in the solid line and dotted line. You get that. Okay. So, if I'm gonna use this data to say what's the insurance effect, what I'm saying is that this trend by age would have continued this way.

I feel pretty comfortable that that's the effect of Medicare at 65, 66. And you can see, on the extensive margin, insurance rates went up by 25% percentage points. Okay? So that's one in four newly got covered. I feel reasonably comfortable at age 72, it's a bitter effect. Now to believe that, you have to believe that this line would have continued this way.

That's for you to decide, okay? I'm just pointing that out. Because I want to be able to say something about things farther away from the discontinuity. If you don't like that stuff, ignore those parts of the tables, and just focus on 65 to 66.
>> Okay? Okay, the other thing I want to point out is you, I'm not gonna, I don't have time to present it.

This discontinuity, is bigger for the disabled. When Medicare was first passed, it's bigger, bigger for the disabled, the poor, the less educated, and minorities, African-Americans. By the mid-80s, that's not true anymore. By the mid-80s, the gaps of the growth at age 65 and hospital insurance is almost equal by race, education, etc.

And you can imagine it's because of the programs that came in from the non-elderly, we're focusing on those groups. So again, the margin's totally different by the mid-80s. Okay, so I'm not gonna spend too much time on this. This is just fitting regressions to what I just showed you, okay?

And trying to be reasonably general on the polynomial we're gonna let fit this data. Some would say, well I don't even know why you're fitting the polynomial, that looks like a straight line, but we're gonna literally try and be as general as possible. It doesn't matter what we do.

We get the same estimate, you can kind of tell from that, from that graph. The other thing I want to point out is this is all that we, what, having this much data before and after and with a lot of covariance because this is individual level data. Means we can do a lot of robustness checks and falsification checks.

For one thing, for instance, we can run this regression, not controlling for individual characteristics like education, race and etc, etc, etc. And we can run it controlling for it and see if we get the same effect, and we always do. In fact, usually what happens is the standard errors just fall, meaning we get more precise estimates.

We think we have enough clusters for clustering. We have about 50 clusters that I, I'm just looking at Doug. No one else knows in this room knows what I'm talking about other than Collin. If Collin's here.
>> All of our students back there.
>> Oh, okay sorry. I was, I was thinking of the non, non-economists in the room.

And we can test for discontinuities in every year before hand, too. Right? There should never be a discontinuity at age 65 before 1967, and the discontinuities should only happen after. There's a lot of stuff here. Okay. That's, this is what happens when you do that. All we're doing here.

All I'm doing here is I'm fitting those regressions, two of those patterns you just saw when this is unadjusted. This is the discontinuities at age 65 to 69, 70 to 74, 75 to 80. You can do whatever you want, we just wanted a simple way to summarize it.

This is for all races. The first three columns adjust for no other individual covariance. The secondary columns, adjust, basically, basically for the kitchen sink, and, the first column A of each one is the discontinuity in the pre-period, okay, and you see nothing. And then, she's saying it's what you saw in the glass.

It's following. That insurance rates age 65, 66, 67 are fine under the trend from age 50 to 64. And then, this is the change and the discontinuity from before and after. And, you see what you saw in the glass about a 24% increase, percentage point increase in house trend setting 65 to 6 times the T ratio of 19 with clustering and all that.

Because you saw how smooth that data is. And it's bigger at other ages. 30, 39%. If you don't like that assumption that things would follow that pattern given polynomial, then you just don't like my 39% for 75 to 80 fine. Okay. I'll point out there was no discontinuity for the pay period for those ages.

Is.
>> Okay. Now when you adjust for the co-variates. You can see the estimates don't change hardly at all. The point estimates don't change. All that's happening is the t ratio is getting a little bigger. Because those co-variates are sweeping out a lot of the residual variation but aren't highly correlated, well they're not correlated at all with the age discontinuity Okay, every graph after this now is every outcome.

