DARYL FOX: Afternoon, everyone, and welcome to today's webinar, "Establishing New Methods for Estimating Crime in the U.S. — Transition to Incident-Based Crime Reporting through NIBRS," hosted by the Bureau of Justice Statistics. At this time, it's my pleasure to introduce Erica Smith, Chief in the Law Enforcement Incident-Based Statistics Unit Bureau of Justice Statistics, for some welcoming remarks. Erica?

ERICA SMITH: Thank you, Daryl. Thank you, everyone, for joining us this afternoon. We appreciate your attendance for this webinar. I just wanted to say a quick welcome and introduce our speakers for the afternoon. As you know, the Bureau of Justice Statistics has been working very closely with the FBI and our contract partner at RTI International on establishing new methods for estimating crime for the United States based on incident-based data reported to the National Incident-Based Reporting System.

So, we are going to talk a bit today in a little bit more in-depth anyway about the work that we've been doing on generating the estimation methodology that we plan to implement this year. And to give you some background about that, we first will have Cindy Barnett-Ryan from the FBI. She is the data scientist with the Criminal Justice Information Services Division at the FBI. She's the primary representative on the NCS-X NIBRS Estimation Project that I referenced just a moment ago. And she's got extensive experience working with the Uniform Crime Reporting Program data and as well as other ancillary data collections.

And then we'll hear from Marcus Berzofsky. He is the Senior Statistician at RTI International, and he has been the primary investigator on the NIBRS Estimation Project for the past four years or so. He's got over 20 years of experience implementing and analyzing surveys and related studies, including a number of different BJS efforts, and so he is very well versed in what we are trying to accomplish here. So with that, I believe I will turn it over to Cindy to kick us off.

CYNTHIA BARNETT-RYAN: Thank you, Erica. Just a quick check to make sure everyone can hear me.

ERICA SMITH: Yup, we can hear you.

CYNTHIA BARNETT-RYAN: All right, awesome. Thank you for that introduction. And as Erica mentioned, I'm really just here to kind of set the stage for Marcus, who is going to really provide the meat of the presentation today. So with that, can I have the next slide, please?

So, just a little bit of background about the NCS-X NIBRS Estimation Project, so if you're on this webinar, most likely you're familiar with some of the efforts that BJS and FBI have been collaborating on over the last several years. And at the beginning of 2021, January 1st, in fact, the FBI UCR Program retired the Summary Reporting System and fully transitioned to crime reporting through NIBRS. So throughout that effort, BJS and FBI have been close partners in this effort through the National Crime Statistics Exchange or NCS-X, on a full transition to NIBRS. So that's really kind of taken on two particular aspects of it. The first of course is supporting the state UCR programs and a scientifically selected sample of agencies to transition to NIBRS reporting. A lot of the information about the current status of that effort was discussed on Tuesday's webinar session and just like today's, it—the recording should be available on BJS's website if you have an interest in that or unable to make it. But today, we're really going to be focusing on the second part, which is developing methodologies and procedures by which national, regional, and state level crime estimates can be produced. Next slide, please.

So just to give a quick overview about the agenda for today, I'm going to go through a quick overview of the estimation system and, you know, the efforts that we've been working on and really at that point, I'll hand things off to Marcus, who will be able to provide a lot of great detail on what, especially RTI, has been able to assist BJS and FBI within the production of—in developing a methodology to produce these estimates.

So, we'll discuss the impact that coverage has on producing estimates, discuss key components of the estimation system, the indicators that will be estimated, and the data quality review of those indicators. Finally, we'll wrap up with a discussion of data editing and imputation rules before we open it up for Q&A. Okay. So at this point, let me just give you a quick overview of the objectives, accomplishments to date and the schedule. Next slide, please.

