

## Webinar Transcript: [The Opioid Epidemic: A Geography in Two Phases](#)

Good afternoon everyone and welcome to our webinar, *The Opioid Epidemic: A Geography in Two Phases*. My name is Ashley Murdie and I'll be your host today. As a reminder this webinar is being recorded and will be posted on the ERS website next week. If at any time during the webinar you have questions, please enter them into the chat feature and our speaker will answer them at the end of today's presentation. Today our presenter is David McGranahan. David is a senior economist and the Rural Economy Branch Chief in the Resource and Rural Economics Division. His long-term research has focused on rural population and business change with projects on the roles of natural amenities, rural enterprise innovation and the creative class. His current work includes a study of rural obesity and health. Okay, let's go ahead and get started. The floor is yours David...

Thank you, Ashley...uh...Good afternoon everybody. I'm presenting this uh report called *The Opioid Epidemic and Geography in Two Phases*. I'm hoping that by the end of the webinar you will kind of understand uh where this title comes from...uh...Meanwhile, I'm going to leave it a mystery. There are some, a few uh ground rules here that I should mention up front, so this is uh less confusion. One is that, I'm using non-metropolitan counties, anonymous component areas, that define rural...um...This is forced, to some extent, by the nature of data available, which is often at the county level...uh...A second thing is that I sometimes pull mortality data over three or four years to get a more solid uh less kind of iffy estimate...um...But I'm going to try to refer to the middle, I'm going to talk about the middle year so, so I average a pool of 2010 to 2012. I'm going to try to say 2011, so that I'm not always just mentioning this kind of spiel of years during the presentation...um...I guess another thing is that I use age-adjusted mortality, which tries to reduce the influence of differences in age distribution across areas as these differences might affect uh the mortality statistics. And I want to remind people I'm using annual rate. You know, somebody asked me that during one of the practice sessions...uh...We've gotten used to COVID's uh data being presented weekly, so I just want to remind people that it's manual. And the final thing is that some of the data here have been upgraded...updated from the report um because it made more sense to present, you know, the most recent information and I'm not really relying on individual level data, which we don't have yet for 2019. So uh, I think there's one graph that has nice data.

So, let's begin. That's enough of that...um...So, the U.S. opioid epidemic has driven drug overdose mortality rates to triple uh since 1999. And this expansion kind of slowed in recent years. You can see from the graph of 2018 when there was a slight dip, but research, current research is sort of suggesting that there was a substantial increase in mortality in 2020. I think there was something in the newspaper today, this morning, about how uh it might have gone up as much as 20 percent in 2020. So, it's not over. Drug overdoses have historically been primarily an urban problem, but rural areas have increased faster during 2000 well from 2000 to 199 to 199 to 2011 if you look at this graph here the green line shoots above the orange or red urban line. And then after 2000 level, 2011 um the urban wealth and drug mortality has taken over somewhat. They're not big

differences, but nonetheless, there are two kind of distinct trends before and after 2011...um...So, at the end of the presentation, I'm going to come back to this and, you know, we'll... we should understand why these two trends, you know, why these trends have differed uh slightly over time.

