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Event

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Presenter

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- [Ronda] Well, wonderful. Welcome. Thank you for the opportunity to come here today and to share with you... My opportunity is to corrupt you today. And I say that very proudly because one of the things I have found is that nursing has to play catch up when it comes to policy.

Having worked at the national policy level for many years, we, as a profession, still have to basically prove our worth. And I don't know about you, but it was amazing to me, a couple of years ago I had the opportunity to go to the American Academy of Nursing annual meeting. And one of the topics that still kept coming up is what actually is a nurse?

And so, what it reminds me is that now that I've been a nurse for 30 years, why are we still asking that question? It's actually really sad. And from a policy perspective, it puts nursing behind the eight ball. So, how do we change that? And so, what I want to do, if anything, is encourage you this morning to really shake things up, look outside the traditional norms of how we've been doing research and part of what's really going to take us to move to the next part is to look at how do we use data to inform policy.

So, after I completed nursing school, I basically got into lobbying. And that was an interesting experience. It's not one that necessarily advocate for a lot of people. But my first thing was working on nurse prescription writing. And so, it was very fascinating. It was amazing what you could do to get votes, also very disheartening.

But that being said, one of the things that really impressed me from that early point is that if I had a number, I had your vote. And if I could say that number in three different ways when I had maybe a couple minutes of your time, I had your vote. And I have found that to be true ever since then.

So, how do we push that to the next thing? Well, one of the statistics I grew up with, that I still laugh at today, particularly when I teach statistics, is four out of five dentists who recommend gum. Okay?

Recommend, tried it. Now, if you ask the majority of dentists, what will they say about gum? Don't eat it.

Right? And so, this is where I first started getting into how do we use numbers to basically tell a story. And this is really a statistic that so many people have used for years and years and I'm still entertained by it. Of course, what they didn't tell you in the fine print is that maybe they only surveyed five dentists. Who knows? Who are all getting payouts from Trident.

So, this is also where I learned to develop a certain amount of healthy skepticism and cynicism as we looked at data. But, again, one of the things that I have seen as we use databases and we're trying to tell a story is that there's so many different ways to portray that and to use that information in a meaningful way. Because a lot of times, if I'm trying to convince you to do something different or to think differently, I need to catch your attention.

And so, a recent example of this is I'm working on a big data project and I had on my laptop, which I carried with me different types of presentations. And it just so happened I was in the airport, saw one of the chief nurses that I've been trying to run down. And so I said, "Can I have five minutes of your time?" And so, in those five minutes, I whipped out my laptop, had a canned presentation, showed it to her and the contract was signed two months later.

So, having that different types of messages, other people all I can use is the one graphic and that will be all I have the time for. I can't, as a researcher, go and say, "Well just read my article on the latest journal," because a lot of eyes will glaze over. And then, of course, we know trying to get access to articles can be quite an experience. So, I don't want to put people into that position.

I want them to hear my message. I want them to hear those numbers. So, anytime that we can take something and make it easy, self-explanatory, that's where you get people's attention. Even when you're trying to change policies that seem to be set and immutable. So, what is policy? Well, what's been fascinating about this to me is that policy is really what makes us tick whether we like it or not.

Of course, a lot of times what happens is, or at least what I have found, is that there's advocacy, politics, and policy. And they really are very different but they're very intertwined. I think when we think of it being very impassioned, that's where I look at the advocacy work. The politics is the stuff that we are tormented with daily on from the news, I think is that's where we see that, you know, where people are taking facts and figures and taking a certain part of it.

I also look at an example. If you were to listen to the news and they had this great headline on something in healthcare, then you went back and looked at the original article, what are you going to find? Something very different. And I think those are things that we do need to be mindful of when we go forward, is how do we really sell the right story? What does that messaging that we want to get out, particularly from research?

How do we want to utilize that in the best way possible? So, the healthcare system has really moved to more population health. And this is, I think, where nursing has a strategic advantage. So, nursing looks at patients in context. So, how do we capitalize on that?

Well, when I look at social determinants of health, that's a patient in context in the community. So, how do we put the two together? Even within a hospital, look at everything that's going on with a patient while they're hospitalized. It's not just because of the diabetic asthmatic with hypertension that was just readmitted 30 days ago, they also have family issues.

They have how they understand healthcare, their level of literacy. All of these factors come into play. I think nursing's uniquely positioned to capitalize on that. So, how do we do it? How can you do it in each of... each and every one of your roles? How do you capitalize on the social determinants of health, population health, patients and context?

To me, they're all intertwined and I'm sure the purists would be upset that I would use those definitions all together, but it is essentially all within the same domain. How do we describe patients? Where they live, understanding that their interface with health care is a very microscopic point over the care continuum, but how do we describe that?

How do we optimize? How do we get to what is a nurse? Again, 30 years. I've been a nurse 30 years, we still really cannot clearly articulate what nursing is. I find that very upsetting and I want you to be upset about that too.

How do we define a nurse? It's not a license. It's not that they care for patient because the majority of the population has no clue what that means. So, how do we get to something that they can understand? So, one of the things that I've worked with now the majority of my career, which, in hindsight, that explains a lot of my ticks or quirks that, if you know me, that explains it works with big data sets.

But one thing that I have learned with big data sets is I can get answers and they may not necessarily be the answer you want, but it at least gives you that number that I can then influence policy with. Now, I also get to teach statistics and one of the things that I enjoy about teaching statistics is I look at statistics as a tool much as I would a blood pressure.