Thanks. So really, we can really focus on the primary objectives, of course, was to determine a set of key NIBRS indicators for which accurate and reliable estimates can be produced. Marcus will go in greater detail with that, but suffice that if you are here, probably you're fairly familiar with the amount of information that we're going to be able to glean from a NIBRS incident. And obviously, we had to make some choices and some prior—set some priorities when it comes to identifying the indicators that we will develop these estimates for. Additionally, there was a primary objective to develop population served estimates that can be split by key demographic characteristics, such as age, sex, and race. This is going to be a new area for UCR data and really will provide us with an enhanced view of victimization compared to what we've been able to do under the Summary Reporting System.

And, you know, finally, the, you know, the primary objective of using the NCS-X sample to produce national estimates, that was our ultimate, you know, top goal was to ensure that we had defendable national estimates throughout this transition. Beyond those primary objectives, there were some secondary objectives that we also wanted to consider throughout this project and that is really to focus also on subnational estimates, so some regional and state level estimates will be available, as well as looking at ways that we could develop population served estimates for agencies that traditionally are classified as zero population agencies. I will at least preemptively say, because I anticipate that there would be a question that this is really an optional extension, to really enhance what is delivered through the NIBRS estimates and that the FBI will still have zero population associated with many of these agencies.

So, Marcus will again, you know, provide a lot more detail on this, but just quickly some of the key milestones that we can report that we have both hit and also anticipate delivering over the course of this year. Back in the fall of 2021, we received, BJS and FBI, the delivery of what we refer to as the alpha version of the Estimate Generation System prototype. And with that delivery, there was sort of a proof of concept effort to actually generate estimates based on 2020 data. With that, over the course of this winter, both FBI and BJS have been working to integrate this estimation system into their infrastructures in anticipation of the publication of the 2021 data. The next milestone that we anticipate in the spring, early spring of this year, is some further refinement, to both improve efficiency and address some methodology, you know, refinement that obviously occurs throughout the development process, there will be a beta version, and also a gamma version that will be delivered both in early and late spring. And through that whole process, there'll be an opportunity to update the estimation methodology to account for additional transition to agencies.

Finally, in late summer, fall of 2022, we will be, both BJS and FBI, working to disseminate information about these new estimates, much like what we're doing today, providing a lot more information on how it works and how it's different from what people may have grown used to under the Summary Reporting System, and really setting the stage for the finalization of the estimation system that will produce national estimates for the 2021 data year. That's a lot. And I can even go into further detail when it comes to these six key areas and some of the accomplishments that have been achieved through this project to date.

First of all, of course, the indicators, as I mentioned, there was an effort to determine which indicators would be estimated in the initial estimation system. This also is going to include law enforcement officers killed and assaulted assault data that is also integrated

within the NIBRS data collection and assessing additional measures such as drug offense indicators. So, really we're trying to launch this project with what would be considered, sort of, the highest value more—the more sought-after data with the possibility of additions later.

Estimation, the development of the weighting methodology that Marcus will take you through in greater detail based upon the expected transition of agencies. And the—that led to the development of three types of weights, so a national weight, a regional weight, and a state weight. Quality is the third, sort of, prong to this effort. And to date, we've been able to determine a set of quality checks to identify agencies that have outlier responses to each data element and integrate that somewhat in the imputation methodology for victim, arrestee, cleared offender demographics, plus victim to offender relationship.

Population estimation, as I mentioned, there's really an effort to try to expand upon the population served data that is usually associated with UCR data to incorporate some disaggregation by age, sex, and race, and determine when it would be possible to produce accurate population estimates for those zero population agencies that have concurrent jurisdiction over a primary law enforcement agency. Variance, estimation, and suppression, there was a—we were able to—I should say we as the project, but really honestly RTI did enormous amount of effort on this obviously, developed variance and suppression rules for the alpha version of the prototype and those suppression rules take into account bias within the variance estimation methodology.

Finally, in that particular aspect of variance estimation, there is an effort to determine if alternative variance methodology or suppression rules are going to be needed for that beta version that's forthcoming.

