

Per Ostmo:

Now it is my pleasure to introduce our presenter, Dr. Yvonne Jonk is an associate research professor within the Department of Public Health at the University of Southern Maine's Muskie School of Public Service, and she is the Deputy Director of the Maine Rural Health Research Center. As a health economist, Dr. Jonk has over 20 years of experience working within the field of health services research. Dr. Jonk's areas of specialization include rural health, access to care, health insurance coverage, program evaluation, and cost and cost-effectiveness analyses. Dr. Jonk received her PhD in Applied Economics from the University of Minnesota. So now I'm going to hand it off to you, Dr. Jonk, please take it away.

Yvonne Jonk:

Thank you, Per. And we'd like to start off by thanking the staff at the Rural Health Research Gateway for the opportunity to present our work on identifying ambulance deserts today. We'd also like to acknowledge the Federal Office of Rural Health Policy for funding this work, as well as the members of our team from the Maine Rural Health Research Center at the University of Southern Maine. We'd also like to thank the members of our EMS expert panel, Gary Wingrove, Kevin McGinnis, and Nick Nudell. I would also like to acknowledge the person who served as the inspiration for this work, and that is the late Tom Nehring who was the North Dakota State EMS director at the time that we started working on the concept of ambulance deserts.

During my former tenure at UND, or the University of North Dakota, Tom had held numerous listening sessions throughout the state of North Dakota and talked about the fact that the state's EMS services were in crisis due to the declining number of volunteer staff. He talked about certain areas of the state that you do not want to be in a car or a farming accident because if you called 911, there were no ambulance services located within a reasonable driving distance. So he was the inspiration for addressing the issue, and our first venue for identifying ambulance deserts was within the state of North Dakota, which is my home state. So thank you, Tom.

Today we'll review the study rationale and purpose, the definition of ambulance deserts, share our methods, and finally we'll share a few of our maps illustrating the prevalence of ambulance deserts. So the declining numbers of rural hospitals and ambulance services imply that remaining ambulance services are being tasked to play a greater role in delivering emergency services in expanded service areas. Compounding the issue is the fact that the delivery of ambulance services has not been systematically integrated, particularly in rural areas. So unfortunately, this lack of systems planning has led to gaps in the provision of ambulance services, also known as ambulance deserts, which are exacerbated across larger geographic areas. So to document these gaps, this project employs a systematic methodology within a GIS framework for identifying ambulance deserts and addressing access.

Our study aims were to build a database of transporting ambulance service locations, create maps of ambulance deserts within each of the states, characterize who lives in these ambulance deserts and understand the

healthcare landscape for those living in ambulance deserts. Our research questions included, what areas of the state are ambulance deserts, what percentage of each state's population lives in an ambulance desert, and how does this differ by rural urban location or by census region? Who lives in ambulance deserts? And then for those living in ambulance deserts, are there other access barriers to obtaining care?

So in this study, we define an ambulance station as the physical location of a ground transport capable EMS service. An ambulance service area was defined as a geographic area encompassing all roads that can be accessed within a 25-minute drive time from an ambulance station. And an ambulance desert was defined as a populated census block with its geographic center outside of a 25-minute ambulance service area.

So in terms of our methods, we created our state maps in ArcGIS by taking the following steps, from the list of ambulance stations that we received from each state EMS office we first Geocoded ambulance station addresses. We then estimated 25-minute ambulance service areas using the road networks available in ArcGIS. Next, we identified populated census blocks with geographic centers outside of a 25-minute ambulance service area and color coded them in our maps to designate the ambulance deserts. We included locations of healthcare facilities, hospitals, FQHCs, or Federally Qualified Health Centers, and Rural Health Clinics, or RHCs, and then we addressed county level differences in ambulance access by rural urban location using the Rural-Urban Continuum Codes, or the RUCCs. We are currently working on comparing the demographic and socioeconomic characteristics of counties with better or worse ambulance access.