Same thing. The advantage is, is that usually when you mention statistics, people run from the room. And so, the ones that have a certain level of fortitude will say, "Okay, I'll hear you out. What are you going to say about statistics?" But what's fun about statistics is you're trying to figure out why? Why are things happening? And this is where I think, again, we can capitalize on this.

So, big data sets. Years ago, I was working on a big data set and running into problems with coding. And if any of you have ever used SAS, it's a great way to lose years of your life waiting for it to work, especially the older versions. And I'm sitting there trying to figure out why this code was not working. And in those days, it would basically get to a certain point and just stop.

And then there was no reason why. And then it eventually morphed and it would turn red. And you're like, "Great. Red means what?" And it could easily be something like an extra space, really quirky things. Of course, now the newer versions of SAS are a little bit more user-friendly.

But one of the things that I found in using these big databases is really the lack of understanding that even the people who manage these databases had. So, I was doing some work at CMS and one of the

first things I did as any good researcher would do, is I went to see how many Medicaid beneficiaries there were in a 10-state analysis I was doing.

And so, I was using the raw data that was on the mainframe at CMS. And what I found is that CMS had six different sets of numbers that they were putting out and reporting publicly that created a lot of excitement within the agency, not necessarily good excitement.

Of, course, you know, they did the typical, "Well, your methodology was wrong. You don't know what you're doing, your coding was wrong." It turns out I was right because I had the raw data and that between myself and the Kaiser Family Foundation, we were right in terms of the actual numbers. No one within CMS had the right number of beneficiaries. And so that to me, was a very eye-opening moment. I'm sure they still have my name on the "do not let her enter list" since then.

And in the process of really trying to use the data while I was there, I did crash the mainframe three times. And I can tell you what, they know exactly who did it. So I would, if it crashed, I'd go and get a cup of tea so I wasn't there when they would show up. But again, here it is, a larger government agency sitting on an incredible amount of data that wasn't being used.

And that, again, really upset me because using that data could really help us point to where are areas for improvement. And so, I was able to do that and it was still a constant battle. Anytime you're trying to show something that disproves what's considered the norm or what's accepted to be the truth, it's not fun, but I still think it needs to be done.

And so, there's tremendous opportunities in these large federal data sets as well as what's going on in the state. So, I've been in South Carolina now for two and a half years and it's been quite an adventure. I think one of the things that's been fun for me is having worked with national data sets for so many years and seeing all the disparities, all the differences that went on in the southeast.

And now to actually be there and see what's going on from a research standpoint. And I think the one thing that really has struck me is the complacency. And, of course, I really get the attention of people in South Carolina when I say that, but there is a certain amount of complacency with that as the norm, so it's okay. And I'm like, "Well, it's a norm if you want it to be that way."

So I've been trying to shake things up all within... The guys are doing research, you have to be careful with this. And so, what I've been doing is basically going out to different organizations and asking for data. Now, I'm sure you know what the response to that is. So, I have signed away my firstborn to get the data. Now, the trick is that, don't repeat this please, I don't have a firstborn, but it's worked.

So, I'm trying to leverage the fact that I've worked with large data sets my entire career and we're trying to do this to improve the health of the state. So I have all of the insurance information for the entire state. I am getting more data from hospital systems, any data, but we have extensive encryption protocols so that everything's protected and now we also have the licensure data for the state.

And so, from this, we're trying to get to some of these questions of why. So but part of it is, I mean, if you think about it, what we traditionally do in healthcare is we'll use just the licensure data, it tells us

how many nurses there are. Those that do anything. I would argue it doesn't. I mean, we can cry shortage, and we're going to get to that in a moment, but what does it do?

Does it change our hiring practices? Does it change your education practices? Does it change our nurse to patient ratio at the bedside? I would argue, no. It really doesn't. I'm going to take that a step further. Readmissions are a big issue right now across the country and it originally started off as a nurse sensitive indicator.

And there's problems with that because if a patient's readmitted, just as if a patient develops a pressure ulcer, it is not just reflective of nursing care. So, I... And a lot of people know this, I have a real heartburn when it comes to nurse-sensitive indicators. I think we have to have team-based care indicators. So that being said, readmissions are an incredible problem.

One is because the average cost of a hospital admission is about \$40,000, the average cost of a readmission is about \$52,000. So if you assume that you're not supposed to get the money reimbursed for that readmission, that adds up really quick. So \$52,000 times 2 is 1 FTE. And so now that I've been able to delve into some hospital databases, I find that what ends up happening is the number of nurse FTEs with high readmissions is decreasing.

They just cut the FTEs off. It's actually pretty exciting, not understanding that by doing that they're going to have poorer patient outcomes pretty soon. And so, this is the normal practice, but this is putting many different siloed databases together to get to get to that answer. So the CFO loves me. The CNO doesn't quite know what to do with me and the nurses at the bedside are like, "Could you please get us more?"

The other thing that hospitals are doing is they're looking at overall readmissions, how many readmissions do we have? And they will even tell a provider, "There are 10 readmissions on this unit." Now, what does that do? Doesn't change practice, doesn't change the care, doesn't change the outcome, but yet, there's this facade because we have the numbers, we can solve readmissions.

I haven't seen it, have you? And the same thing with even knowing how many nurses we have. It's not necessarily dealing with the number of nurses that are needed at that bedside for the next shift. So how do we get it to that next level? So this is where we have to really start looking at nurse workforce and outcomes.

And this is combining a lot of different databases that aren't traditionally linked, but fun stuff. We're also finding too that... Who here has a wearable watch with like an iWatch? Okay. Do you realize that you're collecting data each and every hour and you don't own it?