And finally, when it comes to the prototype itself, as we've talked about, the alpha version was delivered in October of last year and there will be further work to optimize that system in anticipation of both beta and even the gamma version later this calendar year. So with that, I will hand it over to my esteemed colleague and collaborator on this, Marcus Berzofsky.

MARCUS BERZOFSKY: Thank you, Cindy. Can you—can you guys hear me? Is everything okay?

ERICA SMITH: Yes.

MARCUS BERZOFSKY: Okay. Perfect. Thanks. All right. Well, thanks, Cindy, and thanks for that introduction. I'm Marcus Berzofsky. I'll walk you through the rest of the slides this afternoon. I will say, given the last slide that Cindy just walked through, we're going to focus on the first, I think it was five, the ones related to estimation. I won't get into a whole lot of details about the system itself. But obviously, as Cindy walked through the schedule of it, we—you know, if you have questions about it, it's, you know, itself and the schedule and what it entails, we are more than happy to answer those in the—in the Q&A.

So, I'm first going to talk about coverage. Now, Kim—for those that were on Tuesday's webinar, Kim Martin went through a lot. I have some slides that are going to overlap, we have overlapping slides. But—and I think that's a good thing, because I think it's worth going over these again. And I'm going to talk about it from a slightly different point of view, because I'm going to really focus on what it—what the impact of coverage means for estimates, both at the national and subnational levels. And so we'll talk about it. I'll talk about it in this context.

But I wanted to start with just some basics, you know, not knowing, you know, everyone on this call in advance, so I just want to talk about some basics, about what we mean by coverage and what the coverage rate means and how that impacts and, you know, why that matters, why we—why we should care about coverage. So, the "coverage" or the "coverage rate" is the percentage of the population from which we have responses, or we have, you know, we have, in this case, we have NIBRS data from. And coverage is important because it can be calculated in two different ways. So, it's a—it can be a little tricky in that way, when you say what the coverage rate is, you have to really understand what they mean. And so I give a little example here, if you had a state, State A, there are 300 agencies in that state representing 5 million people. If you had participation of NIBRS, you know, NIBRS transitioned and provided NIBRS data, 200 of those agencies provided data and those 200 agencies represented 2 million of the resident—residents, you can calculate coverage two different ways.

First, you could say, well, I have 200 out of 300 possible agencies or two-thirds, 66.7 percent coverage rate, or if I was going by the population, I could say, well, I have 2 million people served that provided—we have data representing out of the 5 million in the state, that's a 40 percent coverage rate. So obviously, those two numbers are very different, right? So when you hear someone mention the coverage rate, I think it's very important that you follow up with—if they don't say—follow up with the question of, "What is that based on?" Because it does matter in terms of thinking about what—how much of the state is really—or the area that you're talking about is really being represented.

So, why does it matter? Why ultimately, from an estimation standpoint, does coverage matter? Well, what we're—the next concept we're going to talk about in a couple of slides—in a couple slides, I'm going to talk more about coverage and the actual numbers in a second. But, you know, is that the lower the coverage rate is, the more uncertainty there is about an estimate. And as I'll talk about it uncertainty is just that it's uncertainty, you're unsure. But like I said, I'll talk more about that in a minute. But the problem with uncertainty is you, you know, you're uncertain and so that leads to potential error in the estimate. When you have a point estimate, you can't say that's exactly what the answer is, the estimate is. And so you have to account for that potential uncertainty when you publish any sort of estimate. And also, we'll talk about that today too. And the—and so what—so, like I said—as I was saying, you have to address that uncertainty and normally the way one does that is with a confidence interval and we'll talk about how we are going to construct confidence intervals, which might be a little bit different than how a traditional random sample survey would calculate a confidence interval. So we'll talk about that later in the presentation.