Okay, first outcome you might ask is, do people use it? So, they've got coverage, but they actually go to the hospital where they admitted. So, this is being a discharge from the hospital, so you had to stay in the hospital overnight to be in this. This is from the National Health Interview survey, but then what we do is we follow this up with National Hospital Discharge survey.

Those people in the know, know that the Interview survey is self-reported, the Discharge survey is based on what the hospitals report, okay? We're gonna get the same results with both. The issue with the Discharge data is, you don't have data before Medicare was passed, you only have net data after Medicare was passed.

With the Interview Survey, we had the data before. Okay. So, this is hospital discharge rates by the age. The dotted line is 1963 to '64, so that's before Medicare. The solid line is 1969 to '70. I was surprised to see this cuz remember, hospital charts is growing even at the younger ages.

Remember that? But, do you see, utilization is right on top of each other. Okay, it peaks when you're an infant. This is not being born in a hospital. This is getting admitted after you're born, okay? Then, it falls. And then, it increases for both ages, f, sorry, before and after Medicare by age.

But pretty solid before and after Medicare and again this is still surprising because cost of insurance did go up. The only, I mean again I put a vertical line here. I honestly think if I didn't put a vertical line there you would say it was somewhere to the right, that the de-couple.

Now, that doesn't look as smooth as the insurance but you're gonna see under the That's actually a big amount. And, it's actually pretty precisely estimated. Not like of 20. More like of four. Okay? So that's what this does. Oh, no, no, no. They do one other thing. Remember the utilization data, I have every year, not just every four years.

So, I can even do changes before Medicare was past, and changes after. Not just levels before and after. So, this is, you can think of these as like diffs at this before and after. The bottom line is the change between 63 and 65, this other line was the change between 63 and 69.

If I difference these two lines, it'd be the change between 65 and 69. Okay. And, you can see, again, what you saw, which is before and after Medicare was passed, the changes are pretty flat. There aren't that many changes in hospitalization, but they decouple after age 65. Here it's starting to get a little.

By the way, all these graphs are tested for anything. If I start adjusting these they smooth out a little bit. They get even more obvious that there's a, a disconnect there. Okay. And then, now, if I do this kind of difference if strategy. Now, we're saying, utilization gap is something like these things at these points, which if you don't like them, well that part of the tables.

These are the you get on discharge rates. I'll just summize it, cuz it's, it's not easy for everyone to understand how you convert discharge rates into hospital insurance rates. But, once can think of this as, here's the simplest way I can explain it. Is given a change in insurance, if everyone only goes into the hospital one time between age 65 and 70, which is not true.

Some will go in two some will go in three, but if everyone only went in once, you, you could only rationalize that growth in utilization at ages 65 to 69. If half of the people went in. Now, of course, it's going to be some woman non, some woman one two three, but you can say that's still a big number.

Okay. And again, the estimates don't change when I do not adjust for anything or when I for everything that's in the which is a lot like a CPS. Okay, now this is what. We're now getting into stuff most people are interested in. I wonder if we showed you there was a first stage.

Right? And, shorts went up, utilization went up. Okay. So now, we're going to look at outcome. Before I get to mortality, there is one outcome in the national health survey that I actually think is looking at. A lot of people will pull it. Cause I think it's lazy, self reporting stuff.

Generally speaking, that should work against us, okay? This is, did you report having unlimited activity? A lot of people call the ADL wave or whatever. I don't know what to call it because I'm not sure it's just a disability, but it is something. And, this is the same graph you saw before, but now the outcome is self-reported limited activity rates, by age.

And, these are now the differences, the change between 63 and 65, and the change between 63 and 69. You can see that before Medicare's passed, and after Medicare's passed the changes are very similar, by age. Okay, this, again, is unadjusted for anything. Around age 65, all of a sudden, you see that the ideal rates start falling from before to after Medicare, but they aren't in the years preceding Medicare.

Now, you might say, well, what the heck is that? Okay. I actually looked at this, this isn't like I the natural reaction would be oh it's gotta be age 75, age 85, its not its not sometimes it's its every 2 years of age sometimes it's every 3. I dont know why tapping.