Harnessing that data, harnessing social media data can also help us understand patients. Why is it sometimes patients will go home with high hemoglobin A1Cs and they're back in the hospital the next day? Why is it others won't? Part of it's the community. So some people started looking at this and they'll start looking at ZIP Codes, for example.

What do we know that's going on in a particular ZIP Code? Now I don't know about you, this is a question that's really bugged me. To me, ZIP Codes are macroscopic. There's not enough fine tuning in

that. Once we can get it down to the census track, then it's a little bit better. But there's still a lot of information. Problem is, if I can go to the grocery store and buy that quart of ice cream, because it's been a long week and the grocery store prints out a receipt saying, "On your next visit, try this other brand of ice cream," why can't we do that in healthcare?

Well, the main thing we have in healthcare is an incredible misunderstanding of HIPAA. Now, just to let you know how old I am, I was on the original HIPAA committee. So it can't blame me because that went through a federal process so it was not my fault. But the majority of people do not understand HIPAA.

And so as a researcher, you try to get the data and that's why I joke about selling my firstborn. I shouldn't have to do that if I had the right protections in place to make sure the data's being used in the right way, I should be able to get access to the data. Well, that's easier said than done. And so, now that it's taken me about two years to amass an incredible inventory of databases throughout the state of South Carolina, but I also have encryption and privacy things built into place.

I know that I have to be very careful with that data at every move. But I would really challenge you to, how do you partner with others? How do you reach out? Because one, even if you have the largest database in your state, you have just that one database. How do you partner with others? And that's how you can start to get to the fun questions.

Again, how many nurses do I have? Well, that's great. But based on that number of nurses, what's the outcomes in this community, community A versus community B, census track five, six, seven versus census track five, nine, eight. That is actually what's going to help transform care, in my opinion, at least. But it's worth a shot. And why not?

So, the same thing with nursing. If we're trying to just describe what nursing is, how many nurses there are, how many nurses have had claims against them, how many nurses have breached their license? What does that tell us? It's interesting. It's not something we want to say in the headlines, but does that change nursing practice?

How do we take that information and put it back in the hands of educators so that maybe there's some changes in training for the future generation of staff? There's really a lot of great opportunities and so, one of the things that I'm a really big advocate for is where practice partners with academics.

There really shouldn't be any research that's just one way or the other. It shouldn't be just academic research, it just shouldn't be clinical research. When you put a team together, it is amazing. Now I know what's so fun is we get students to do team projects because, well, we do that for different reasons. One is because we don't have as many assignments to grade, right?

If we're doing team assignments, then it's only 6 versus 36. Same thing with real life. How many of you have had the opportunity to work on a fabulous team where everybody pulled their weight and got amazing things done? The sad thing is it's about 40% of the room. But it's not impossible. It's the same thing like a team.

Teamwork is the same thing like a marriage. You have to work on it every day. When you form that team, you have to say, "Here's how we're going to work together. Here's the expectations." And you keep reiterating that. I think those, again, one of the challenges that we just don't talk about that we really do need to do. The other thing I can say is that data only takes us so far. And one of the projects we worked on in trying to figure out some of the outcomes that were going on in a big health system in Wisconsin is that we actually did a survey of nurses.

And so, after this, the report that keeps coming up from the Gallup Foundation saying that nurses are the most trusted profession is wrong. The reason being is because we'd even go out at 3:00 in the morning onto the units and say, "Could you please fill this out?" And we'd give out cookies and kind of different incentives. And the nurses would be like, 'Oh sure, we will fill that out.' I get home, check the next day, how many surveys were filled out?

Maybe one. So nurses lie to get out of doing surveys. But I still think we have to pursue. We still got quite a nice response, but it was just funny to me to have experienced that I'm trying to use the surveys to help supplement what's in the big databases. And survey research is really difficult because of that response rate.

But what it did is it helped us fill in some gaps. And so, that's what's fun too about research teams, where you can combine qualitative and quantitative and mixed methods and big data. And so, now we're at the point where we're using MATLAB to do our research. SAS is actually not big enough to handle what we're doing.

Not a program that I would advise a lot of people to use. But what's fun is when I first started doing this kind of research, SAS really was the biggest program. And I started talking about a 500 variable regression to explain why we got certain outcomes in healthcare. And I got a lot of looks, especially from former professors. They're like, "Obviously, you didn't learn anything because a 500 variable aggression is not possible."

But if I'm going to describe that patient in context, it's more than five variables. I mean, can I really describe any patient, any nurse with just five variables? I can't. But what's the majority of the research that we have in the literature now? It's about five variables. So now with new technologies, we can start looking and seeing what are the variables that are driving the outcomes?

What really is explaining what we're seeing in practice. So again, if we look at data and how do we use it to inform it? And part of it's really the message. We can go on a long time, especially as researchers talking about all the technical aspects of how we derive that variable, how we derive that element, what is that R-Square?

But the majority of folks are not going to be able to understand that. So one of the things that's fun with that is that if we put the data into pieces that policymakers can use, that's where the power comes. And, again, away from the manuscripts, the manuscripts are very important to inform us, but they're not very important for policymakers.

Again, we want their attention. So, whether that policymaker is a legislator, whether that policymaker is within a college of nursing or within a health system, we have to put it into elements that they

understand. And this is actually kind of fun because it's like, how do I figure this out? How do I take this really complex analysis and put it into little bits of information that anybody can understand?

