Coordinator:
Welcome and thank you for standing by. I would like to remind all parties that your lines have been placed in listen only until the question-and-answer portion. Please be sure that your telephone is unmuted and clearly record any of the parts of the question maybe introduce. Today's conference is being recorded. If you have any objection, you may disconnect at this time. It is now my pleasure to turn the call over to the administrator. Thank you. You may begin.

Shawnda Schroeder:
Thank you. Hello to everybody on the call and joining us today. My name is Shawnda Schroeder, and I am the principal investigator of the Rural Health Research Gateway, also referred to as Gateway. Today, Gateway is hosting the webinar titled: Financial Distress and Closure of Rural Hospitals. For those of you who are not familiar with Gateway, it is a website that provides easy and timely access to research and findings of the Federal Office of Rural Health Policy-funded rural health research centers, with information on that website from 1997 to present. Our goal is to help move new research findings of these research centers to various users quickly and efficiently. One of the ways we do that is we host webinars like this. Our website can be used to find abstracts of current and completed research projects, publications that have resulted from those projects, and really any information you may want about those research centers or the individual researchers who work at them.

Following today's presentation, this webinar will be posted on the Rural Health Research Gateway website. That will include the PowerPoint and a transcription of today's webinar, as well as the recording.

You can find Gateway at www.ruralhealthresearch.org. You can also join our Gateway Alerts to receive email updates when we have new publications, including the archive of today's webinar. You can follow us on Twitter, like us on Facebook, and receive daily notifications about rural health research.

We have muted all lines, but I encourage you to use the question-and-answer chat box at the bottom of your screen or prepare questions to ask at the end of the presentation today. At the end of the presentation, the operator will open up the meeting for questions, and I will read those in the chat box if there is time.

If there are remaining questions in the chat box after we have taken all of the questions on the phone, I will send those out to Dr. Pink following today's webinar, and he can respond to those.

Thank you again for joining us. Now I want to introduce our presenter, Dr. George Pink. Dr. Pink is a Humana Distinguished Professor in the Department of Health Policy and Management, Senior Research Fellow at the Cecil G. Sheps Center for Health Services Research, and deputy director of the North Carolina Rural Health Research Program, all located at the University of North Carolina at Chapel Hill. I am very excited to hear from him today, and thank you again, Dr. Pink, for sharing with us. I will turn it over to you.

Dr. George Pink:
Okay, thank you very much, Shawnda. I greatly appreciate the opportunity to participate and to present in the Rural Health Research Gateway webinar. I would also like to thank the Federal Office of Rural Health Policy who fund all of the work that you are about to see. I'm going to try and be fairly prompt in this presentation because I found that I've made it a lot across the country in many different states, and I usually find that there are a lot of comments in terms of not questions but people's opinions about

what's going on, and I'm really interested in hearing from you. So if it becomes a comment section at the end of the presentation that would be just fine for me because I'm curious to see how you respond to some of the data I'm going to show you.

I'm going to cover five basic topics in this presentation. I'm going to briefly [give] a very descriptive analysis of where rural hospital closures are happening and why. I'm going to describe a model that we've developed to predict the financial distress and closure in rural hospitals and then look at some of the preliminary results in terms of the trends that we find over time. And then some new work that we haven't actually finished yet, but I thought it might be interesting to get some reaction from an informed audience, and that's looking at the communities that are served by hospitals at high risk of financial distress, and what we find is that they are very different that communities that are served by hospitals that are relatively stable. And then I'll bring it all together in a summary.

So, the first thing I'm going to talk about is the rising rate of rural hospital closures. This was the Journal of Rural Health article of the year, primarily because of Brystana Kaufman, who is an outstanding doctoral student at the University of North Carolina, and not a lot to do with me, but I get to take part of the credit. So, one of the first things when we first started studying this issue of hospital closures is they're sometimes difficult to identify, and I'll show some examples of that in a second as well, because what we find is there's a lot of opening and closing and opening and closing. And sometimes the closing is for a week and sometimes the closing is for a year.