And so from the NIBRS, for people who are used at UCR, I should say—or summary UCR estimates, one thing—this is a very different—I want to point out that this is a very different sort of way to see the data presented. Under summary, you could either report through summary—summary-only data or you could report NIBRS and NIBRS would then be converted to summary. And under that arrangement, you know, pre-2021, the coverage rate was around 97 percent. And so when you have coverage rates that combine coverage rate around 97 percent, you're pretty certain, I mean, that that 3 percent isn't going to impact the estimate very much. So that allowed the UCR estimates to just be put out as a number by themselves, they didn't need a confidence interval, they didn't need any other detail around them, because they were fairly certain that was the number—that was the number of crimes that occurred for a particular offense. Whereas when that number is lower, you know, that you can't just get away with putting out the number. Next slide, please.

So what is the coverage right now when we look at just NIBRS only reporters? Well, it has grown and has grown dramatically over the past two years and it's continuing to grow. So in 2018, it was around 43 percent. And what you can see here by the shading of these colors is that, you know, it—but it wasn't equal across all the states. And so for example, in California, it was near zero in 2018 and versus something like South Carolina or Virginia, it was 100 percent. As we move to 2020, we've moved up to 57 percent coverage with over 10,600 law enforcement agencies participating, but you still see some states that are lagging behind. And with 2021, for those that were on Tuesday's talk [INDISTINCT] mentioned that the number is now over 11,000

participating somewhere around 63 percent, 64 percent coverage rate. So we're moving up there and more agencies are transitioning now that we've stopped—now that the FBI stopped accepting summary as we go. Next slide, please.

So among those agencies, of those 10,000 that had participated, we put a special emphasis on the largest agencies. Now, why do we do that? Well, just as we talked about in our two examples, you can count agencies, each agency as being equal or you can talk about the population that it serves. And obviously, a large agency represents a much larger population and with a larger population comes more crime. So from a coverage standpoint—from a representation standpoint, those large agencies are critical to fully understanding how much crime there is in the United States. And so there were 72 agencies, that as of—when the NCS-X sample was drawn, about a decade ago, that had not transitioned yet to NIBRS. Now, our expectation in 2021 is that 40 of those will have transitioned and been able to provide all 12 months of data via NIBRS, 13 will have transitioned and provide about half a year, you know, half—between six and eleven months' worth of data, and eight will have transitioned and provided between one and four months of data, whereas 11 agencies will not quite have transitioned or we're not quite sure if they will or not, will make it or not.

So, all in all, that's pretty good, that we're moving, you know, we've put the NCS-X Project, put an emphasis on these agencies, and, you know, put a lot of work into getting as many of these agencies to transition as possible. And so that is a good thing from both a coverage standpoint and a representation standpoint. So that's going to help and be critical in the estimation process that we're moving to now under the NIBRS only estimates. Next slide, please.

So, how does that then break down about by region? Well, if you look at the regions, you can definitely see that they're not the same. For example, the Northeast has 74 percent in 2020, non-responding by coverage. And one of those big agencies is, of course, New York City and so that's playing an outside role in that 74 percent, whereas other areas have much higher coverage. So the South is—was a much more early adopter of NIBRS and only has 30—and, you know, and has around 70 percent of the population covered. The West is sort of in between at 50 percent, you know, as we show—we talked about California was lagging behind and that would be a big part of that 50 percent. But the point here is mainly that the participation from NIBRS is not equal across the country. And so what does that mean for estimation? And what does that mean for potential issues when producing estimates? And we'll talk more about that as we get into the estimation process itself. Next slide, please.

So, implications, so again, I'm going to throw out another term here that I'm going to move—I'm going to talk about it in more detail in a—in a little bit in the presentation, but the big impact here is the word suppression. So ultimately, when coverage is low, there's questions about whether or not you—whether or not the estimate should be published. There's lots of reasons for that, but basically, the percent—ultimately, it's—around the precision, the confidence interval around that estimate is going to be too big. And if it's too big, you know, you don't want to put up that estimate because you don't know if the point is—how accurate that point estimate you said is. So due to the variable coverage across these different areas, we're going to make recommendations to the FBI and BJS about which estimates should be published and which estimates should not. And so that's going to be part of this process that hasn't been part of, you know, the summary crime estimates in the past because as I said when you were at 97 percent between both summary reporters and NIBRS reporters, there was—there was no uncertainty and so you could publish everything without any concern.