So, one is you have to really start with what you have. And so, now that I've been working with the licensure data from a state, it's not as robust as I thought it was. And what's fascinating is, is that when we first started using the data, one of the things I realized it was two years late and so we started getting into the issues with the folks and saying, "Two years late, what the..."

You know, by then, so much has changed in two years and I'm trying to say, "Here's the ebb of flow of nursing within the state. Here's the growth of nurse practitioners in the state. Data's two years old." Very frustrating. Well, what happened is, is I started nosing around asking questions. Turns out the state has not funded the infrastructure for the platform that the data's collected on.

So they essentially, once the licensure data has been collected, it takes them two years to clean it, which is obscene. There's huge federal databases that are cleaned within a year, not two. So, I don't know if this is going on in other states, but my assumption is that it is because if it's one then there's a problem with that.

So, two years to get data. So, I'm already behind the eight ball when I'm trying to show that there's a shortage in a state or that there's a growth in nurse practitioners. I know I have a lot of CNOs in my state that are concerned that the number of students, their staff that are students in nurse practitioner programs are pulling nurses away from the bedside. And they considered that because we have programs for NPs in the state that were pulling away...we're actually contributing to the nursing shortage within the state.

But with data that's two years old, I can't show that or I'm not going to, let's put it that way. So, then what I have to do is then get into the HR data within the health system and that's really exciting. Not only do I have to sign away my firstborn, but probably put a second mortgage on my house in case something goes wrong because HR data is very protected, but again, it's something that's really not used.

But by looking at that HR data, I know a lot more than actually, you know what? It's what's in the licensure data. But even then, it's not enough. If I want to know what program that nurse is in for their graduate degree, I'm going to have to do a survey. So I've partnered now with nurse managers and directors to do surveys of their units, to not only find out what program all of their students and what truly is their last degree obtained, but also are they married?

How many children do they have? Do they own a home? These are all factors that if we applied labor economics, we can start to describe the workforce that much more. But you can see I've gone to all these different data sources. I'm still standing, but I'm trying to get to this: how do we really understand the workforce that we have?

How do we really understand the workforce needs that we're going to have in a few years from now? And again, it's not just one database. So years ago, when I first started working on HRSA, we put together maps. Medically-underserved areas are throughout the country. One of the things that has really fascinated this about me...or has fascinated me about this is that in the state of South Carolina, 46 of 48 counties are either a HPSA and/or MUA.

HPSA is a health profession shortage area, MUA is a medically-underserved area. So that's the majority of the state where I live. Are those numbers that you know and what does that mean? Well, basically, it also really indicates a state that's highly rural. And we do know that. You go out into the communities, the distance to care is quite far.

When we started looking more at the data, trying to really understand where are nurses working, where are nurse practitioners working, where are primary care physicians working, overlay that with counties within a state, we paint a much different picture than when you look at just the nation as a whole.

So, it actually becomes kind of fun in a weird way. I know as a researcher. So, one of the things that's important is that as we're trying to play catch up, as we're trying to change things, we have to be very clear what our methodology is. And this is something I found that was very helpful. If I just told somebody, "Well, I've done the statistics," I'm taking a big chance that they're going to consider me an expert and they're going to believe me.

So, we recently in South Carolina, had a big change for scope of practice for nurse practitioners. And one of the challenges that we've had and this, I'm using this, as an example because there's so many issues that are like it, is that the physicians would say, for example, "Well, nurse practitioners are not practicing in rural communities."

Now they had absolutely no evidence to support that. But because they said it, and it was coming from a physician then it was true. And that's essentially how it was perceived by the legislature. So, when you're trying to come up against that, how do you do that in a proactive, meaningful, thoughtful way? So, one is we thought, "Well, if we're transparent with the methodology and we lay it out there, and say here's what we did."

Then what does that allow the naysayers to do? Not much. And this is where it becomes fun. So, I'm sharing this with you to hopefully give you some ideas. This is what we did in South Carolina and it was actually successful. This is also a strategy that's been used at the national level. And very transparent, said, "Here's what I did. These are the people I got involved. Here's the data I used. Here's the methodology."

Now, majority of folks who are making policy have not had years and years of methodology classes. But if I'm up front, and I convey it in a clear, meaningful way, then folks get it and they're like, "Okay, well now you're an expert even if I have no idea who you are. Obviously, you're taking great pains to make this clear and transparent."

So, what we did is we actually just recently, in this most recent version are looking at basically areas of penetration. So, one of the things that was really not helping the state is that there was this requirement that physicians had to supervise nurse practitioners within a 45-mile radius of wherever the physician worked.

Now, I got a little rambunctious and, you know, I'm not from the south, so that got to be interesting. And I said, "So is that as the crow flies or the crow drives?" And folks just kind of looked at me with like, "Well, why are you asking that?"

And I'm like, "Well, because 45 miles flying is different than 45 miles driving. So, where's the evidence base behind that 45 miles? So, I had some students and we called across the country. So, where do you think the evidence base was for that? It doesn't exist. It was essentially something that somebody had come up with and it worked.

And then the gossip mill traveled across the country. Absolutely fascinating. No evidence base whatsoever. And nobody had really defined crow flies, car drives. But yet that's what was used to restrict NP practice. Didn't matter if it made sense or not.

It made sense for somebody and everybody caught onto that, so it was very fascinating. So, we started looking at the licensure data and taking where nurse practitioners actually worked. And that was one of the things in the older databases that only had their mailing address. And what we found is that their mailing address was their home address. And so when we overlapped the maps, we found that there is this corridor that goes from Greenville kind of in the upstate all the way down to Charleston and it looked like that's where all the nurse practitioners were.