There are no secondary databases that we could go to. So, in fact, we have to use a lot of news media to keep up to date for this. We also found some weird things, too, where, for example, the inpatient stays open but the ER closes. We had one hospital that was admitting patients from doctors' hospitals, for example. And occasionally there was some hospital rationalization that's going on by system.

We decided on a definition as permanent cessation of acute inpatient care because that's essentially what Medicare says. If you want to be a hospital, according to Medicare, you've got to have inpatient beds, so that's how we defined it.

I'd also like to formally acknowledge Sarah Young, at the Federal Office of Rural Health Policy, and Brock Slabach at the National Rural Health Association. The three of us, and other people actually, keep each other informed about these closures, and it's a really beneficial tripartite arrangement.

Where have these hospital closures happened? Well, there's been 80. In fact, that's already out of date. There's now 81 rural hospitals that have closed since January 2010, 123 since January 2005. You can see the map. On the map, you can certainly see that there's a predominance of the closures in the South.

The numbers, or when do they actually happen? We started getting interested in this in about 2012, when you can see we were at the beginning of a steep climb. You can see a small drop in 2016. I don't know what's going to happen in 2017. We've had quite a bit of activity in the last month or two. I don't know where we're going to end up in the end of year, but it seems to be leveling off at least in the last 24 months or so.

There have been interesting differences in terms of the types, the consequences of rural hospital closures. You can see that we differentiate, this is the same data as the previous slide, however we break it down into abandoned and converted. What we mean by that is that sometimes when a rural hospital closes, it morphs into a new kind of healthcare facility, and typically, these are mixtures of

ambulatory care, primary care, urgent care, emergency care. In some cases they have been rehabilitation facilities and nursing homes and those types of things. That's what we called converted. They've gone from acute care to something else.

Abandoned means they no longer provide any healthcare services at all. In other words, the building is no longer used for healthcare. In some cases, the building has literally been abandoned. We found examples, I think there was one about three months ago that was converted to condos, office buildings, and so on, but they are no longer in the business.

You can see that the preponderance of rural hospitals have been abandoned, only about 40% of them convert to something else.

This happened last month. This is an example of a rural hospital in Tennessee. About two months ago this hospital was in our closed list. It just reopened last month after being closed for about a year. There are different reasons for this happening. Sometimes it's financial. Sometimes bankruptcy has been declared.

More typically, we just had another one close, I believe in Texas, because of the hurricane that hit Texas last month.

And there are different reasons for this, but we try and keep track of an online database where we have a current list, and this has now been taken off.

Where were they? Again the preponderance, almost 2/3 of the closures have happened in non-Medicaid expansion states. Only about a third are in expansion states.

What were there Medicare payment classifications? The vast majority of them have been critical access hospitals and rural PPS hospitals, not as many Medicare dependent hospitals and sole community hospitals yet. However, you'll see at the end of the presentation, Medicare dependent hospitals seem to be a little more vulnerable in the future going ahead.

Their bed sizes, again the one to 25 represents a large number four critical access hospitals in the list of closed hospitals. A few more 26 to 50 beds, and not very many than are larger than 50 beds.

How rural were they? Again neither category is the most rural. The Metro is more or less the rural fringe of a metro area. The Micro is in between those two. So these are typically and fairly isolated areas.

This graph looks like a neat figure. It's actually a lot of work to put it together. What this shows you is, let's pretend you live opposite a hospital that is closed. This measures the number of miles to the next closest hospital that you will now have to drive to access inpatient care. The number of miles is on the X axis, sorry, on the Y axis. The number of hospitals is on the X axis. So you can see that probably 20 or so hospitals, for 20 or so communities, on the far left, patients are not driving very far, five miles or less. It's not a big deal.

We do get concerned, however, though when we see that there's quite a few communities that are driving 20, 25, and upwards of 30 miles. In fact, there's one hospital in Nevada where people are now driving 109 miles. This shows you the patient access implication of some of these closures.