Secondly, clearly as we just showed with region, some geographical areas and agencies subgroup will have lower coverage ratios. So what does that mean? So that means maybe certain whole areas might have to be suppressed. Not just certain estimates but certain whole areas might have to get suppressed and we might not be able to present them. We're going to talk about states in a second. But certainly that may, you know, apply to some regions. But it also means that because the coverage is very different, we had to produce, as Cindy said earlier, separate weight for each region.

So in a perfect world, we would—we would do what's called going from the bottom up, each agency would have a weight that would build to a state, that would build up to a regional, that would build up to a national estimate, that would be the ideal way to do it. But because coverage is so variable, we weren't able to do that yet. Hopefully, one day soon we will but right now, we had to look at each areas, each type of geographic areas separately and build a weight accordingly.

So, and last, the NCS-X had a sample of 400 agencies. Those agencies included those largest 72 that haven't transitioned yet. By 2020, 167 of them had transitioned, obviously that's not 400, but we noticed that, you know, those agencies really are critical. Those agencies were the 72 largest and then the random sample of the rest were critical, and getting those on board really make a big difference in terms of improving the precision of the estimates. Especially in certain special population groups like tribal agencies and where they were—they were also putting an emphasis on them and getting them to transition.

Next slide, please. So at the state level, I want to talk about where we moved—where the—where transition has moved to at the state level. So these are the list of states that have or we expect to have at least 80 percent coverage. I chose—just so I'm clear, 80 percent in my—was an arbitrary number on my part to choose. It doesn't—as—we'll talk about it doesn't have any specific meaning right now but you can think of 80 percent above coverage, we're pretty certain about the estimates in that state. So at least you can think of it that way. But the number itself won't be an important number at the end of the day. But ultimately, you can see there were 22 states in 2018 that had 80 percent or better coverage. We expect another eight states to achieve that in 2021. I think based on the numbers [INDISTINCT] had, I think it might have been slightly better than that, I think we might be at like—no, I guess that's 30. So we're about 30, 31 states that achieve that mark, so that's good, over half and the others are all coming up, you know, at varying degrees below that. And so the question then becomes at the state level, what does that mean? When can we produce a state level estimate, when should we not, and what are the implications of those two things? Next slide, please.

So as I said, you know, expansion is varying, we probably won't be able to produce in 2021 an estimate for every—all 50 states. We're going to try to produce as many as possible but it probably will not be all of them. There's certain states that are lagging behind, specifically, you know, as I mentioned, California and Florida already but also Alaska and New Jersey are lagging. But we do expect significant progress from several of these states in the—in the coming year. So what does that mean? That means that maybe these states will not be able to have an estimate published this year but next year they will. So states that might not be able to have an estimate published yet, will, as time goes on and as they continue their transition process, they will be able to have estimates published in the near future. I do want to point out. I'm putting a large emphasis on coverage, mainly because it's an—it's a concept that I think everyone can grasp, can understand.

Okay. We are recovering this much of the population but it's not the sole determinant of the whether or not we do publish an estimate. That is going to come down to precision. And I'm going to talk more about that—and uncertainty. And I'm going to talk more about that next. But I focused on coverage here because I think it is an easy concept— well, relatively easy concept for people to understand and it's highly correlated to uncertainty. So while it's not the determinant, it's a very highly correlated measure. Next slide, please.