So, if you looked at a map that way, by all means, you could say nurse practitioners are not in rural communities, but the way the licensure data was set up, is it set a mailing address and it didn't really say work address. So when the rules changed and it was work address, then we had great data because then we could overlap it with the physician data and the physician data was where they worked.

So prior to that point, we were comparing apples and oranges. And so, no wonder it was so hard to really define what nurses were doing in the state. So by using geographic information system technology, we're actually able to do some mapping. And what's fun about this is that people can look at maps and understand a lot even if they really don't, they think they do, but it's really important to do that because again, graphically and very important, again, putting the methodology there.

So there's no question. You can look at this and know exactly what we did. That's what it was so important. So, South Carolina has one of the worst nursing shortages in the country. And we see this every day. And one of the things that has happened in the state that to me is interesting, is the high use of travelers.

So despite what the financial impact of that is, it's also going against what I think, we as a profession want, is to have a stable workforce. And so, by having travelers come in and out, it makes it very difficult. What I've seen some hospitals do recently is that they really do appreciate the travelers because it allows them to keep the units open, but it's also significantly driving up the cost of care.

And so, the chief nurses are put in the position of, "I need nurses so I can have the units open," but at the same time they're getting yelled at because they're driving up the cost of care, the operational costs within the system. So chief nurses are really in an awful position with this.

And in looking at data across the state, no matter what we do, there are just simply not enough people in the state to meet the growth and demand for nurses with all the professional needs within the state. And so to me, the only way to do that is to bring people from the outside. So, when I interviewed for South Carolina, I was currently in Milwaukee and had left a snowstorm and went down to nice, sunny, azaleas blooming, South Carolina.

That really was a great time to interview me because I'm like, "This is good weather versus the snow." And so, when I was here on Saturday and I got out of the car and there was snow flurries, I'm like, "I don't miss this." But how do we really take our nursing resources and meet the demands throughout the country?

So, there's one thing to worry about what's going on in our state, but what's going on in the country. And so one of the things I like about this graphic is that it's showing states where there is a surplus and also states where there's a shortage. So I don't know. What would it take to get people moved around so that we were meeting the needs for every day?

It's just an interesting thing. We've had different opportunities, different things that have worked out over the years, but we still have a long ways to go. So, how do we take that to the next step? Well, again, I'm really enjoying infographics. And I don't know if you've seen many of these, but what's so fun about this is I'm taking a gazillion data points, all this amazing knowledge and I'm boiling it down to something really simple.

You know, again that four out of five dentists. So now if I take this and then actually work with not only my licensure data, but then also my supply data from the universities and colleges within the state and then also the demand data from the employers for nurses in the state, I can then combine those databases and put together and say, "Here's where the need is."

And so for right now, in South Carolina, I know what's missing are experienced nurses. We have the new grads come out and get jobs, they stay for a couple years and then they leave. And that really has left healthcare in a bind. So, what are ways that we can again, pull all those different databases together?

I also like graphics such as this because this really makes South Carolina look great. And right now, the weather's great and it will be until probably May when it starts to get bloody hot and humid again. But the advantage of this is it's a nice friendly image, it tells you some key pieces of information about the state.

So how would we even take something like this and make it so that it's attractive for nursing? So that once they maybe train in the state, they stay in the state. Or how do we get people from Chicago to go down to South Carolina and live? So, going back to GIS. GIS is really great because what you can do is you combine different databases to really show and describe what's going on in a community.

The same thing with the 500 variable regression trying to describe a patient in context. How do I describe what's going on in that community? And I use the example at least while I'm on campus of saying, "If I use just the ZIP Code for the campus, it really will reflect predominantly the students which are a very different demographic than the one area which low-income projects. So, that's why we're trying to look at census tracts.

And what's nice is with a GIS, we do see a definite difference in the maps. So, the other thing that's important too is that not only use the data but use the data towards a big issue. And one of the big issues that's facing every state is access to care. So, regardless of what happens to the Affordable Care Act or basically insurance as a whole, access to care is something that impacts each and every one of us.

So how do we take that information and convey it to somebody who has really very little understanding, who maybe, has not really accessed healthcare and really try to again, get to that issue is what is a nurse? What can a nurse do for us? So we initially started off with looking at, for example, by county and what this does is there's software that allows you to do county by county.

For a lot of people, this will be great, but when you look at congressional districts, congressional districts are rarely by county any more and a lot of politics involved in defining the lines. So, when you show this to somebody, they may eyeball it real quick, but if you ever watch how long somebody looks at this, it's pretty quick. I'm not really going to be able to use this to sway your attention.

There's just not enough information because I'm going to say, "Well, this is the county where I predominantly serve or represent, but I'm also into this other county. And so, it really doesn't do much. And I've asked a lot of policymakers over the years, "What have you done with maps like this?" And they say, "Well, it looks good." You know, we can actually use some numbers, but then that's about it.

There's really very little that these types of maps say. So then we moved to, for example, looking at nurse practitioners per population and we can take this, the counties and shade them in. But one of the things, again, that we found is that when we were working with our physician colleagues, that the physician colleagues were saying, "Well, nurse practitioners are not practicing in rural communities." And when you look at the map on the left, there's nothing there that would really substantiate that.