Why are these closures happening? Again, there are no secondary databases that we can go to, so what we've had to do is really go to news media, go to websites, go to, in some cases, talk to people in the community, and in some case actually talk to the hospitals and staff themselves. Generally, they fall into three large buckets. Market factors – and again, none of these will be a surprise to anybody on the webinar, I don't think. But small, declining populations, and high rates of unemployment and un-insurance, high dependence on public payers, and lots of competition. The hospital factors include low daily census, difficulty getting physicians to cover the ER, for example, deteriorating physical facilities. I've been in one or two of these facilities where literally the roof was leaking. I was in the hospital a few months ago where only half the hospital has power because they can't afford to pay the electrical bill. Those kinds of things often have patient use effects as well. In the small minority of cases, there has been from fraud and patient safety concerns.

By far the most commonly cited reasons for closure is financial factors. These are typically hospitals that have been losing money for a long period of time. It's not just a recent phenomenon. It could be a decade or more. They've typically got a high burden of charity care bad debt. It's the insufficiency of the cash flow to cover their debt complications or even current liabilities that drives them into closure.

We looked at the sample of the hospitals in the year before they were closed. Almost all of them were unprofitable, illiquid, and unable to service debt. They were typically small, 150 or fewer FTEs, $10 million in salary expense, negative or close to zero net income and net assets. Interestingly, most had already closed obstetrics. Obstetrics, as you know some of the work that Minnesota has been doing has shown there's a lot of small hospitals that have closed obstetrics in the last decade, a lot of it because of difficulties in obstetrics coverage but also because It is perceived to be a money loser. But in the hospitals we looked at, closing obstetrics had already been done.

In summary, most closures are in the South, almost two-thirds. The number of closures has been increasing until the last 12 months or so. Most are CAHs and PPSs and are in states that have not expanded Medicaid. Patients are now traveling between five and 30 miles more to access inpatient care. And most hospitals close because of financial problems.

So that's sort of the description of where closures are happening and some of the insights as to why.

This is the latest closure, well it was until about two days ago. This is in Texas, and this is the one that the storm closed. They are planning on reopening. We'll see whether that happens or not.

This is another one that isn't closed yet, but I wouldn't be surprised if it did. This is a $90 million billing fraud scheme in the lab that could portend a bad omen.

If you are interested or if you want online up to date data, literally when a hospital closes on Thursday, it's usually on our website by Friday, so it is real time map, and it has information about where they are. It also has whether they converted or whether they have been abandoned. We have general descriptors of whether they are still in the healthcare business or not. You can go to this website, and it is maintained.

This is just a quick summary of an article that was recently published in the Journal of Healthcare for the Poor and Underserved. This is an interesting study that Sharita Thomas did. She looked at other rural hospitals. There are lots of hospitals at high risk of financial distress, but some of them close and some of them don't close.

We were wondering what it is about hospital that close that are at a high risk of financial distress, how do they compare to the ones that stayed open over the same time period even though there were also at high risk. What she found was that the ones that closed had a smaller market share, they were located near to another hospital. And I guess of more concern is that they were located in markets at a higher percent rate of unemployment and a higher percentage of black and Hispanic residents. I'm going to come back to that because our new work gives us some additional insights as well. This study sort of prompted us to go in a new direction and start looking at the consequences of the communities, and that's what I'll be talking about later.

So, I'm sorry, wrong way here. A lot of the pressure, a lot of the results that we found in closures led us to develop a model in predicting financial distress and closure. And why we did this is because the concern about hospital closures was increasing and we wanted to develop an early warning tool or early warning system that would give boards, managers, and state and federal office policymakers sort of advanced notice, "Hey, you better look at this hospital. It looks like it's in pretty rough shape and at risk of closure, at least at risk of financial distress." That is what prompted the model.

We looked at a lot of different models of financial distress. This has been around in the corporate finance literature for many, many years. Of course, what we found was that there was very little in the literature that would be generalizable to rural hospitals, so we really ended up developing a model that was specifically designed for rural hospitals and took into account their realities, as it were. We tried to develop a scientific approach. We had a development and validation sample, so we didn't develop it on one sample and then just use it willy-nilly. We did try to keep to a scientific method approach. We used publically available data.

Essentially, we had three goals – to identify the hospitals at high risk, to have high face validity, so when I'm presenting it to folks on this webinar, I'm hoping most people will say that makes sense or if it doesn't, you'll tell us why it doesn't. And it should be parsimonious and easy to understand. A lot of the finance, the corporate finance, financial distress models are what are typically known as black boxes. They use neural networks and all kinds of complicated econometric techniques that practitioners and lots of people fail to understand. We wanted to use a fairly easy to understand model.