What has driven the opioid epidemic? Now, there have kind of been two theories or two approaches. One is that it's been changes in drug demand. And this is uh highlighted in Case and Deaton's work, and they, they've argued that from the loss of economic opportunity for people with no college degree, particularly uh whites... uh...There's been an increase in, in generally in, in despair. And that's reflected in the rises in mortality from drug overdoses, from alcohol, from suicides, which they kind of combined together, into deaths of despair. Now the research results, you know, based on this notion, uh kind of looking at economic changes across the landscape, the counties or across states, show some support for this view, but it has become clear that it doesn't explain everything. There's a lot of other stuff going on that this approach doesn't really address. The second approach is changes in drug supply. And here I've drawn primarily on work by Quinones called uh dreamland and he, he covers a number of things. One of his focuses is what happened in the health industry around in the late 90s and early 2000s. And you know just to spell out some of these...First of all there were new opioid drugs, uh oxycontin in particular is a time release medicine that was very popular. There's a growing belief in the medical profession that pain itself needed to be treated, that you couldn't just sort of wait around until you understood exactly what the source of the pain was. You really needed to treat the pain. And then there was also a belief that opioid drugs were not addictive, which kind of turned out obviously not to be true. And also he includes a brief discussion of pill mills, in other words these drugs got to be so popular that they, that some doctors set up their offices just to, just to prescribe and then maybe nearby there was a seller to prescribe opioids. He also discusses black heroines from Mexico, which was kind of changing uh the way drugs were...illicit drugs were marketed... um...He, he wrote this before the recent uh surge and fentanyl-type drugs and we, so, he doesn't cover that. But, but he's really important, I think, in understanding the first part of the, up to 2011 of the opioid epidemic.

So here, here I've divided the opioids up into two, into three kinds of, you know, trends here. The first is the prescription opioids kind of down here below and they rose up to 2011. And after that, they kind of plateaued and then they've gradually gone down. But that was not the end of the rise in opioid problems, because in around 2011 heroin started expanding perhaps from this black heroine from Mexico. And then came other synthetic sort of fentanyl and it and its analogues... um...And fentanyl, fentanyl is somewhat different from other drugs, because it's extremely powerful and it's used to somewhat, to kind of spice up, if you will, uh strengthen other drugs. So, it's often mixed. So, you'll find fentanyl in morphine or fentanyl in heroin or fentanyl in uh even prescription drugs. And what that means is that once, is that people are being sold cocktails of drugs, rather than, you know, a single drug like morphine or, or whatever. It also means that when you look at the individual trends, the prescription opioids, heroin and other synthetics, they add up to more than any opioid at the top of the, of this chart because, because so often people, the people

end up in more than one of these other types. And so, this, this particularly happened after 2014....um...

So, the next slide I just want to kind of go over a little bit, the age and the demographics of the prescription and illicit phases of the epidemic. So, if we look first um at the orange. So, that's a prescription phase, which goes through 2011. And in that phase, it particularly hit uh...So it always hits current people in middle ages not the older people over 65 and not the younger people under 25. But in this, in this period in the prescription phase it was strong among women in the kind of in their 40s and over in both rural and urban areas, and then also men in that age group in both rural and urban areas. So, um, so, this was something that affected men and women more or less equally. Then if we come to the illicit phase, then suddenly there's a huge...uh...Well let me just go back because there is another aspect of the prescription phase, which is that young men started to uh also be... get involved in this and that's probably uh not through their own prescriptions let's say. But then in the illicit phase, young men became particularly, you know, involved with that. And it was a large increase in mortality, now whereas in the prescription phase the rural was higher than the urban, in this phase that this is particularly higher than, the urban is higher than the rural. So, so the drugs, kind of the problem, the epidemic, kind of shifted to urban areas and, and that's what we saw in the initial graph.

The geography of opioid prescriptions. So, how do we study, you know, um the factors behind the, the, the problem is we look for where the, where the problems with drug overdoses increase the most, and we look for, you know, what are the characteristics of both places or the people living in those places. Our main notion is that prescription drugs, we kind of looked at it simply in a sense that prescription drugs are painkillers. And so you want to kind of have a sense of where the, if that's how they were distributed to this, you know, prescribed for pain, then the geography of pain should be uh help explain uh the rise in prescription opioid mortality. Now physical disability is associated...A study by Krueger in 2017...So, the physical disabilities associated both with chronic pain disease and with chronic pain...um...So, we looked that, at that because we have a measure of that from the 2000 Census, and we don't have any kind of other, other measures. But the Census question is very apt. It's sort of looking at long lasting... it's a long-lasting condition that, that substantially limits one or more basic physical activities such as walking or climbing stairs, reaching, lifting or carrying. So, that notion here in a way is that, is that if people have difficulty doing, you know, walking or climbing stairs, it's often because it's painful to do. So, we would expect them, that physical disability would, would bring about uh prescription opioids uh for people to relieve their pain. Now physical disability, you think of physical disability like it's related to mining or you know physical jobs, but in actuality physical disability does not seem to be related to occupation so much as the general health. For instance, one of the areas where it's very high, if you go to the graph on the right, is West Virginia and Kentucky and, and you kind of say, well you know that must be mining. But, but when you look in the area, physical disability is just as high among women as it is among men, which suggests that there's a more general health problem quite apart from the mining itself... um...Overall, the physical disability is high in West