So here's a list of our data sources. In addition to the 2020 census block level population data, we're using the American Community Survey five-year estimates, the Robert Wood Johnson Foundation's County Health rankings and the Area Health Resource File to describe the socioeconomic and market factors associated with counties lacking adequate access to ambulance services.

Ambulance data were requested from all 50 states, of the 41 states that responded, 31 provided ambulance location data with no limitations and 10 provided data with minor limitations. Two states responded, but they were excluded from the current report due to major data limitations and data were unavailable or not received from seven states. Major data limitations included not being able to distinguish transporting from non-transporting services. So in other words, services that consist of first responders that do not have a ground transporting ambulance was considered a non-transporting service. Minor limitations included the provision of incomplete information on ambulance station locations. So for example, some states were only able to provide agency mailing addresses, which may or may not correspond with actual station locations, or agency headquarters addresses potentially resulting in the overestimation of ambulance deserts. Any data limitations are listed in the footnotes of the state maps.

So in the analyses focused on the 41 states that we received data from, we estimate that 4.5 million people live in an ambulance desert. Of the 4.5 million living in ambulance deserts, 2.3 million lived in rural counties and 2.2 million lived in urban counties. And note that because we use county as the unit of analysis, some counties contain a mix of rural and urban places. So some urban counties contain communities that are ambulance deserts. We found that rural counties were more likely to have at least one ambulance desert at the census block level, 84%. Rural counties are more likely than urban counties, urban counties had 77% of their counties having at least one ambulance desert. However, because rural counties are less densely populated than urban, just over half, or 2.3 million people, were living in ambulance deserts located in rural counties. Finally, rural counties had higher percentages of their populations living in ambulance deserts, 9.3% on average, compared with urban counties, 3.5% on average.

So here we have a national map illustrating the percent of rural and urban county populations living in ambulance deserts. The national map highlights the following geographic areas of concern. The Southern States, particularly within the Appalachian region, the Western States with difficult mountainous terrain. The jagged coastal areas of Maine, Vermont, Oregon, and Washington had high percentages and/or high numbers of people living in ambulance deserts. So the states with the highest rates, over 94% of their ambulance desert populations living in rural counties included New Hampshire, Nebraska, and Ohio, followed by 75 to 87% of ambulance desert populations living in rural counties in Vermont, Kentucky, Montana, and North and South Dakota. The states with the lowest rates of ambulance desert populations living in rural counties included the northeastern states of Rhode Island, Massachusetts and Connecticut, and the southern states of Delaware, Maryland, and Florida.

In this state, we are illustrating the number of rural and urban county populations living in ambulance deserts. This looks similar to the previous map, but in this map you can see that the states in the South, Texas, North Carolina, Alabama, and Kentucky, and in the West, Missouri, had the highest number of rural people living in ambulance deserts, and those are designated or illustrated in dark green. The Northeastern states of Rhode Island, Connecticut and Massachusetts, and the southern state of Delaware had the fewest number of people living in rural counties living in ambulance deserts.

So we have a sample of five states for you that illustrate what we're finding in terms of ambulance locations. The ambulance locations are the black dots on the right-hand side. The ambulance deserts are identified at the census block level and are highlighted in orange. And the rural counties are highlighted in dark gray, with the lighter counties being urban counties. The number of people living in ambulance deserts are identified in the legends.

On the right-hand side, we're overlaying the location of healthcare facilities, including hospitals, Federally Qualified Health Centers, or FQHCs, and the Rural Health Clinics, or RHCs, we overlaid those locations onto the ambulance deserts

map to give us a visual idea of what other healthcare resources are available in the state. So in Alabama, we have 172 ambulance stations. We have almost 315,000 people living in ambulance deserts, which represents approximately 6.3% of the state's population based on 2020 census data. Just over half, or 46%, or 144,000 of those living in ambulance deserts reside in rural counties, which represents almost 13% of people living in rural counties. So we sliced and diced those data a number of different ways and hope that that is helpful to our policy audience.