We started with essentially accounting theory, and that is these equations, which I won't go through. But essentially, long-term profitability leads to growth and net assets and equity if you are investor owned. Unprofitability essentially results in decline in value over time. So, we use this as our starting point to come up with different signals of financial distress. Financial distress is not easily categorized. You can't say, well this hospital is definitely under financial distress and this one is not. It's not the same thing as bankruptcy, which is a formal legal definition. Financial distress is sort of a continuum of different signals, as it were. What we hypothesized was different kind of signals and an increasing signal strength as you go from the left to the right.

Unprofitability, that's bad, but every hospital can have a bad year. So just because you're unprofitable in one year doesn't mean you are under financial distress. But if you're unprofitable for a lot of years, that's probably the first sign. The next is equity decline. So if we see a huge decline in the value of the organization in one year, that would probably be a stronger signal of unprofitability. Going to technical insolvency, which is where your liabilities are greater than your assets, and then finally closure being the ultimate sign of financial distress and probably the strongest signal.

We hypothesized those four signals and then, of course, the next thing said, how did the data show? Did the data show that those signals are valid? What we found – again this is during the model development stage where we're using 2013 data – we found that a quarter of all hospitals had negative cash flow margins. Only 16% had the huge decline. 11% had technical insolvency. Less than 1% actually had closed.

This sort of verified what we thought were the signal strengths hypothesis, as it were. What was the sample size used in the model, Brenda wants to know? It was every single rural hospital in the United States, so it was 2,300-2,400 hospitals. So it is the population of rural hospitals. It's not a sample. In fact, I just answered my own question. It was 2,257 hospitals. So what we found was that the overwhelming majority, two-thirds of rural hospitals, had none of these financial distress signals. About 1/5 had one signal and so on. It's really the hospitals with two, three, and four signals that we were concerned about. What we set about then, trying to answer this question, which is two years ago, could we have predicted hospitals under financial distress today? Because we are trying to develop a predictive model, because it's no good saying to a hospital, you know, you're under financial distress, when they are already under financial distress because they know that. This was a predictive model to try and say, can we use data to predict two years from now whether a hospital is going to be under financial distress or not?

This is our simple parsimonious model that we came up with. Essentially, it's got a whole bunch of information on the left. What we decided to do was to come up with these four boxes. So we have these high-level financial distress, mid-high, mid-low, and low. And what we do is we take the data on the left and we assign every single rural hospital, all 2,300 of them, to one of those four boxes, so every single hospital is either high, mid-high, mid-low, or low. How do we do that? Well we use a complicated model that uses these four categories of variables – financial performance, government reimbursement, hospital characteristics, and market characteristics.

What we found, these weren't just determined beforehand, we also looked at many different measures of profitability. We looked at different measures of ownership and size and so on. We found the measures, which I'll briefly show you but won't go through in detail on this slide, these are the precise variables that we used. We looked at all kinds of different specifications, these variables, and these are the one that came up with the best statistically behaved behavior – they had the best statistical behavior in our model. We don't claim that they are perfect. But from the data we had, they seemed to work the best.

The other thing that we included in our model, which I don't think I've ever seen in any other model, were these specific benchmarks. Those of you who are familiar with critical access hospitals, we developed a report, and we still do, for every critical access hospital. About five or seven years ago, we did a survey of all the CEOs and CFOs of the critical access hospitals in the country. We had about a two-thirds response rate. It was a phenomenal response rate, essentially asking them what values on various indicators they use that would indicate a high but attainable level of financial performance. We didn't want to have unrealistic benchmarks, but we wanted to have ones that are attainable and meaningful. They came up with these and again, I'm not going to go through each one of them. Essentially, these are benchmarks for profitability, liquidity, capital structure, and cost, that if you're meeting these benchmarks, then most the CEOs and CFOs were of the opinion that this was an indicator of good financial performance.