Virginia and Kentucky, but then it goes down through Appalachia, Tennessee and then it affects um the Ozarks of southern Missouri, northern Arkansas and eastern Oklahoma. But then there also, when you look at a map, you see that it's also high in, in northern California and in eastern Oregon. So, there are patches in a lot of places. It is associated with um low income and low education, but we found that it was, it was, you could say, it did drive the opioid epidemic. Now I just, before going on, we just should look at the ones at the bottom like Connecticut, Iowa, Massachusetts as well as some of the upper Great Plains, and we'll come back to these, some of these states uh in a minute.

Now the rules above overdose mortality, when you look at it by race and ethnic groups, that shows that Blacks really were somehow left out. If we look here at the graph, this is, this is like the percent reporting disability is in the legend. So low is very light blue, seven percent or less, and then the high is 13 percent or more, and we can see that the change in deaths per 100,000 in drug overdose deaths increase very much during the, you know, let's say 2000 to 2011 periods depending on your...the level of local physical disability. And that was true in rural areas for whites and American Indian Alaskan Native communities, but for Blacks there's utterly no relationship at all. And at first I thought, well you know we've made this huge mistake, but then when we look in urban areas we found the same, the same kind of result. And studies showed that the academic literature suggests that Blacks have been less likely to be treated for pain during this period uh when they report it... uh...That's this for instance, these were studies for, in uh emergency rooms in hospitals um...And there, there was a belief in uh that some people have prescribed to, which is that the Blacks, you know, couldn't handle...the reason they didn't give it to Blacks, is because give these opioids to Blacks because they couldn't handle the opioids. But of course, now we understand that nobody can handle opioids. So, they were right that Blacks couldn't, but nobody could. Native Americans can't, Whites can't, and Hispanics uh can't either. So, in a sense the, the Blacks were saved from this epidemic by some false information. And it's because of the, this difference for Blacks, that in general, I started, we've, we've done some of our analysis just for...just for the white population so that this black issue uh would not... um kind of get in the way and cause us to uh interpret the results incorrectly.

So, this is...Here, I'm looking at the... I'm using state, the, the rural parts of state, state rural areas. And uh so they're 47, because some states don't have any rural areas, and down at the bottom it's, it's the percent in the rural part of the state that reporting the percent of adults, 21 to 64 reporting physical disability, and then up here is the change in mortality...uh...This is during the prescription opioid phase, so 2000 to 2011 and then this is the next phase. So here is a fairly strong relationship - not as strong as there was for the prescriptions, but um and that's noted by the, the r squared. That's the variance explained, and I guess I forgot to mention it earlier, but this goes, this statistic goes from zero to one. It's one o'clock one when all or 100 percent when they're all the dots are on the line, and it's zero percent when you can't even draw a line or this and these are regression lines... uh... statistical regression. In any case, this is fairly related and we see West Virginia and Kentucky way up at the top and the other states similarly. There's Connecticut and