One thing is, my big relieved about was that bottom line it's not as oscillating but it tends to happen at the same points. The main point is, the pre-summer before and after the knot. So, always have in your head, and these are big by the way. Have in your head that, and this is, to get into the survey, you have to be alive.

>> That's right. So, have the mind that I will show you there's a big mortality reduction. So, that means, even among the people who survive. They have less reporting of limited activities. Usually it works the other way. Like most self-selection models say, it's gonna be this. Sorry the, the weak ones are gonna be the ones who die, right?

So, in the post-period, the more weak one's surviven. Okay. So, the fact that you see that ADL rates went down, means they're not the ones who like literally would be miserable if you kept them alive. Okay. Now, when I show you the cost benefit analysis, I am only going to show you the cost per life year saved.

The cost per quality of adjusted life here should be even smaller. Cuz I'm not adjusting for this right now. Cuz I'm, I don't like the way the adjust for it. I, I shouldn't say that cuz probably some people use it, but I, you know, I don't know how to call by the quality, but it's, it should be understood.

By the way, just as on the side the way we know that this has to be Medicare when we start getting to cost like this we know it has to be Medicare because to Medicare, or Social Security because. The at age 65. And also, when you start doing analysis by region, unfortunately, the nat, National Health and Interview Survey only gives you a range sense.

It doesn't give you exact state unless you get proprietary access. But, we already know that the vast majority of southern states adopted Medicaid late, okay. Like '69, '70. The vast majority of northern states adopted it immediately. So, we can do this change before the south adopted. And, if we see that same pattern in the south, it can't be Medicaid.

Because none of them had, or very few had Medicaid. The patterns are even bigger in the south than in the north. Mm-kay. So, let's move on. Okay. So now, let's do mortality. The nice thing about mortality is unless there's huge fraud in death certificates, you're dead. Okay, 80-

>> I mean it's 80 people have, there's huge do I trust NHRS data on the ADL. Okay. Here, it's more you just have to believe that the US kept decent records on who died. Okay. So now, what this is last for, is we can start looking at other countries too.

Because I can't get NHIS data for Britain or Canada or France, but what I can get is their death records. Okay? Now, the yes is to anyone who did this age specific expansion of a National Health Insurance Program. Every other country all ready had health insurance for everyone.

Or, in the case of Canada, were rolling at health insurance for everyone, but not age specific, okay? So, I'm gonna show you first patterns in the trends. Just so you know that when I show you the age specific discontinuities, they'll all line up. Okay, that we're not finding something that's not in the data.

And let's continue. Okay I'm gonna blast through this. The three sets of countries we decided to use as comparisons were England and Whales. France and Canada. Those have their health insurance programs. The only one that's a little more changing during our period is Canada. Not because they technically actually, everyone had hospital insurance by 1961, but Quebec was the last to adopt.

But, it wasn't age specific. It was for everyone. Okay. And then, for out patient services they also and studied about them in a standard way, but again it was not age specific. Okay. So, this is what happens if we do what the pre kinda did, but didn't do even for five categories.

Tends to use. Age categories, which is fine. So, I am doing here, I just want to show you on trends there's something visible and then we'll get to the discontinuities. This is just a difference in mortality rates for those aged 65 to 69 minus the mortality rates for those age 60 to 64, right.

Cuz that's the which Medicare happens. That's the top line, by NIH, from 1954 to 1989 for the United States. I should have removed the vertical line, but I think you would have said something happened in the late 60s, okay? Just as a point of comparison I showed the exact same graph but now the relative time rate is those age 60 to 64, minus those aged 55 to 59.

Because they're not covered by Medicare, okay? And, can see, you don't see the same pattern, okay? The next thing I do, is I do that, oh, now this is doing it by cause of death, because this is going to be really a big deal when we get to the age specific data.