So now I'll get into some other considerations, the first one of which will be uncertainty. All right. So uncertainty basics, so I threw out this term earlier, I'm going to try to talk a little bit more about it now. If you have any questions about what it means exactly, if I

don't do a good job here, please feel free to ask a question in the chat. Uncertainty in an estimate basically occurs when you don't have participation from everyone in the population. So this can occur if you have a random sample, so normal official statistics, like the national crime victimization survey comes from a random sample of households, it has uncertainty. Just like in NIBRS now, even though it's administrative data, since it doesn't have participation from all agencies, it has uncertainty.

When you have uncertainty and you think of the word uncertainty, it might not be a word you're used to hearing and so I'm going to now, like, get at the words you are used to hearing in a second. But uncertainty is an umbrella term that really can be broken down into two parts. Part one is variance and part two is bias. Variance is probably the one you're most used to hearing. These are like standard errors or, you know, that you would typically hear around the sample. And the variance represents the random error that would occur due to not having all participation. And like I said, that is what you would traditionally get from a random sample like the National Crime Victimization Survey. Bias and when you have a random sample, there is no bias. So that's why you don't always hear the term bias. When you have a random sample because it's random, you know, those units selected are representative of everyone and there's no reason to believe that they could be different and therefore have bias.

On the other hand, bias represents uncertainty because when you—when you don't have a random subject, which is the case here in NIBRS. And the reason they're not right here in NIBRS is there could be a fundamental difference between why an agency was able to transition and why it was not. That could be correlated to its crime counts. We just don't know, maybe it is, maybe it isn't, but the fact is we don't know, and that— and that not knowing is a potential form of bias. So, for NIBRS and the NIBRS estimation, we want to use this term uncertainty because we are covering both—we need to address both variance and bias. Okay? So as I said, you know, why does—why does uncertainty now matter for NIBRS? Well, the lower your level of coverage, again this is the correlation, typically the higher your level of uncertainty. There's a direct correlation there. And so as we just said, since we're moving to an environment in the UCR for crime counts where we don't have summary anymore, so we don't—at least in the short term until everybody transitions, we don't have that same high level of coverage, we now have to deal with this uncertainty that we didn't have to before. So that—so it matters in that it's a new thing that we have to deal with in the concept of the UCR program. Okay?

So how will uncertainty be measured? So uncertainty is going to be measured through what is called, another statistical term, the mean squared error. The mean squared error is a term that combines variance and bias, it's the variance plus the bias squared. And

the bias is squared could bias can be a positive or negative value, so they square it to make sure that it's always a positive value. But that mean squared error is you can think of it in terms of the analogy is the standard error. So the standard error that you have from a variance that you would see in a report from BJS, they would publish an estimate and then they would have a table that would tell that you what the standard error is around that estimate. That standard error is the variance. It's the representation of the variance. The mean squared error is basically that exact same concept, but it both incorporates that variance component and the bias component. And so it can be used in the exact same way.

So, in the same way that the standard error can be used to create a confidence interval, the mean squared error can be used to create a confidence interval. It just has that extra bias component factored into it. But ultimately, what you'll start seeing with NIBRS now is a confidence interval based on that mean squared error to go around every single estimate that is published. Okay. Next slide, please?

So let's talk about how we're going to create these things. So, on the variance side, we're going to use something called linearization. Not to get [INDISTINCT] the variance estimation but there are two ways of doing variance estimation. One is linearization, one is replication. We looked into both. Ultimately, while there are some nice properties of replication, it is a little more computationally challenging to do and when you're going to create—calculate 10 million estimates like we are, you have to be concerned about that. And what we ultimately found is that the variance estimate was not different when we use linearization versus replication. So we went with linearization mainly because it was more computationally—like I said, you go get the same result and it was computationally better, you know, with—for the size of and amount of data that we're going to be producing.