So of course we have to illustrate Maine. We have 215 ambulance stations in Maine and just over 82,000 people living in ambulance deserts. And this represents approximately 6% of the state's population based on the 2020 census data. And of those people who live in ambulance deserts, approximately two-thirds, or 54,000 of those living in ambulance deserts reside in rural counties. And that represents almost 10% of people living in rural counties.

Montana is fairly orange, lots of deserts in Montana. It has 142 ambulance stations and just over 140,000 people living in ambulance deserts. So this represents approximately 13% of the state's population. And of those people who live in ambulance deserts, approximately 80% of those living in ambulance deserts reside in rural counties. It's a very rural state. And of the people living in rural counties, 16% live in ambulance deserts.

New Mexico has 246 ambulance stations, approximately 120,000 people living in ambulance deserts. This represents 5.7% of the state's population. And we see that approximately 68% of those living in ambulance deserts reside in rural counties, and of rural populations, 13% live in ambulance deserts.

And finally we have South Carolina. It's included as an example of a state with better ambulance coverage. South Carolina has 461 ambulance stations and approximately 84,000 people living in ambulance deserts. So this represents approximately 1.6% of the state's population. Of those people who live in ambulance deserts, approximately 29% of those living in ambulance deserts reside in rural counties. And of rural populations, only 3.4% live in ambulance deserts.

So in conclusion, we saw that well over three quarters of states in the 41 states contained ambulance deserts at the census block level demonstrating the gravity of the issue of ensuring access to ambulance services. Rural counties were more likely to have ambulance deserts, and of the 41 states, well over half of the state populations living in ambulance deserts were living in rural counties. We'll refer you to the chart book that the Federal Office of Rural Health Policy has just released for more information on how the states rank on the following measures such as population densities, ambulance stations per square mile, ambulance stations per capita, the prevalence of ambulance deserts, and the number of people living in ambulance deserts in each state.

The additional tables in the chart book will help explain some stark differences across the census regions. Sparsely populated rural areas in the Western and Midwestern states make it challenging to provide adequate ambulance service coverage. A hundred percent of all the counties in the Western states have ambulance deserts, for example, but they also tend to have high concentrations of ambulance stations per capita. This is because they have a lot of ground to cover. Populations are spread out, ambulances are driving long distances, and that's why you see high rates of county populations living in ambulance deserts in these states.

Alternatively, in the South, we have the opposite issue in that there are relatively low numbers of ambulance stations per capita and high population densities that are driving high numbers of people living in ambulance deserts. Although ambulance desert populations in the south are largely concentrated in urban counties, a few of the southern states have high concentrations of their ambulance desert populations living in rural counties, and those are Kentucky, Oklahoma, Arkansas, and Texas.

And finally, the national maps highlighted the following geographic areas of concern, the Appalachian region, the western states with difficult mountainous terrain, and again, the jagged coastal areas and rural mountainous areas of Maine, Vermont, Oregon, and Washington.

So this study is the first to document coverage gaps in the provision of ambulance services across the United States. Policymakers need to consider how best to address these coverage gaps within the existing fabric of the healthcare system. In terms of next steps, we hope this study helps inform the work of policymakers interested in addressing these pressing issues underlying the reasons why we're seeing high concentrations of ambulance deserts in rural areas. And that's all we have for you today. Thanks so much. If you have questions, please feel free to reach out.

Per Ostmo: Yvonne, we do have several questions pouring in here. So we're going to tackle a few of them. The first has to do with the nine states that we have no data for, and I'm hoping you can provide us a little bit more information about the efforts to attain data, if there's anyone in those states that was perhaps "responsible" for providing data, and what sort of challenges you had to overcome with getting data from those states.

Yvonne Jonk: Well, first of all, I just want to acknowledge that we were in the field during the pandemic and the EMS services were basically on the frontline, and so we were knocking on this state EMS doors at a time when they were really pressed in terms of time, in terms of staffing, in terms of the pressure that the EMS workforce was feeling during the pandemic. So I want to acknowledge that. The states that we did not receive data for, a few of them have actually reached out to me and have offered to provide the data for us or to us. So of course we welcome any opportunity that the states have in terms of fulfilling that request.