The top line is heart disease death. That grey line is cancer, essentially neuroplasm. And, the next line down is Stroke. Bottom line is Diabetes. These are the four biggest causes of death during this period. You can see almost everything's driven by Heart Disease deaths and Stroke. You can, if anything you see Cancer starts to go up, this is a well known thing, right?

Like, pew, everyone knows. You have to die of something, okay? So, as heart disease deaths and cans, and stroke go down, cancer deaths are gonna go up, because someone has to clone that death. We're going to actually fit models to this. I'm not gonna go through all that, alright?

That, that's too much for this, but you're gonna see that. It's pretty clear that the growth in cancer deaths is due to the heart disease and stroke reductions. Okay. This is what happens if we do the dumb thing, but they're not the dumb thing. The easiest thing to do with these four countries, which is now look at the difference in mortality rates for 65 to 69 versus 60 to 64 over time for the four countries.

We're using log differences here because it was easier to put them on the same scale across the four countries. We can see they are on the noisy side, but only one is breaking before and after the red line. The other ones are actually tending to trend up, which just means that all those other countries, 65 to 69 year old mortality rates are tending to grow.

A little bit, relative to 1664. But, when I saw that I was like, I'm just really, it's strange that our, the historical went through, this weird phase where the early work really always found that medicare reduced mortality. And, somehow, economists starting in the mid 2000s started to say no, it didn't.

I don't know what that, I'm just saying, I'm probably line more with the early crowd. Now, when I really line up with the early crowd is when we do age discontinuitious. Okay. So, no one sent this before. These are these same graphs you saw before, now the outcome is just more okay?

So, I'll use this. The mor, mortality rate you can see. Oh that's the line. This is for the US. The dotted line is the change between 63 and 65. The solid line is the change between 63 and 69 by age. And, you can see there's a decoupling. This is just for US whites, because I wanted to make them more comparable to the.

UK and France, those gaps got even bigger when I include everyone, okay? And, you can see that there's definitely something going on after age 65, mortality shifting down in 60 after Medicare is passed, and it's actually big, it's quite big. Now, if I do England and Wales, nothing.

If I do France, not much. Now, if I do, what I'm going to do is, since, these lines line up pretty well beforehand. I'm now just going to the 69/65 difference just so I can have everything on one graph without many lines. So, this is cause of death.

The solid line is all deaths and then I have lines for. Heart disease deaths, stroke deaths, and cancer deaths, and they can see is that, again, just like you saw with the trends data, most of the gains are heart disease deaths. The second most is stroke deaths, and then you can see cancer deaths are actually rising.

Now this is where you can see where the competing risk is gonna start coming in. You can see what seems to be going on. If I try and interpret this, I can fit this statistically, which we did right before this conference. It looks like as when you age into being eligible for Medicare, heart disease does go down pretty dramatically.

Okay. Struck us a little, it almost quite a bit, but not quite as much. And then what happens is in the early 70s, okay, at age in the early 70s then the heart attacks start happening, or you start dying of cancer. Okay. Then you survive that. Then heart does go down again.

Okay, that's kind of how a computer risk model would work, okay? So what it would say is, you're pushing off deaths until you get a heart attack later and die, or you get cancer, and that'll take you, okay? It would be disturbing, sorry, it's doing that thing again.

Let's put it this way. It would be disturbing if someone is always lower. So these people are living to age 100, okay? They are dying, they're just dying later. From that, need to do life expectancy calculations, and it's a big number and I'll show you that in a second.

This is what happens if I do the same changes for the US, and England, and Wales, and France. Now, I've, as you know, you already knew that mortality for ages 65 to 69 are worst than in England and France. I'm not sure, I mean, someone could look at that and say, woah there's some weird discontinuity where it's getting worse.

They're pretty similar to each other. I don't know what's going on, I, I'd have to do a whole study of England and France where I can tell it's different from the US, okay? So, now let's get to the cooler stuff. So now we can construct birth colored specific survival curves because we're in this interesting case.