On the bias side, I don't have a [INDISTINCT] for some reason, but on the bias side, there are a couple of different ways that bias can be calculated. Bias is tricky for something like NIBRS because we don't have—we don't know what the actual true value is. So bias for those who don't know what bias is, bias is the difference in your estimate, so the people that reported data, provided data versus what—if you had everyone what you would get, that difference just subtracting those two numbers is the bias. And since we don't know the second piece of that, what the value—what the count of crime would be if everyone provided it. We—you know, we have to get a proxy for bias. And so, there are a couple of ways of doing that, one, you have 2020 summary data which did pretty much cover everyone. So at the top line, you know, the top line number of offenses for each offense type and so you could use that in—you can calculate the bias in 2020 between NIBRS reporters and everybody. And then there's

other ways of using imputation and other statistical procedures to try to approximate what that bias is from the part that's missing. Imputation, we'll talk more about it too. But it's used to fill in missing data and so it could be used as well. We are actually still—this is why there is an alpha, beta, and gamma version, this is one of the methods that Cindy mentioned that's still being updated. We have both—we're just investigating them both, so I cannot say with certainty which way will be used to [INDISTINCT] the bias right now. But just know that there are two ways of doing it, the bias will be calculated for each offense at a minimum each offense separately, the bias does vary. As one can imagine, different offenses will differ by different parts of the country. So, when you have different participation, some crime types might have more bias than others and so you need to be careful about that. So, we are certainly taking care of it, you know, at the offense type level. But like I said, the exact approach is still being worked on. But ultimately, we will have our variance, we'll have our bias, we'll combine them in to the mean squared error that I mentioned and then we'll be able to create a confidence interval. Okay.

Now, now that we have this confidence interval, what can we do with it? Well, obviously we'll publish it. But beyond that, we can take that confidence interval and we can see how big it is. And if it's too big and I'll get to what too big is in a second, if it's too big, we're going to tell BJS and the FBI, we would probably recommend not publishing that estimate, if there's just too much uncertainty. And so what is too big? Well, most federal agencies that do surveys, they have—they use a rule that is if the ratio of the standard error, they're usually dealing with a sample, of the standard error over the point estimate is 30 percent or more, or the estimate is based on a really small sample size like less than 10 agencies or something provided a value in the case of, you know, NIBRS, then usually it would get flagged and potentially suppressed. So we're going to use that as an initial starting point. We're then going to say okay, well, that's done for each—that's done for each particular estimate that we're going to produce, you know, be it flagged or not flagged. We can then look across a given area and see how many estimates in that area are being flagged. So for example if you took a state, you took Maryland, I don't know, if you took Maryland and you saw—and you looked at how many estimates were being flagged, if more than 50 percent of those estimates were being flagged and recommended we suppressed and the coverage rate was below 80, we would say, well, that's a lot of uncertainty from a lot of estimates. So it's probably the ones that aren't getting flagged may be suspect to they just didn't happen to get flagged. So in that case, we would recommend that that entire area not be published. And that's how we're going to dictate whether, you know, we're going to recommend whether or not a state is—have their estimates published initially. So as their number of estimates that have— you know, have—as their estimates get higher coverage, their level of uncertainty will

go down, their coverage will go up and over time, the number of states that are published will go up and up and eventually of course reach all 50 plus DC.

Now, the one caveat to that rule is that, you know, in these small states, you have some really small states out there, you know, relative in terms of population, take the Dakotas. The Dakotas are 100 percent reporting states but they're really small, they don't have a lot of crime. And in some crimes, you have very few agencies reporting the crime. But we know it's everyone, you know, they're just—they're 100 percent reporting states. So in those cases, we're going to say, okay, we recognize that in those places, we are certain about the estimate, it just happens to be small and that's okay. So in those cases, we're going to undo those first two rules and we're going to say we can publish every estimate in that area. So we're recognizing that when we do reach that certainty level, a small number is acceptable, it's just it is what it is. And those cases, we will publish the estimates. We'll recommend that the estimates are published and go from there. Okay? So that's suppression and how—so suppression is directly—ultimately directly tied to uncertainty which is all—which is a function of variance and bias. I don't know. I guess that's the take away from all of that. Okay. Next slide, please.