We started with contacting the state EMS offices and we sent out emails, we followed up with phone calls. And so we did give it quite an effort. Some of the states were just, they don't have a well-developed system of tracking exactly where their ambulances are stationed. We asked, we didn't want the mailing addresses, we wanted to know if it's Mr. Jones's backyard on Rural Route 2, we wanted that actual physical location, where is that ambulance parked? And that's not easy to track over time. These services are run by, a good chair of them, by volunteers. And so it's a fairly fluid situation, so we acknowledge that and want to really thank the states that were able to pedal hard and fast and get us that data.

So we're hopeful that over... If we were able to continue this effort and track it over time, that the states will anticipate that and develop some systems where they are tracking this on a more consistent basis because I really think that we hit them at a time when it was very difficult for them to give us their time in terms of tracking and giving us accurate data.

Per Ostmo: So it sounds like, if there's anyone in the audience when your state is not included in this chart book, there could be a call to action here to reach out to the main rural health research center. If there's a future revision of this chart book as a possibility, maybe we can get those states included in the next revision.

Yvonne Jonk: Yeah, we are actively, Per, working on characterizing who lives in ambulance deserts and distances to healthcare facilities, and so that's an active project right now. And so if we are able to get a few more states on board, we'd really appreciate having that data.

Per Ostmo: All right, the next question, how did your study account for urbanized EMS systems that may only utilize one station, but a dynamic deployment model such as a system status management posting format?

Yvonne Jonk: That is an excellent question. I do know in North Dakota for example, there are some ambulance services coming out of Fargo and they go out on a daily basis to rural areas, but they are stationed in Fargo. So we did ask for that information as well so that we could actually plot where those ambulances are sitting during the day. Whether we were successful or not is very dependent on what the state offices could provide us. So we hope to follow up with any of the states that feel that after looking at the deserts for their respective states, if they would like to send us updated information pertaining to that issue, we'd really welcome that opportunity.

Per Ostmo: All right. Next question, Yvonne, could you go back to the definitions where you talk about defining an ambulance desert here?

Yvonne Jonk: Absolutely.

Per Ostmo: We just want to clarify the definition here. So the question is, was any consideration given to response time instead of only distance when defining an ambulance desert? But I think we are actually defining it by time. So could you clarify?

Yvonne Jonk: Yes, absolutely. Sorry, that's an ambulance in the background. I'm not sure if you can hear that? But yes, we took into consideration the road surfaces, so with the GIS software, we went after the speed limits and that took into account the road surfaces. And so what we did was we estimated a 25-minute drive time, not miles, but how long does it take, or how big of an area can that ambulance service get to within 25 minutes of where they were physically located? Does that answer the question?

Per Ostmo: Yes, very much so. Thank you. Let's see, the next question... Actually, Tim Putnam has raised his hand. Tim, if you're still there I'm going to unmute you here so you can ask your question. Oh, maybe not. Okay, we're going to move on to the next question here. Did this study incorporate EMS ambulance utilization as a factor in determining ambulance deserts? How much of this is a supply and demand issue?

Yvonne Jonk: I'm not sure I'm following the question. How much did EMS factor in utilization?

Per Ostmo: I think the question is more about supply and demand of perhaps EMS workforce.

Yvonne Jonk: Yeah, so the workforce issues were not something that we were able to address within this study. So for example, we know that there might be an ambulance sitting in Mr. Jones's backyard, but we don't know who's driving it. So we don't know if it's paramedics, if it's first responders, and I hope I'm answering the question, but that is something that is a next step in terms of us better understanding the workforce issues and how that plays into whether that ambulance service is able to respond not only in a timely manner, but in an effective manner. So we have been working on some projects here in Maine where we're looking at cardiac arrest with some folks at Maine Health, and they are doing a study where they're looking at who was actually responding. And they did find, at least for the cardiac arrests that were in the NEMSIS data, which is the National EMS data sets, that for the most part, those calls that were recorded as cardiac arrest did have a paramedic on staff or that a paramedic was responding.