Usually when you do survival curves you have to use a cross-section, right? Because most of us aren't dead yet, right? With these guys, they're almost all dead. Okay, for certain ages. So I can literally, other than migration, which isn't a big deal for these birth cohorts, immigration. I can plot out what fraction of them are still alive by age 70, by age 75, but by age 80 cuz I have the universe of all deaths, and I know how many people are living there at age 64.

So, I'm gonna, I can plot out the survive occurs from age 64 on, okay? Now I'm gonna do that for some birth cohorts. Now, unfortunately, the US microdata only starts in 1960. So that means that the first cohort, at which I observe at age 64, is 1890, the 1896 birth cohort, okay?

That means, the margin along which I do the survival curves, meaning I'm going to get you a life expectancy gain, is the 65 to 70 year age range. Why? Because the 1896 cohort is the oldest I have. All I get from them is that they're not eligible for medicare until they're ages 70 to 71.

For every cohort after that they're eligible for medicare at age 69, 68, 67, then once you get to the 1902 cohort, they're always eligible, okay? But I can compare the 1986 cohort to the 1902 cohort, for instance. See what the life expectancy gain was, and also compare that to England and France to make sure I'm not picking up something random, okay?

So, there what you see is the life expectancy gain is about a year between the 1896 and the 1899 cohort condition of surviving to age 64, and another like two tenths of the year from well I should say 1903 cohort, actually. But from the 1899 to 1903 cohort, and if you do the exact same thing for England and France, you see nothing across these cohorts, okay?

So, now, by the way, that's a huge number. Cuz one year for an entire cohort, well, how many of 'em benefited from Medicare? It turns out, if you divide it by the number of people that were in the cohort who suppositively got the new Medicare, it ends up being about five to seven years.

Okay? Now, that's not crazy, cuz what you saw in those previous graphs is heart disease stats that just drop off, and they don't rebound until age 70 or 71, so it's saying you're pushing that off, okay? Now we also know how many more people were admitted, and we know what the cost per admission was.

Okay, now, that doesn't count for all the other things that Medicare are doing, and Finkelstein has a lot of work saying that Medicare does a lot of other things, but at least on the admission versus the life year, you can calculate what the gain was. Oh. Yeah, yeah, there it is.

Okay, and you end up with about $210 per life year. In 1982, $84, I don't know what that'd be today, is that like $500 today? You guys know better than me. Okay, just so you know, even if it was five times bigger, which there's no way it is, it's still $1000.

Okay, to give you a sense, everyone in this room, unless you are depressed, would be willing to pay $1000 dollars to extend your life for a year. Okay, even the depressed ones would do it. And and also keep in mind that probably cost for quality is even lower, right?

Because we know that the ADL rates went down. Okay, so these are healthier people that are surviving, weirdly enough. One baseline is Britain has a literally a death panel, it's called NICE. The National Institute for Health and Clinical Excellence. When I call it a death panel, I just mean they actually use scientific evidence to say how much we're willing to reimburse you, for a procedure.

And the world they use as, of three years ago, I should look it up again now was, though, they'll reimburse you 30,000 Pounds for any intervention that saves one life here. You have, you just have to cover the rest. So this would be very good. Now, on the competing risk side, when I compare the 1903 the 1896 cohorts so, what we're really picking up is what's happened to life expectancy for those people who got medicare at age 65 versus age 70.

You see that two thirds of the gains are due to heart disease and over one third is due to stroke. The reasons over one third that adds, adds up to over 100% is cancer deaths go up. Okay, so you could conclude that, Medicare increased cancer, I think the thing they conclude is Medicare reduced deaths mostly through heart disease and stroke and yeah die of something.

So it's going to be cancer. I, I don't, by the way, I don't mean to sound so flippant. I'm just trying to get through this. I

I don't think it's cool to die of cancer I'm just saying that like. This is a well known thing one would study what's the effects of the treatments for cancer by looking at the age of death for cancer accounting for the fact, that people are surviving longer, okay?