Iowa and Massachusetts. They're all kind of down there, but since... after 2011 and beginning with the illicit opioid phase, suddenly there were a bunch of states, uh rural parts of states let's say that, where, where mortality shot up. And it had nothing to do with physical disability. And you can see here is New York, Pennsylvania, Maine, Vermont. The common thing about these states is they're all in the northeastern kind of quadrant of the country. So, something happened in the northeast and overall, the relationship between physical disability and mortality, and mortality just kind of evaporated and, if anything, it was somewhat negative. So why does northeast? Well it also, when you look at the urban... So, we looked at the urban parts of states, and it was the same sort of thing. It was really mostly in the, in the, in the northeast states and including in, in the states that had no rural areas such as Rhode Island or Delaware... um... So, one of the things that we expect, we thought was that this might have to do with employment that in, in the area. And so, we looked at employment change over the 20 years. And the northeast and, and this kind of lists the states down below. So, the northeast... This is not a Census definition. This is kind of one that emerged from our analysis because we include Ohio, which is not normally considered northeastern. But so anyway in this, our northeast, employment, and here is measured by the number employed in the previous year. We, we have a problem with the Census in 2000 and the American Community Survey kind of since then, because they, the Census, used to be just April and so it didn't have a seasonal variation, whereas the Community Survey is year-round. So, it has that into account, but both of them asked about employment in the previous year. So, we used that. And employment in the previous year didn't change much. I mean this is not annual change. This is, this is like the total change in employment in the northeast in this period of time was 2 percent gross. It wasn't very good in the urban areas at three percent, but it was terrible in the rural areas that was minus eight percent... um... And, and in particular the, the northeast, the micropolitan areas where the cities are above 10,000 or more are, were hit and this may have been a decline in manufacturing. We can't tell. But the rest of the country is, was a real contrast except in rural areas, which also declined although, you know, half, by half as much. So, so employment would seem to have some relationship to the illicit opioid phase of the epidemic.

So, we've explored this actually in our last... in our next to last slide. So, in this chart, I've divided up uh counties into whether for the on the left side in the prescription opioid phase, I look at 2000 to so what is this 2009 maybe... um... And this is declined by five percent or more, decline by less than that, who by less five percent or less, include by over five percent. So, these are kind of uh contrasting employment uh histories and we see that there isn't much difference in the northeast or in the country as a whole. So, you know, whereas we've got really strong results for physical disability for this period, we really don't get much, you know, for employment change. Now then when we come to the illicit opioid phase, uh here, I looked at practically the whole 20 years, and, and looked at 10 percent decline, you know over 10 percent, you know, less than 10 percent, 10 percent or less, and then over 10 percent growth. And here again, you have very little difference in outside of the northeast. It's sort of, you know, there is a bit, but I mean it's 9 to 14, whereas in the northeast itself there's a huge difference according to the level of growth. Now somebody asked, uh I didn't see... Somebody asked the question once, well you know how much of this, you

know, is it some of this because uh employers don't want to go where they're, where there's, you know, where there's a lot of drug use where all of potential workers are on drug use. So, we think that that's probably true. It's kind of hard to separate at the same time, but we also did the analysis of changes in the drug test during the illicit opioid phase depending on changes in employment in the previous phase during 2000 to 2009. In other words, did employment change earlier, have an effect on change in opioid or drug deaths...uh...10 years later, or you know in the next phase? And, and we, we thought we would find that because we think that what happened is that fentanyl came in and didn't necessarily create uh new addicts, but it made exist, you know, it made addiction more dangerous for existing addicts. So, if, if there was a growth in the population of addicts during, during the prescription opioid phase, then you know they might have survived that. But then along comes the, the fentanyl and, and suddenly their mortality is going up uh depending on uh on, on local employment rates. So, we think that the, that that employment has a kind of a long-term effect uh and even though that some of the effects looking at concurrent change, some of the effects might have been one way or another... um...So, this is, so this is just this the complete different, completely different experience. So, you can't really think about these two phases is all, it's part of the same epidemic almost. They involve opioids, but they their geography is completely different, and the populations affected are fairly different, and, and so on.