But of course, that's for the people who made it. I mean they actually brought that patient alive to a hospital, and that is not always the case. I mean, if a service doesn't bring a patient to a hospital alive that that run may not be recorded.

So let's see, in terms of demand and supply, it's a great question and I think that's probably something that we'll need to address in our future work. But I'd

love to follow up with whoever asked that question. If they could follow up with me as to what they're thinking, I'd love to have that conversation.

Per Ostmo: Sure. All right, Tim, if you are there, I'm going to ask you to unmute.

Tim Putnam: All right. Does it work this time?

Per Ostmo: It does.

Tim Putnam: Oh, fantastic. Okay. I typed it in the response, but thank you for the study. I'm glad to see this information getting out. One thing I wanted to know is, and I know you realize this off the top, but it didn't show up in the presentation. Stations vary quite a bit, whether it's one full-time crew at a station or two or three or multiples or whether it's a volunteer station. How did you incorporate that in there? Did you use a 911 call to exit from the station? Because if it takes 10 minutes to get the crew to the station and exit, that expands it quite a bit.

And the other thing, it kind of goes back to the issue of urban areas might be much better covered than what this data show because a lot of urban areas may have a station, but they will stage ambulances. And you alluded to this in your North Dakota example, but I think it happens more in urban areas than rural, where there's stage ambulances to cover urban areas that are a little farther away. So if that's included, I think it may make rural a little worse looking and the urban a little better if that was there, but I'd appreciate your answer on it.

Yvonne Jonk: Yeah. Again, Tim, we did our best in terms of trying to be clear about what we were asking the state EMS offices to give us in terms of that data, but we didn't go around... And we did circulate our state level maps back to the EMS offices when we could to ask them, does this pass your sniff test? Does this look right? But in terms of quantifying where whether there were multiple ambulance services at one location, we don't have that data. I mean we just have what they told us, is an ambulance station, where are they all located?

And to be fair, I think that if we were to follow up and ask them explicitly those questions that you were posing, Tim, that they might come back and give us a different answer. I'm not a hundred percent sure about that. In our request, we tried to be clear about, we would like to know the location, the exact physical location of a ground transport capable EMS service. That's the way we phrased it. And when we talked to them, we were trying to be clear about that. But again, I'm not sure, I think we're going to have to come back to those state EMS offices that feel that, "Hey, we can do a better job of giving you data for those services that have multiple ambulances," and we welcome that. That would be fantastic if we [inaudible 00:29:49]-

Tim Putnam: Based on personal knowledge, I think what you'll find, especially from what I've seen in Indiana, some stations are volunteer response. So there's the call that goes out to someone in their home, then they respond to the station and then



the response, so it makes that 25 minutes a lot longer. The other thing is some stations are only staffed part-time, so maybe they cover 12 hours or eight hours of the day, but they don't cover 24.

Yvonne Jonk: I think [inaudible 00:30:16]... Yeah. So Tim, we had quite a discussion about this within our EMS expert work group, and Tom Nehring was in on that discussion and he was bringing up this exact issue. And the reason why we landed on 25 minutes was we thought, well, it's probably going to take them 10 minutes or so at least to get to the station to start the ambulance up, so that extra 10 minutes is about 35 minutes in total. And we know that the distance between critical access hospitals that policymakers, for better or worse, have placed that at 35 miles in between critical access hospitals. And so we were hedging a little bit on this and trying to factor that 10 minute initial response time to get to the ambulance. But we didn't explicitly say that in this report. But that's why we landed on 25 minutes, was that, okay, there's an additional 10 minutes, but we did 25 minutes because we needed to have a starting point from the station to where people live. Am I making sense, Tim?