We use this, and this actually ended up being very important component of the model, because it is a broad-based and fairly statistically significant measure of whether a hospital is going to be in financial distress are not. If you're not meeting any of these benchmarks, there's a very high likelihood that you

are in financial distress. On the other hand, if you're meeting a lot of these benchmarks, then that would indicate the reverse, that you're probably doing pretty well.

When we ran the data, using the benchmarks, we found, interestingly, that about 14% of the hospitals were not meeting any or only a very few of the benchmarks. Only 6% of them were actually meeting 80 to 100% of the benchmarks. I take from this table that it's tough being a manager of a small rural hospital. It's tough to hit all benchmarks to have really good financial performance on many different financial measures at the same time. These data sort of confirm that.

I always put this slide in because I never know if there's an academic or an economist in the audience, as it were. Essentially, this is the measure, the model that we used. It's the uni-dimensional index. We calculate, essentially, financial distress. It's an FDI score that is based on the probability of different events. It's a multi-line function, and I'm not going to say more beyond that. I would be happy to talk with people off-line if they are interested.

When we first ran the model, of course, we first wanted to see how well we're tossing hospitals, every single rural hospital in the United States, into one of four buckets. So let's look at the characteristics of the hospitals in each of our buckets, and when we did, we were quite happy with the results. What this shows is that hospitals that are in the high bucket on the far right. You can see that there's much higher probability of closure and negative equity and decline in equity and negative cash flow margin or profitability. It goes down sort of in a fairly nice fashion until you reach the far left, where hospitals at low risk of financial distress, there were no closures and certainly there was a much lower percentage of hospitals with negative equity and profitability.

So, this we took as kind of face validity of the model. Of course, we don't know. There's always things missing, which is what I'm going to talk about right now. You'll never get an academic to present a model without pointing out all the limitations of the model. Certainly there are definite limitations to our model. Probably the most important limitation, and one that I agonize over, is that there is no measure of system affiliation. We know, just through anecdotes, that hospitals that are affiliated with systems are less likely to close than hospitals that are independent. The two challenges we have are there is very little data on system affiliation, and secondly, there are 50 shades of gray between being wholly owned and wholly acquired, wholly bought and then something that's on the other end, being wholly independent. And there's everything in between, including management contract, partial ownership, the CEOs have a coffee klatch every Friday afternoon, and everything else. And how to measure the continuity of system affiliation is something which I haven't solved and I haven't seen anybody else solve yet.

There's nothing in the model about the medical staff composition or the numbers. And of course most rural hospitals are highly sensitive. Financial performance is highly sensitive to the number of medical staff.

The state and county government, sometimes there's sales taxes and local levies that are buried in the cost report. We don't know what those are. There may be community circumstances happening, such as fundraising campaigns. And finally, if the CEO resigns next week, that could change everything. Of course, our model uses historical data. So the bottom line is that all those may have a very real impact on financial distress, and that may or may not be captured in our model.

The implications of that, of course, is that if we had had that complete information, if we knew all of those things, that might result in different classifications of hospitals. Some that are at mid-high risk may be elevated to high-risk and vice versa and mid-low may be low. So there are limitations.

The other thing that's important to point out is that closure and financial distress are really very different things, that there are significantly more hospitals at high risk of financial distress, but closure is still a relatively rare event. It's got a lot of press. There's been 120 of them in the last decade. Out of 2,400 hospitals, 120 hospitals is still a relatively rare event.

Therefore, it's important to remember that if the hospital closes, it's almost certain that it was high risk of financial distress. Just because a hospital is at high risk of financial distress does not mean that it will necessarily close or even probably close.

So, the findings, I think that our model has a fairly good predictive power. When I've gone across the country and presented at this model, a lot of state flex coordinators and state offices of rural health folks have told me when I've shown them a list of hospitals in their state that I think are at a high risk of financial distress, I'd say it typically gets 80% to 90% of them to say, yeah, I agree with those. Typically, it makes more type II errors. In other words, we tend to miss hospitals. If we say you're at high risk of financial distress, the hospital usually is. Sometimes the model does not capture hospitals that really are at financial distress, at high risk of financial distress, and the model doesn't capture that. We tend to make more the type II errors.