So, we took the licensure data that listed where primary care physicians worked and where primary care nurse practitioners worked, overlapped them, used GIS, used the 45-mile radius, came up with the map on the right. So now, when any policymaker looks at that, they know exactly if that's in their area that they represent or not. This overlaps also too where hospital systems are, where practices are, that actually is more meaningful and that was used by the legislature and the action coalition within the state and we now have a change in the Nurse Practice Act within South Carolina.

And it was just something very different. Now, it took a while to get to that point, but it's had a profound impact. So that being said, what can we do next? Well, there's such amazing opportunities now. When I first started working with data, it was very difficult to get the data. It's still difficult to get the data, but we now have technologies that can handle the data better and we're also, I think, in a position where we really do need to collaborate.

And so if you're looking at doing research just on your own, I will say you need to get out and start partnering with folks because we really are at this great tipping point for using this data to really drive the next generation of nurses, to really drive what we can do in healthcare, but it is going to require us to put the different databases together.

And it's fun. And just imagine the fun you'll have at 2:00 in the morning, try to figure out how you merge these two different databases when one uses medical record numbers and the other one uses ZIP Codes. It is so much fun. It's like blowing snow and it's 20 below. I mean, it's just great fun and please, enjoy it. So other opportunities we have, and so what we have done in South Carolina is we have set up the Excellence in Nursing Consortium.

This is what I've done out of the Center for Nursing Leadership. What we have done is we're partnering with nurse organizations and healthcare organizations throughout the state to really drive outcomes. And so, what we have done is we are not only using available data, but we're taking evidence-based tools and we're putting them into the electronic health record so that nurses actually have more data points that we can then use and say, "Here's the impact that nurses are having within practice."

We're absolutely having a blast doing this. Initially, the nurses were very hesitant. They said, "Well, you're creating more documentation for you for us." And I said, "But you should've been doing this all along. This is great stuff. You're going to be able to predict a patient's readmission much more than anyone else on the clinical team because you'll also have the insight from the patient."

Now I had my flak jacket on, but it's done. It started October 1. It's been going great. The amount of data that we're getting from nurses is just incredible. So we're combining this new insight plus the current data, plus data from within the state as a whole to drive outcomes. And with that, within a year, we're going to be able to show the financial impact that doing this simple nurse documentation intervention has done to decrease the cost of care.

I cannot put a dollar amount on the value of nursing. So there's also other opportunities and I just recently saw this article in one of the recent issues of regulation where an incredible group came up with how to use data to inform regulation, came up with some recommendations.

Each and every one of these, I could see how it can be done throughout the world using the available data. But to do this really does require partnerships. So some of the biggest challenges. One of the things that I have found is that, you know, again, people are very scared of data.

And the majority of data I have worked with over my career has been very dirty. I've had to spend the majority of the time not only getting it, but then cleaning it. And cleaning it does not involve a mop although I think it would be easier. Cleaning is a lot of back and forth with the owner of the data.

And saying, "How can we improve this? How do I know? And so a good example of this as we did this multisite study across the country and we asked them for just gender. And gender was supposed to be 0 for male, 1 for female, 2 for unknown. So when we got the data back and it had a three.

Not really quite sure what a three is, but once we went back to the health system and said, "Hey, what is a three? Can you help clarify that for us?" Then we actually got some data that we could use for research. But it is amazing how much time. And so, I understand why a lot of people don't like working with data, don't particularly care for statistics because it does require a certain amount of tenacity and stubbornness.

But this is what we need in nursing is. So the challenge to you is, how can you leverage what you have now? How can you leverage the partnerships that you have now into a new realm? How can we think outside the box? So one of the fun things for me is working with the State Board of Nursing.

I have not done that before in my career. I've worked with other agencies and one of the things that's fascinated me, is how many times they say they can't do certain things. Well, we don't have, you know,

the regulations don't let us do this. The regulations don't let us do that. And I'm like, "Okay, so here's the bottom line. They don't allow you, what prohibits me?"

So if we partner together, where's the barrier? So I appreciate this opportunity to talk with you today. I encourage you to think out of the box, do things differently, and let's really define what nursing is and how it can really be the solution to healthcare in the future.

Thank you. If any of you have questions at this time, I'm more than happy to field them. - [Woman 1]
Thank you. I always have something to say. So I just had... I'm thinking back to that slide you have that was very colorful and had numbers on, I believe, reflected your state.

And the first thing that caught my eye was the 44 years of age which I thought was kind of young, which was interesting. But when you mentioned that the young nurses that... I shouldn't say young, but with less experience, less than five years, they're leaving, I don't know if it's the profession or they're just leaving their organization. And I wondered if you had any additional data that would address why, because I think that's a nationwide trend and it's fearful.

I fear it as a nurse and as somebody who's aging, because I want somebody there to take care of me. Is it because they're leaving the profession and they thinking, "This isn't what I signed up for," or are they leaving for graduate school? I mean, is there any way to get maybe data from exit interviews or something like that because I think we have to know where they're going, what's happened?

We can't lose them.

- So one of the things that we did is we actually got into the HR data where they were doing the exit interviews because the licensure data because in South Carolina it's captured every other year, is not very helpful. There's a lot of movement that can happen from one year to the next. So we basically took that as far as we could and we found that a lot of folks were staying on average, for about three years within the state.

One of the things that we found is that there was a certain percentage that went into traditional 9:00 to 5:00 jobs and went to work for insurance companies, other providers. So that was very disheartening. When we looked at the exit interview data, which is very spotty because it's not done typically for everyone who transitions to another role outside of the organization is that there were different reasons.