Tim Putnam: Yeah. I just think in the comparison, the urban 911 call dispatch to the station and out is probably going to be in the four-minute range and in the rural area it's just going to be... So when you compare rural and urban, take that in consideration. They'll probably have a mean of four to five minutes from call to dispatch out of the station, and rural will probably have that 10 to 15.

Yvonne Jonk: Yeah, I wonder if there's some literature out on that, Tim, we'd be happy to take a look at that. And I know that that response time, I believe it's in the NEMSIS data. The challenge for us to look to work with the NEMSIS data is that we don't have geographic identifiers, we would have to go from state to state and ask for IRB approval on that. So anyway, there's some barriers to us researchers really using NEMSIS data in a way that we would like to use NEMSIS data, and Clay is very well aware of that.

Tim Putnam: Thank you.

Per Ostmo: All right. Thanks for your question, Tim. So Yvonne, could you move to one of the maps that has the hospital locations on it?

Yvonne Jonk: Sure.

Per Ostmo: The next question is, "Was there a comparison of ambulance deserts to hospital deserts?" And this map is a little bit different, so could you explain?

Yvonne Jonk: Yeah. So that actually is the work that we're currently engaged in is to figure out, I don't know that we want to call it healthcare deserts, but I think that's where the question is going is that, all right, so if there's no ambulance desert, what else is there? And if there's nothing there, as in, there's no place for rural residents to even travel within a reasonable distance aside from what an

ambulance service can facilitate, are we going to call that either a hospital desert or a healthcare desert? So we tried to do that just by illustrating, throwing those hospital locations on the map and to just start the dialogue around, okay, so what resources are out there in these rural communities that rural residents can get to within a reasonable time? So that's where we're going next. That's a great question.

Per Ostmo: Thank you. Our next question is about getting higher resolution copies of some of these maps. I know the chart book is very large and some of the images maybe were compressed a little bit, so is there a way to get larger high-res copies?

Yvonne Jonk: Sure, just send us an email. We do have that contact information within the chart book, and so you can either email me directly or email the ambulance deserts email that was specified in the chart book.

Per Ostmo: Okay, perfect. All right, the next question, "Has this study been designed such that it can be an ongoing database, much like the SVI maps from CDC? Could this be updated regularly so that changes are tracked?"

Yvonne Jonk: That is my dream. Well, this was a two-year process for us to go after all of these states and to throw these locations on the map. But as we all know, this is a moving target. I mean, the data was collected in 2020, '21, and so it's aging fast and this is a fluid landscape because there's a fair number of services that are staffed by volunteers and volunteers come and go. And so we would like to update this on a continual basis. Right now we don't have that in place, but it's going to take some funding to do that. So if our audience has some suggestions or thoughts around how we could facilitate that, love to have a conversation. Thank you.

Per Ostmo: Excellent. And we do have some very thoughtful questions here. This next one asks, "How did you differentiate between EMS agencies that offer 911 responses versus only inter-facility transfer operations?"

Yvonne Jonk: That is a good question. We didn't go there. We just simply asked for licensed ambulance services. I know I talked to a group, I believe it was in Missouri that told me that there are areas of the state that they do not have 911. And so that is another issue. We've also been talking about addressing broadband issues within each of the states to see, okay, so how could we fill some of these gaps and could we triage through telehealth? How are we going to address some of the issues that we're seeing currently? But that's a very good question, and if folks out there have ideas as to how we could take those next steps to improve the information that we have out there when it comes to these ambulance deserts, please don't be shy. Give me a holler.

Per Ostmo: Excellent. So our next question is, have you considered doing a follow-up to see what the reality of staffing is? So for example, the Wisconsin Office of Rural

Health conducted a study of ambulance reliability in the Fall of 2022 and found almost 50% of services were not operating 24/7. So this finding in combination with your data is greatly concerning that the size of these deserts are considerably larger at times than your findings.