Okay. Now, we've gone through the models. Some of the trends that we are seeing in the findings brief that came out a year ago. We are about to start running the new data, because we just update the model, and I will show you some of the results for that. But what we found is that we ran the model for all rural hospitals four the last four years. What we found was, in fact, an increase in the percentage, the proportion of hospitals at high risk of financial distress over the four-year period.

In fact, to be honest, I actually find this to be of greater concern than the closures. Closures, there's 14, 15 in the last year. It's awful for those communities, but I think the risk, the secular increase in the proportion of hospitals at high risk of financial distress over all geographic categories except the West, this actually concerns me more because I think it's an indicator of future problems that could be larger than the closure problem we have now.

This shows you the risk of financial distress by hospital types. Again, as I alluded to a few minutes ago, the Medicare dependent hospitals seem to be, there are not as many of them, but the proportion of them at a high risk financial distress is higher than other groups, as well as rural PPS hospitals.

The conclusion from this findings brief was that there have been increases from 7% to 8.1% in 2016. The largest increases were in the South and the Northeast. And then 13 to 19% among Medicare dependent hospitals. The rural referral centers still seem to be fairly immune from these financial problems that face most other types of rural hospitals.

I'm going to try to finish up in the next four or five minutes so we have ample time for comments.

This is work that we are still working on. So, take it with a grain of salt. What we are interested in here is that we wanted to know how the communities that are served by hospitals at high risk of financial distress, how they differ from communities that are served by hospitals are not at high risk of financial

distress. So we really wanted to take the subsets, the smaller subset of the hospitals that are at high risk and compare them to everybody else and see how they differ.

This graph is about two weeks old. What it shows is that again the hotspot for closures and financial distress continues to be the South, particularly Florida, Alabama, Tennessee, Arkansas, and Virginia. Although there are not many hospitals in Virginia. So it continues to be really a southern problem, as well Texas as well. A lot of states in the Midwest have no hospitals that are rural and at high risk of financial distress. So this map will be in the findings brief.

We looked at a lot of different things, and the characteristics of the communities that are served by hospitals at high risk of financial distress, but the one that really stuck out at me and the one I guess I have the greatest concern about is the impact on the ethnic and racial composition of the communities. What we found is that the hospitals in the communities that are served by hospitals at high risk of financial distress have a much higher proportion of white and a much lower percentage of black community residents. What this is saying is that communities that are served by rural hospitals at high risk of financial distress are much more likely to have a higher proportion of minorities in the community. And I guess what we're concerned about is the impact and the implications this might have for exacerbating a lot of the existing rural/urban health disparities, but also, that closures may be exacerbating the disparities within rural communities as well. This is something that we are going to be eager to continue examining and seeing what the potential impact are.

To conclude, from this study, communities served by hospitals at high risk of financial distress had significantly higher percentages of residents who were black, who did not graduate high school, and are unemployed, again high-needs communities.

Communities also had percentages of residents who reported fair to poor health, living with inadequate social/emotional support, obesity, smoking, and a greater number of potential years of life lost. This really is a very worrisome finding, because, essentially, it's saying that the communities that are served by these hospitals are more vulnerable. They are at increased risk of losing access, perhaps exacerbating some health disparities, as well as the loss of hospital and other types of local employment, which could make the consequences of closure even more concerning.

In the last minute, I will sum up everything I've said. In my opinion, the data sort of indicates hospital closures are going to continue. They're probably going to occur relatively more frequently in disadvantaged communities. I hope the model convinced you that financial distress is a very complex phenomenon.

I think a lot of people in healthcare community look at rural hospitals as being sort of fairly simple, straightforward, basic healthcare organizations, but what we found is that it is very complicated to measure and predict financial distress.

The number of rural hospitals at high risk of financial distress is growing. Nine percent of rural hospitals are at high risk of financial distress and that's up from about 8% the last time we ran the model. There is emerging evidence that disadvantaged communities are more adversely affected by closures and financial distress.

They call me Doctor Good News.

I'd like to acknowledge and thank my colleagues, particularly Mark Holmes and Brystana Kaufman who helped with the development of the financial distress model. We have an incredible team, though, and all these people have contributed to this work in some way.