So, now I want to come back to the conclusion...um...So, and, and this and the, and that first graph. So, initially, initially the rural...most in rural areas the, the, the uh epidemic and with it one reason would be because the rural working age population had much higher physical disability rates than urban. Nine percent versus six percent. So that would tend to make uh, the rural uh, mortality rates higher. However, another important factor is that this epidemic was being driven by prescription opioids and these are available or sold through almost ubiquitous drug stores. In other words, it's hard to go places where you're, you know, very far away from drug stores. So, there was very little, you know, impediment to access in, in rural areas to, to the prescription opioids. Then when that, when the urban gains became greater than rural gains after 2011 and the pandemic shifted to the northeast, then rural areas uh kind of fell behind urban areas. One reason being that the rural population is less concentrated in the northeast than the urban population. So, that would just automatically make when you look at national statistics in rural areas uh less prone to the, to the drug overdose mortality epidemic. And then the other thing is that it's very difficult to market illicit drugs in rural areas. You, you can't, you know, it's it, there's no system such as, such as you might have with prescription opioids. And I think that has kept, cuts opioids out of, a lot, a lot of the more rural areas. And there was a study of a couple of years ago about, in New Hampshire and looked at where, where there were drug deaths in New Hampshire, kind of outside of metropolitan areas and they tended to, to follow uh interstate routes so the drugs became you know available in towns along interstate routes, but not or at least much less so in, in more interior towns or towns more away from the um interstates.

So that, that is essentially uh what's in the, what's in the report and I'd be glad to answer any questions.

Thanks David. As a reminder, you can use the chat feature located at the bottom left-hand corner of your screen to submit questions. Alright, we've got a few that have come in so far. First up...David you talked about racial and ethnic breakdowns for one of the phases, but not the other... uh...Is that data available?

Yes, um the report covers it, but I didn't feel it could, could fit in and, and basically during the, I mean, and the results are not very surprising. During, during the second phase for no matter what your ethnic group, whether you were Black or American Indian, Alaskan Native or White or Hispanic, if you were in the northeast, the mortality rates from drug overdoses increased substantially. I mean noticeably and less so outside of the, less so outside of the northeast... um...So, so the second phase, the illicit opioid phase has been you know kind of an equal opportunity killer.

Got it, okay the next question...Another individual noticed that the disability data you used was from 2000. Was there a reason for using data from so many years ago?

Um well of course that was the beginning that was just at the start of this. So in, in a way we wanted to have a constant definition throughout, the throughout the period, but and maybe um, but the Census 2000 had a really good question and that wasn't repeated, so we couldn't really update it...um ...And so we, we just went with the 2000 measure.

Got it...uh...another question is, has the opioid epidemic affected life expectancy?

Um it has, we, we didn't look at that necessarily, but we um, we looked at trends and mortality for instance for the population 25 to 54, the, the uh prime working age population. And without the epidemic, you know, this kind of assumption you can't really hold everything constant, but roughly they, their mortality rates would have declined by 11 percent over the period of the uh in the last 20 years or 17 years I guess... um...But instead, it stayed about the same or rose just slightly. So, it had a big, you know, it had a big effect on, on mortality rates particularly for middle-aged people.

Okay, thanks. This question is referring to slide six. Is that the despair driven epidemic for slide six?

Am I on slide six? So, this is just the retail prescription rates... um...So, that's the most direct, going to be the most direct link between um physical disability and drugs. So, this shows that uh yes, so this is just retail prescription rates and we picked 2011 because that was the kind of the peak of the prescription opioid phase, the last gasp of maybe of it, but yes.

Alright and another question is, was opioid use a result of employment loss?