Yvonne Jonk: Yeah, absolutely. It's the point that I said, "Yep." Okay, so there's a licensed service according to state records, but who's driving that ambulance and how often? What are their working hours? It's something that's a next step. And so we do believe that we've underestimated ambulance deserts, but we've started. We've got to start somewhere, right? So here's our baseline, let's build on this, and that is our next step to go to address staffing.

Per Ostmo: All right. So the next question is a clarification of the roadways used on ArcGIS. So for example, it appears that some of the ambulance bases are surrounded and contained within a desert. I'm not sure if we have one of those examples on a map, but could you explain how that is possible?

Yvonne Jonk: Yep. Yeah, numerous questions around that one. So if I can get back to the definition that there is that nuance of a census block. Just a minute, let me get there. There we go. So this definition of an ambulance desert is that a populated census block with its geographic center outside of a 25-minute ambulance service area. So it's possible that an ambulance service could be located... So it looks as though the ambulance service is sitting in an ambulance desert if that block contains people who are outside of that 25-minute service area from that ambulance station.

So you'll see it in, I think it might be Utah or Idaho, maybe it was Idaho, where it's a mountainous area and it probably takes some time for that ambulance service to get to everyone in that census block. And so if they can't get to everyone in that census block, then it looks as though that service is sitting right there within that desert. So it is a nuance. I think we need to maybe take a closer look at some of those areas and try to refine what we're calling an ambulance desert. But right now it's a limitation of... The census block is the smallest geographic entity that we could work with, at least within that mapping software. And so if others have ideas as to how to refine that beyond what we've been able to do, we'd love to hear it.

Per Ostmo: Okay. Our next question is, does air transport factor into this at all?

Yvonne Jonk: Absolutely. Right, so we only looked at ground transporting. So that's what you see here under the station is a ground transport capable EMS service. We've had conversations with some, at least Life Flight in Maine, and we know that there's a data set out there from 2018 that we could overlay the air ambulance, but it is a conversation where we're going to have to work closely with EMS experts around how to define an air ambulance service area. It may be simpler than this because they're not bound by a road system, so it might just be circles. But those conversations... We are having those conversations and talking about

whether we should overlay the air ambulance over the ground ambulance or how we should illustrate who's covering what bases in what states.

So yes, we're starting those conversations, but we did not include that here for obvious reasons. So the air ambulances are funded in a different way. They're not usually funded at the ground level, so to speak, with communities and communities pulling together and trying to figure out how to support a ground ambulance, that's not how air is funded. It's a very different issue, yeah.

Per Ostmo: So there's lots of great questions and even suggestions here. The next question is, are there any plans for future work to look at states that allow triage but not transport for non-emergency issues? And the example says that, "Our state did that during COVID to help with hospital ER capacity with Medicaid patients."

Yvonne Jonk: Yeah, so can you repeat the first part of that? They're saying, [inaudible 00:42:44]-

Per Ostmo: Are there any plans for future work to look at states that allow treat and triage but not transport for non-emergency issues?

Yvonne Jonk: Okay, so what I'm understanding from this question is that an ambulance service is not reimbursed unless they bring, currently, unless they bring the patient to the hospital. So if there are states that do allow reimbursement of those services to go to a patient and treat and release them, they didn't have to bring them to the hospital in order to obtain coverage or reimbursement for that call, that is also something that we did not differentiate between the states.

There are a number of state level policies, including, no one's quite asked this question yet, but I'm going to bring it up because it's just another example of how these communities that pull together ambulance services, we know that there's also some agreements across the borders, the state borders, but there's variation. It could vary by the state. It could just vary by that ambulance service, whether they've agreed that, "Okay, we'll take care of people in a bordering state, or respond to calls or at least provide some backup coverage." And so you're going to see ambulance deserts along the borders that maybe are not real. There might be some coverage from a neighboring state, but we did not tackle that one just because of the nuances associated with those agreements. And so it would take a fair amount of effort on our part to try to characterize what those agreements look like. So I think that what that person is bringing up is something that we didn't have the capacity, at least not in round one, to address, but happy to look at that in future work.