This is just a list of places where you can access our data, as well as the Gateway, the Information Hub, and so on.

I will stop talking there. It is 1:42 p.m., and hopefully I've shown you that not all academics are windbags.

Shawnda Schroeder:
Thank you, George. I'm going to ask Emily if she would now find if there any questions on the phone.

Coordinator:
Thank you. At this time, anyone wishing to ask a question or make a comment, please press star followed by one on the keypad telephone. Please be sure that your telephone is unmuted and clearly record your name when prompted so that your question may be introduced. Once again, anyone wishing to ask a question or make a comment, please press star one at this time and record your name clearly at the prompt. One moment please for the first question.

Dr. George Pink:
Shawnda, I can answer some the questions that are in the chat box if you would like.

Shawnda Schroeder:
Absolutely.

Dr. George Pink:
Brenda Parnell asked, are quality indicators used in the model? No, they are not. All of the indicators in the model I have shown you and there are no quality indicators in there. That would be an interesting hypothesis. I assume your hypothesis might be that they got poor quality, patients might be going elsewhere and there could be financial consequences to that. I guess that would be reasonable. That would be an interesting hypothesis to test.

Linda asked whether the age of the people in rural areas was a consideration. We did look at age and we didn't find any statistically significant difference.

Ellie, why do you suppose your model is more prone to type II areas as opposed to type I? I suspect it's because of the missing, incomplete data, the discussion I gave you about the fact that we have missing data and the missing data is not allowing us to capture hospitals that are at financial risk when if we knew the data, it would be capturing those.

I missed John Supplitt's question.

Shawnda Schroeder:
John asked, how does your model compare with other models such as that reported by iVantage?

Dr. George Pink:

I don't know how to answer that, John, in that they have their own model. They use different indicators. We've never actually compared hospital by hospital results. I know they typically, NRHA reports a greater number of hospitals in financial distress than our model. I'm not going to say, there are two different models, I'm not going to say one is better than the other. They're just different.

Michael says, what you see -- what implications do you see in using this data for policy advocacy and helping policymakers understand the reality of our challenges?

I'm an academic, Michael. I have no idea how to answer that question. I think the results are – I think our relatively scientific evidence is that are a lot of rural hospitals that are under financial distress. I think there are reasons for that. I think beyond that, how could you use it for advocacy? I will leave that to others to comment on.

I'm try to go back up.

Shawnda Schroeder:
Yes, I can take you back. There's one that says, have you trended the amount of time a hospital has remained in financial distress before closure?

Dr. George Pink:
We have done that. In fact, we've also looked at how individual hospitals change because sometimes they move up categories. They move from high to medium-high and then medium-high to medium-low, and so on, as well. There is a lot of variation. I would have to say the most frequent is that they have been losing profitability, they have been unprofitable for very long period of time.

That is the most common finding. It's very seldom that you find a hospital that had a bad year immediately closing. Unless it's for a hospital that has been bought by a system, and they're rationalizing services or something like that.

Shawnda Schroeder:
Emily, before I read the other two in the chat box, is there anyone waiting on the line?

Coordinator:
We are showing no questions at this time.

Shawnda Schroeder:
Okay. Then we do have two other chat questions. Do you think serving a high percentage of poor elderly white population such as found in southern Oregon increases the risk for closure?

Dr. George Pink:
I definitely agree with poor and elderly. I'm not sure about white. If you want to look at these individually, there's no question that the communities where hospital closures have happened have got a higher percentage of poverty, unemployment, un-insurance, and greater dependence on public payers. If you consider Medicare as being for the elderly, the white population, in fact, I would say our most recent work would say it's the opposite. If you had a poor, elderly, black population, I would definitely agree with what you said.

We don't know the individual effects of each of these factors, the poor, elderly versus race. But, certainly poor and elderly is going to make you more vulnerable.

Shawnda Schroeder:
The final question as of right now in the chat box is that there's also evidence showing that hospitals that are in financial distress are more likely to have preventable medical errors and patient safety events. Is that something that you have looked at?