Okay, well this is an interesting question because we like other people are measuring opioids by death. And that is not necessarily the same thing as use for instance... um...A lot of research has shown that loss of jobs uh creates, that is associated with bad health behavior. So when, when people lose their jobs, then people start overeating, they smoke too much, they drink too much, and then they take too many drugs. Now whether that leads to mortality kind of depends on the

types of drugs that are available. And what's happened with the illicit opioid phase is that fentanyl has become a killer drug, in part, because people are not sure how much they're taking. You know, it's, it's a kind of a partly, it's maybe new or unknown, but partly it's because it's so extremely powerful that, that, that people can uh be killed if when they're not, not expecting it at all. It's, it's not a, it's not a suicide drug. It's at least not an intentional suicide drug. Okay, so yes, it's okay with that, but it isn't always associated with drug deaths.

Got it. Alright, uh this next question is...Does Black uh White differential also reflect differences in access to health care?

Um, it may. I will say that we, you know, it's, it's kind of hard to say, but it probably does, uh but we did not cover that in the report.

Okay this next question is...Does this survey include prescriptions for cancer treatments?

Um so the, the data on opioid retail prescriptions covers all prescriptions...um...At least all prescriptions by, I shouldn't say all prescriptions, all retail prescription. So might not cover uh people getting drugs in hospitals for one reason or another... um...So, I guess I don't know if that answers the question...

Okay um let's move on to the next one...um...Would you conclude illicit opioid use follows interstate routes?

Uh, well that's just, that was just one study... um...And I haven't seen any others, so uh I wouldn't conclude that. You know it's not enough to really conclude that, it's certainly suggestive.

Okay, this question is...What is the leading cause of death in rural areas, not counting COVID – is it drug related?

Um okay I can't say that we studied everything, but we did look at mortality rates for the population 25 to 54. What were the major causes of death? And I guess by, by now cancer is the major cause of death for these people. I think it's 40 annual rate of maybe something like 40 uh per 100,000. But next, uh if you just add together all the drug overdose deaths, that's second. So, it's above heart attacks and it's uh you know above traffic accidents. It's, so it's, it's right up there as a major uh killer.

Okay uh this question um mentions your reference uh that Blacks were not hit as hard as other groups during the pain prescription opioid phase, was disability lower for Blacks suggesting that they had less pain than other groups?

Uh no, I mean they, I mean it's always difficult uh this... these, the physical disability, which we used as a proxy for pain depends on people reporting. You know, are you physically disabled? And Blacks have higher physical disability rates. They're more like, more apt to indicate that they have physical disabilities than Whites. I think they're about the same as the uh American Indian,



Alaskan Natives and, and much higher than Hispanics. Although Hispanics tend to be a relatively young population, so it's not kind of fair to compare.

Okay um let's see...And here's another one...Can you explain a bit more about how opioid mortality is measured in your data source? Uh...Why is it always per 100,000 people?

Um but per... I mean...So we took age groups. So it wasn't, you know, per 100,000 people. It was per 100,000 people aged 25 to 54 for instance. And that's um, I mean you want to put it, you want to be able to compare New York to northern Michigan and the only way to really make a fair comparison is what, you know, is kind of risk. And so, you divide by the population. It could be, if you divide by a hundred thousand, because then you get a reasonable size number. If you divide by a hundred, then the number is you know so many decimals long that it becomes unwieldy.

Okay, and does this data reflect that people living in rural areas are generally older?

Um, well we tried to age standardize all our data so that the age, people's age would not be reflected in statistics. So rural people are older um and they're more likely to, you know, the, the physical disability rate for instance uh is 21 to 64. The likely, rural people are more likely to be physically disabled because they're older and they're also more likely to, to uh have high mortality rates not necessarily from opioids as you saw. That actually the oldest people have very little uh experience with opioids, at least experienced with opioids in doses enough to cause more death. Um so...

Alright...alright okay uh that's all the time we have for today. David thanks so much for sharing your report with us and thank you to all our listeners for joining in today. As a reminder, a recording and transcript of today's webinar will be available on the ERS webpage next week so keep a look out for that. Thanks again everyone. I hope you have a wonderful rest of your day. This concludes our webinar.