Now this was the paper I was gonna present and realized it was too narrow for this, conference. So I hope I didn't freak out my discussant Doug. I'm just gonna summarize it. Cuz there's a literature that says that, Medicare increased a lot, okay? And we're not finding that.

I mean, we're not finding, it did increase costs, by the way, a lot. But it had a big benefit. The question is why are we getting smaller cost increases than some of these other studies. Lot of these studies were using aggregate data. They were not age specific, because if you actually look at the Social Security Administration's calculations from the social security bulletin, they were not finding nearly as big lar, as big costs in, increase in Medicare costs, from 65 to 72.

And they have administrative data, then the more recent studies that have used hospital level data, which covers everyone. There's no age specific data in the hospital level data. What I can tell you is we got very fascinated about that, because I'm the labor economist actually. And I happen to know when I was researching this Medicare effect that, the 1966 Fair Labor Standards Act, the extensions that were done.

There could have been a talk on this extended minimum wage to hospital employees for the first time in February 1, 1967. Now you'd say, well hospital employees, they're not paid the minimum wage. Well, yeah. Actually, the non, basically the non-doctors and nurses are, okay? So for instance, a study done by the department of labor, which actually surveyed the hospitals, found that 40% of all non supervised hospital employees in the south, were paid below min, what became the minimum wage.

Those numbers are only 5 and 7% in the northeast and in the west So, there's a lot of variation by state. Another thing that's interesting is, that same department of labor study found that employment rates in non federal hospitals rose 21% in the south at the same time, which works against what labor command theories predicts 16% in the US as a whole.

The study that I'm just summarizing tried to get at how much of that is And how much of that is literally, they're using Medicare to pay for this higher wage labor. Just well, how can they use Medicare? Well, Medicare reimbursed hospitals based on reasonable costs back then. And hospitals literally could transfer the wage bill increase to Medicare by increasing the per diem charge from Medicare eligible patients, so it was completely legit back then.

Now, what's interesting is if you look at the social security bulletin data, I know from the hospital level data the biggest component of the cost increase at hospitals, was personnel expenses, during that period. If,If you look at total costs, it's like 80% of the growth in total costs is personnel expenses, okay?

Not everything else. And then if you look at the Medicare Social Security data from the Social Security bulletin, the biggest increase in hospital charges on a,on a bill was actually the daily rate charged to Medicare patients, meaning the hotel bill, okay. So, we think we have our theory, oh, okay.

I better crank. Bottom line is we collected the panel data on the universe of hospitals from 1960 to 1972, and we basically think that what you're picking up when you pick up that cost increase at the hospital level, is mostly due to the minimum wage. Okay, but I'm not gonna, that'd be a whole different paper.

I only have five minutes, I wanna get into the time changes since the 60s. There's been huge changes in the marginal be beneficiary. I know this is hard to see. Okay, I'm just gonna speak loud. This is the black-white gap in hostile insurance rates before Medicare. Right after Medicare, and then in 1986.

So when you see a big block like that, that means black have less hospital insurance than whites. Before Medicare, that gap stayed the same before and after age 65. After Medicare, you see what I already said, which is blacks benefit more than whites, because they had lower hospital insurance rates, before age 64.

But we see by 1986 is it's neutral. Why? Because a lot of programs can come in at these lower ages to fill in these

gaps. You see the same thing for education. So by the mid-80s, if people use age discontinuities, they're not picking up something that's gonna affect African-Americans more than whites, other than if the quality of the insurance changed, meaning Medi, Medicare is better than Medicaid but beyond expensive.

You see, equally sharp patterns for disability, here I showed you three graphs because this is before Medicare, the, the disabled had less hospital insurance both at younger ages and elderly ages. Then a lot of that disappears, right after Medicare is passed. Then what you see is these gaps, down here, start increasing even by 1974, which they should, because Medicare is coming in to cover the okay?

The main point is, by 197, even by 1978, Medicare is pretty neutral when it comes to disability. So that margin's changed dramatically. This is hospital discharge rates over the cycle, this is saying that the effective medical or, age margin changes even the cycle, not with time. This is the discontinuity in the likelihood that you're discharged from the hospital at age 65 over time at 95% confidence.