Per Ostmo: I know you mentioned having some sort of expert work group, but we have a question here, "To what extent were EMS SMEs," and I'm assuming Subject Matter Experts, "Utilized to validate your findings?"

Yvonne Jonk: Oh yeah. Well, we definitely had an expert work group, and those people were acknowledged right here. Tom Nehring was also on that group, but he has since passed away. But then we also passed, and talked to the state EMS offices about the study and about what we're finding, the accuracy of what we were mapping out. We weren't able to do it for all 41 states, but we definitely worked closely with those state EMS offices that were responding to us and that were wanting to see, "What did you find? And what does it look like in our state?" So we're happy to continue those conversations. And so I do believe that we had the EMS folks on board and providing input on a regular basis.

Per Ostmo: Okay, excellent. And yes, we do have a few more questions about accessing the chart book. I have dropped a link in the chat box where you can download the chart book. If you are interested in getting high resolution images, I'm going to drop Dr. Yvonne's email into the chat. Okay. So you can reach out to Yvonne for detailed images or state specific maps,, and we do have a few more questions. Were you able to correlate your desert findings with staffing models? We did touch on staffing a little bit.

Yvonne Jonk: Yeah. Yeah, I can see that there's a lot of interest, and of course that is our next step. It's a natural progression to say, "Okay, so who's driving that ambulance?" So that is, again, I'm sorry to sound like a broken record, maybe a bit here, but that is our next step, and we're hoping that the States are going to... Some of the states actually did provide their staffing associated with those EMS services, but we didn't explicitly ask for it. So it is our next step in terms of trying to better understand, for example, to what extent are there paramedics within that ambulance service.

Per Ostmo: Okay. Were there any kind of relationships found between states that designate EMS as an essential service versus states that don't?

Yvonne Jonk: Yeah, we didn't look at that yet, but that is an excellent question. Yep. Another one on our to-do.

Per Ostmo: Yeah, it looks like everyone's excited for a version two of this.

Yvonne Jonk: Yeah, it sounds like it. Yep.

Per Ostmo: Okay. There are a few more questions rolling in, but for now, Yvonne, can you go to the second to last slide while we kind of sort through a few more questions?

Yvonne Jonk: Sorry, I'm going to make everyone dizzy here today.

Per Ostmo: Yeah, buckle up.

Yvonne Jonk: The second to last slide. Okay, so...

Per Ostmo: There's a gateway slide here.

Yvonne Jonk: Okay, so this is the very last slide. So do you mean this one?

Per Ostmo: Oh, apologies. Well, I just wanted to take a moment to remind everyone that if you want to stay up to date on all the latest rural health research, you can subscribe to Gateway's research alert emails. All of our subscribers will be notified later this week when the recording slide deck and transcript become available. So if you don't want to keep checking back on the Gateway website, you can just sign up for the emails and you'll be notified with direct links to all this information.

Yvonne Jonk: [inaudible 00:49:14]. This is the slide you were referring to.

Per Ostmo: Yeah. Yes. Thank you. And lots of folks... Boy, [inaudible 00:49:26]. Okay, here's an interesting question, "The ambulance locations and deserts would be a great addition to the HRSA UDS Mapper. So could any of these maps be overlaid with things like poverty data?"

Yvonne Jonk: Yes, absolutely. That's actually where we're going is we've been looking at who lives in ambulance deserts and the poverty levels for, so for example, the Erie Health Resource Files, as well as the RWJ data on... Or some of the social vulnerability indices, that's where we're going with this next step is, who lives in these ambulance deserts? Yep, so that's exactly what we're doing.

Per Ostmo: All right. And several questions about states that are missing data. So if you do want to give more information about how you can support the Maine Research Center and provide data, then you can email Yvonne Jonk at her maine.edu address. So if you're from, I forget the states, California, Kansas, and there's no data, and your state is white, then you can reach out to Yvonne for more information about why data was not included, or if you can provide that, that would be excellent.

Yvonne Jonk: Thank you.