And I think the one reason that really struck me the most is the understanding of that they would get a higher pay elsewhere and they don't have to deal with shift work. And so, kind of, regardless of the database that I'm using, I'm finding that to be the most pervasive answer, that nurses are going to wherever the money is and to wherever they can control the schedule versus being at the mercy of someone else.

And what makes it really hard is that as a profession, we've backed ourselves into the 12-hour shift. So to get past that, I think we have to look at something that's alternative. Now I have mentioned to several hospitals, "Well, why don't we go back to a mixture of eight hour, 8, 10 and 12?" Fortunately, I was dropped off the day and nobody knew where I parked because nurses were really not happy with that.

They loved their 12-hour shifts. And I think we got to do a better job of saying, you know, what really is the long-term damage to your body? You know, it may sound great, but the generation, the millennials that are really driving so much of what's going on in healthcare right now is very problematic. They really do want a work/life balance. So when you have five generations in the workforce and you've got the old timers like myself who are looking at that saying, "I will put in the extra time, not a problem, work/life balance, what's that?"

Compared to the younger generation who will have it no matter what. And if you can't give that to them, they'll go elsewhere. So I think one of the things that we're really missing is how do we adjust our policies? And systems are not set up with that kind of flexibility right now. - [Mary] Mary Baroni from Washington State.

Thank you for what you do and what you've shared with us today. You mentioned that you were teaching statistics here at the University of South Carolina. I'm wondering how you are starting to introduce this concept and comfort with using large data sets with students that you may have in the classroom because it would seem to me getting people comfortable early on is going to be an easier process than getting people that are more set in their ways to embrace this notion.

- Well, I terrorize them, initially.

- Good.

- I have to do that. Actually, I just say, "Welcome to stats." The second thing I've done is I've taken some HCUP data that is publicly available and we take certain data sets from that and have them ask certain questions and then we compare that with some of the fact sheets that HRQ puts out so they can see how easy it is actually to get that.

So, by the time... They get a subset of the HCUP, but from that, then they can actually track it out and then say, "Okay, now if you can come up with some kind of a white paper like this, here's what we can do." So, it's a very pragmatic way of doing the data, but we also look at the fact that there's a difference when you have a stack of paper and you try to put it into a database. That to me, is the mind numbing.

You know, you kill brain cells doing that. The advantage of using databases, computerized databases, is I don't have to deal with the data, but on the other hand, look at what I can find. And so, we talk about the differences in power. If I have a database with 100 versus a million, who's going to believe me? It'll be if I have the million.

The hundreds, they're like, "Well, that's interesting." But it's generalizable to that hundred. I have a million, people are going to listen. And so, we start doing it that way. And that's actually been quite successful with folks.

- It sounds like... And I mean, I think actually practicing the application of statistics is different from reading a textbook.

- Textbooks are... They're a lot of work, but you have to have the meaning. - [Woman 2] I just have a quick question about the use of GIS mapping. I used it back in 2004 in my doctoral research and it's not easy and I had a specialist in GIS helping me.

If you could just talk a little bit about how people that are interested in maps being their data, kind of, what are the steps to find the help?

- So, demographers, a lot of them call themselves demographers or people that actually assume statisticians know how to use GIS as well. You go find them. It's like my background is more policy and big data and so if I need clinical expertise, I go grab a clinical expert because that's not my personal expertise.

Same thing with GIS. There are many programs throughout the country that teach it. So go find one and partner with them. I have a researcher on my team who is a demographer, which is great. So once I get the database nice and clean, I give it to him and he runs the analysis. So don't think you have to do these on your own, because if you really want to have fun, then you should have probably six different stats packages on your computer.

But the important thing is you get those expertise. If you don't have it, that's perfectly fine. It's your responsibility to go find somebody who does. And universities do have them. So please take advantage of them. It's really... Basically what they need is a clean database and then what you want to see done with it. So it's fun.

It's fun to see the maps. And it was really fun for us when we changed it from 45 miles to 100 miles, then it starts to go into the other states. But there's also a lot of meaning that you can have with that too. So it's fun. I really encourage you to do it. Maps are awesome. -

[Louise] I'm Louise Kaplan from Washington State, and I conducted a survey of the APRN workforce in Washington this year. It's one of many that I've done. One thing that struck me with your map of primary care nurse practitioners and physicians is that in my survey I had, I think it was about 63% who were certified as nurse practitioners in primary care roles.

But when I asked how many were working in primary care, it was nowhere near the number who had that certification. So I'm curious when you did that mapping, because primary care providers are critical and we're all talking about the demand and the need, how did you ascertain that people were actually doing primary care?

Was it by licensure, by certification, by... Did you use workplace data? How did you do that?

- So it was by licensure and employer. And so we used employment data from the state and overlapped that with the licensure data. So if somebody said they were working as a primary care nurse practitioner and they were working in a primary care setting, we took that as a positive hit.

- So how did you get that employer data?

- We actually went to the states. So in the state of South Carolina, there's a Department of Employment and Workforce. So I went and asked for the data.

- Okay. I'm going to see if Washington has the same data.

- Well, you know, part of it is look, one of the things I learned is that until somebody says over my dead body, I just need to ask it slightly different. So I go back and ask basically the same question a little bit differently. It took three tries to get it from the state, but I got it.

And I just wanted a list of where primary care and specialty care was. So I knew exactly what I wanted, gave them the specs. It took a little bit going back and forth. This was not something that took a month, took six months, actually, but then we got it, overlapped that with the licensure data, so I'm very comfortable with the numbers.