You can see the peak was right after medicare was passed. And that's been declining since, as these other programs have come in, but the times that you get big discontinuities, again, bigger, are during recession. What we're trying, trying to figure out is, is that because people who lose jobs under age 65, are having a hard time finding insurance, so the margin gets bigger, when you age into age 65 because if you're unemployed at age 63 you might be in big trouble.

>> Mm-hm.
>> If you're not ineligible for Medicaid. And how much of that is a difference in you know, something else. Okay? But this is saying even ignoring the margin change, time matters, okay? It tends to look like metrics are more important during. And then oh, that's just saying that that's true, that's particularly true of emission due to heart disease, which is a little odd.

And then I'm gonna show you something that 2.4 because my co-author Daniel Kempler did a whole thesis on this. He finds by starting in the 80s, that cost-benefit ratio, which I found was, that we found was really small right after the first pass. That's starts growing dramatically by the 70s and 80s.

Okay. By the 80s he's finding that if you used the ages found in the margin, the amount of spending the protection for the amount you get for the amount of spending is tiny, okay? Now let me explain why that is. In 1983 they passed the propes, prospective payment system, which actually gave hospitals incentives.

Alex, he, you have to read his paper to know why. But it gave hospitals incentives to use high average cost procedures on who people who are eligible for Medicare. Because they reimbursed the patient for average cost, okay? And knew that's not a good, not a good bet. Guess you should price on the margin, okay?

So if they've already paid the fixed cost for the surgical room, the training, et cetera, you might as well use that thing. Okay, so the one we looked at before his thesis was, coronary artery bypass graft. The reason we looked at that is there is a paper in the, in 2007, by Card, Dobkin, Maestas that found big dis, discontinuities in cabbage at age 65.

What we find, this is, estimated discontinuity for national data every year. There was no discontinuity in cabbages at age 65, in any year between 1971 and 1983, 84. All the sudden, and the card data is from here, okay? All of the growth is between 84 and 88 which is right after Medicare, the Medicare Prospectus Payment was passed.

Dao Kim my coauthor actually beats the crap out of this. What he finds is, they definitely did that, and what they did they brought in more people who had fewer comorbidity and gave him cabbage. And then they brought in more people who have hardly any home remedies, gave them angioplasty and they used medical therapies on less people.

And it works exactly the way average costs work. Okay. So, I don't want you to say Medicare's always been great. There's a weird thing, and then I'm not even going to talk about part C and part D. Okay? That's even more of weird okay? So, I'll ignore that.

So that leads to this finding that by the 1980s there are relatively small age discontinuities in hospital insurance and discharge rates, but look relatively large discontinuities in the utilization of surgery, for heart disease for instance. And that's even as angioplasty is becoming more available in the 80's, okay?

And the mortality discontinuities for heart disease don't improve that's my coauthor's paper. So, it looks like they're using more money for worse outcomes or at least not better outcomes. But there I was arguing that the discontinuities supply response, not a demand response, okay? What's going on in the 60's and the early 70's is a demand shift.

Like, demand response, like I'm now eligible, I want. What's happening here is that the hospitals are deciding or the doctors. So that also matters, like, what the reason this pic was taking us forever is we built an economic model to explain this stuff, but you have to be really careful, cuz you don't wanna say doctors are bad.

Because there, it might be administrators doing this, okay? I think I'm out of time.
>> Okay.
>> So those are all the things that become more complex over the last 20 years.
>> Okay, sorry.
>> I'm Ann Stevens, the director of the Center for Poverty Research at UC Davis, and I want to thank you for listening.

The Center is one of three federally designated poverty research centers in the United States. Our mission is to facilitate non-partisan academic research on domestic poverty, to disseminate this research, and to train the next generation of poverty scholars. Core funding comes from the US Department of Health and Human Services.

For more information about the center, visit us online at poverty.ucdavis.edu.