Dr. George Pink:
No, I guess this is sort of along the same lines as what Brenda was asking a few minutes ago. We have not looked at that. I think it would be interesting to do so. Particularly if you're thinking about some of the things, for example, I'm thinking like a hospital compared to different sources of quality data that we may be able to try. That is a good suggestion. I'm writing these down as I am speaking.

Shawnda Schroeder:
There is another question. Are there differences for CAHs, SCHs, MDHs, and rural PPS hospitals?

Dr. George Pink:
Yes, that was what I try to get at. If I go back to – this slide here. That shows you that – this is the percentage of hospitals at high risk of financial distress. It shows you that Medicare dependent hospitals are actually the highest proportion of hospitals. There's not as many of them. There are a higher proportion of them that are at high risk of financial distress. Critical access – there's a lot of them, but the proportion of them is smaller.

About how many hospitals are there in each of those categories? Critical access hospitals are around 1,300. PPS is a list available of hospitals that have the highest risk by state. I'm finishing off Sarah's question. More than half the hospitals are critical access hospitals. PPS are 300 or 400. MDH are a couple of hundred. Sole community, a couple of hundred, something like that.

In terms of the hospitals at highest risk by state, the agreement we have with the Federal Office of Rural Health Policy right now is that we can share the list of hospitals with the state Office of Rural Health folks and the individual hospitals. If you are one of those – if you're on the webinar and you're one of those people – you can email us, and we will be happy to send you a list of the hospitals in your state.

I should ask, since I see Jenny Burges is on the participant list, if that's her understanding as well, but I think it is. If she wants to confirm it, I would be happy to hear from her.

Coordinator:
Ms. Burges, if you're wishing to have your line open, please press star followed by one.

Dr. George Pink:
Thank you for confirming, Jenny.

Shawnda Schroeder:
I do not see any other questions in the chat box. Are there any other on the line?

Coordinator:
One moment please.

Shawnda Schroeder:
While we're checking for the last questions, I am going to switch over the slides for one moment just to share for those who are still on the call the date and time and topic for the next webinar being hosted by Gateway.

Coordinator:
And we do have one question that came up.

Shawnda Schroeder:
Fantastic.

Coordinator:
It's from Mr. Stafford. Sir, your line is open.

Mr. Stafford:
Have you been able to quantify or estimate the rate of closures or the financially distressed hospitals from your time sequence that you've examined?

Dr. George Pink:
The rate?

Mr. Stafford:
Right. An estimate of how fast this is occurring.

Dr. George Pink:
Well, I did show you at the very beginning of the presentation. I showed you the number of rural hospitals by year. So I suppose, we could take those numbers and divide it by the total number of hospitals, if that's what you're getting at per year. If that's what you're getting at.

Mr. Stafford:
Well, yeah. That's an answer that I think I can work with. Thank you.

Coordinator:
Thank you, and I'm showing no further questions.

Shawnda Schroeder:
Okay. We do have one other that seems to be typing into the chat box. I will give them time to share their question while I just share with all of those on the call. I'm going to stop one minute. We will let George answer a question. Can you please share email address for obtaining the state list?

Dr. George Pink:
I would be happy to do that.

Shawnda Schroeder:
I can share it over on the left-hand bar of the webinar list. I will do that now.

Dr. George Pink:

Thank you, Shawnda.

Shawnda Schroeder:
Absolutely. If there are no other questions, I just wanted to share that this webinar was hosted by the Rural Health Research Gateway. We do have another coming up in November. You will see that save the date on the screen now. George's email is now included on the left-hand side of the presentation. If you to reach out to him, that is how you will reach him.

As a reminder, the webinar from today, the recording and the slides and the transcript, will all be available at that same link where you see the save the date. We have all of our old webinars that have been presented at that link. If you also like to sign up for our Research Alerts, you will have an email to notify you whenever we have a webinar coming up, a recording available, or a new research product that has been completed by these research centers. That would be those briefs that Doctor Pink has been sharing today. And he spoke about their future work. That will also be released through Gateway.

If there are no other questions, I do want to thank Dr. Pink for being on the call today. I want to thank all of you for joining us.

Dr. George Pink:
Thank you, Shawnda.

Coordinator:
This just concluded today's conference. Thank you so much for joining. You may disconnect at this time.