- [Cynthia] Thank you so much. I really enjoyed your presentation. I'm Cynthia Bienemy, the director of Workforce Center in Louisiana and I was looking at the projections. I think you had listed the projections from the HRSA model through 2030. In Louisiana, it says it'll be a surplus of 2,300.

Of course, our chief nursing officers would say something different in our state and our data and I do believe that...you know, I really believe that state-level data has an important role to play in that most of the time for us, anyway, we have maybe data on at least 99% of our nurses. But one of the concerns is, is that we hear demand and in our state, in certain regions, we do have, there's not as much a demand or maybe even a little slight surplus in certain regions.

But in that same region, you will hear chief nursing officers in two separate facilities saying that, "We're having a tremendous demand." And the other in the same region saying that, "We're fine, you know, we have a great numbers of nurses, we're right where we need to be." So there's many factors when we try and forecast or talk about demand because there's initiatives and even with the nurse faculty, and the number of students that are graduating, and then do you have a revolving door at your healthcare facility?

Is it the environment that's really affecting retention and recruitment of nurses? So I always say it's many pieces of the puzzle and how do we bring all those pieces of the puzzle together to really have a good picture of our workforce?

- Well, I actually have an answer for that. It's called chaos theory. We really can't think and that's why I go back to a lot of research that you read has five variables. Great. It's a good start. And if you look at it, I use the example, those five variables maybe explain 20% of why. That means 80% is unknown.

That to me, has a very profound impact on what I do. So if I'm only looking at those 5 variables, say my licensure data, I got 80% that I'm missing. I think one of the things, you know, if we look at the work that Pete Buerhaus has done where he has spent his career trying to predict nursing shortage, nursing surplus, what have you, those numbers vary so much that he's had troubles.

He has done his best, he has used the best methods, but nurses are chaos. There's so much that's going on. The one thing that we know that holds true is they will go after the better salary. They will go after the better work schedule.

So those two seem to hold consistent regardless of the type of literature. The other factors, and we have a little bit here a little bit there. So if we look at some of the work that Eileen Lake has done in trying to describe the work environment, I can relate to that personally. I mean, if you work in a hostile environment, that's the last place you want to be even if your life mission is to provide care to patients.

If it's a hostile environment, it's a hostile environment, you're going to go elsewhere. And so, one of the things that we're also doing is I have a CNO forum and we meet quarterly with all the chief nurses and we do talk about work environment. What are you doing to help those at the bedside feel that this is the best place for them to work?

Because as an educator, we can train them and graduate them, but if they go into a hostile work environment, they're not going to stay and I don't blame them. So what can we do to improve that? I think it's just going to be an ongoing process, but it's just thinking of all the different parts that come together. It is hard to do that and a lot of people look at me like I'm crazy the majority of the time, but I'm trying to explain what's going on in context and so it really is these 500 variables.

How do we harness them? And so, 20 of these variables over here might be in the licensure data. Fifty variables here might be in the HR data. The only way I may be able to get these other 150 is I may have to do a survey that all nurses who leave their employer fill out and so I actually preempt HR from doing that.

I don't know what all the answers for that is, I just know that we have to, the more that we pull this together, I think we'll get closer to those answers. - [Woman 3] I just wanted to say, first of all, thank you so much for the work that you're doing. It's interesting to me when we talk about the, you know, nursing shortage at the bedside because on the one hand, as educators and as members of ASCN and other professional organizations, we're trying to encourage lifelong learning and for people to go to grad school, but yet on the other hand, employers don't want you to do that because they want to keep them at the bedside.

So, it's interesting. I have a couple of friends who are researchers who've done a lot of work on intention to stay in intention to quit. In the military, it'd be neat if there was some kind of standardized exit survey form that was distributed nationally so that we can begin to really look at that data. But my quick question is, any words of guidance on trying to get data use agreements for federal or private secondary data sets and anything you can share on that?

- Ask. Really. I mean, that's about... When I really look at the data that I've been able to put together in two years, and by all means, before I came to South Carolina, it wasn't that easy. When I was in the federal government, all I could do was use federal datasets. When I was in Wisconsin, there were all kinds of restrictions on this database or that database.

I'm really in the right place at the right time and I've been able to ask, plus I'm used to people looking at me strangely. So if I don't get a strange look, then what's going on? I'm expecting a strange look, but it's

those repeated asks. And so the one thing that I have found that's really important is that you have a face. So if all I'm doing is calling an agency and trying to get information, I'm only going to get so far, but as soon as I can get a face who will actually take accountability to help me get that data, there we go.

And so, it may take a lot of calls. One database in particular, I remember because I was keeping count, took me 212 calls to get. That's stubbornness. Okay? But I now have it. So you know, was it worth it? Well, there were many times I questioned, but on the other hand, I now have that data.

But it was, you know, someone's like, "Well, call this person." That didn't work well, "Who can I talk to?" Went to another. I would go to meetings sometimes so that if I knew somebody was presenting, you know, how you can hit them up afterwards? Just different strategies, whatever... My goal is to have this massive amount of data that I can answer these questions to put nursing into the next generation.

And I'm not going to do that by myself. I'm going to have to be very tenacious and keep asking. The forms themselves are really not that complicated. There's actually a common theme among data-use agreements and contractual arrangements with the owners of the data. And so if you're not familiar with using data use agreements, again, a lot of colleges and universities have attorneys that can help you with some basic things.

And it's worth doing that. But there's just tremendous opportunities. But keep asking. If you want it bad enough, get it. And it's fun. Thank you.