All right. So I'm now going to move to the next area. So, NIBRS—well, NIBRS—I guess summary allowed this too, but NIBRS allows it at a much finer detail, and we're going to talk about the estimates themselves—or the indicators themselves in a second. But in the NIBRS—well, with summary, we all—UCR, we always could publish three different types of estimates. They were counts, how many of the type of crime occurred, a percentage, what percentage of total crime did that make up or, you know—you know, characteristic, or in the case of NIBRS, you have characteristics. And then you have a rate. So, rates are important because they standardize the estimates across areas. So if you have two areas and one area had a 100 robberies and area two had 200 robberies, well, you would say, well, area two had twice as many robberies. That's true, but if you then learn that area two had twice as many people, well then, you probably would expect it to have twice as many robberies. So rates take the population into account and standardize the estimates so that you have basically a number of, like, say robberies per 100,000 people. So for a set number of people, how many robberies were there? And in that case, those two numbers in that example I just gave would end up having the exact same rate. And that's important because then you can really compare across areas very easily and know if they're really different or not in terms of the crime counts.

So in today's world, under summary—when there's summary, the FBI produced a population estimate for every single law enforcement agency. And so because they only were dealing with counts at the aggregate level, that's all they needed, they could then create a rate, they can aggregate those populations up from the law enforcement

agency to whatever geographic area they were estimating and calculate a number of crimes per persons in that area. But with NIBRS, we want to fully take advantage of NIBRS and NIBRS goes deeper than just a top level count, it provides victim characteristics, arrestee characteristics, offender characteristics. It does all of these detailed characteristics, you know, where you can get age categories, race, you know, race groups, and of course gender, male or female. So now we can break crimes up by those different categories. If we break crimes up by those categories, we may now want to produce rates by those same things. So for example, you know, a good example is rape. You might want to very well split rapes up—rape up between male victims and female victims. You can do that with NIBRS. But then in order to calculate a rape, you then need for each of those areas, a population of males and a population of females. So you need that additional population estimate. And that's what we're now bringing to the system that will be in the system, will be those additional population estimates, you know, where we'll go and disaggregate it. So we're taking the top level number and we're disaggregating it by those key demographic characteristics of age, sex, and race. And so we're going to—so NIBRS—the NIBRS system will be able to create those rates by those different categories.

The next thing it'll be able to do, and Cindy talked about this and she anticipated a question about this, and it was a good anticipation but there are zero population agencies out there. So zero population agencies are agencies that overlap with another agency and for purposes of not double counting the population, their population is zeroed out. As Cindy said, that will still be true, we're not going to double count people, but we wanted to be able to let the system say if we want to just look at those agencies, that agency type. So for example, we just want to look at universities or we just want to look at tribal agencies, even they—or even though they overlap with the city agency or a county or something like that, we want to be able to get a population for them and be able to calculate a rate. We're going to—we're able, we're going to provide a population for the zero population agencies as well. But as Cindy was saying, they'd still be treated as zero for the general population estimates, but if you wanted to subset to just that agency type, the system will allow you to calculate rates or we're able rates for that population. Okay. Next slide, please. Okay.

So, that's estimation and now the question is, "What is going to be estimated?" As Cindy said, NIBRS is amazing. I mean, and Kim was getting to this on Tuesday. Hundreds—you know, I mean, not thousands, but hundreds of different indicators and different ways to cross them, different ways to subset them, different ways to do this. I mean, it's near and for my little brain can count, it's considered infinite. So as Cindy said, we had to make choices for this initial database. Over time, I think we can add this up as certainly as coverage improves, we can add more indicators. But we had to make

some choices early on about which indicators we're going to prioritize. We certainly wanted to cover all the major things and we—and as you'll see in a second we do, but we couldn't cover everything, we couldn't cover every five-way cross of indicators that you can do with the power of NIBRS, at least not initially. Okay.

So how are the indicators determined? Well, you know, the key stakeholders, you know, obviously BJS, the FBI, we had an external review committee. We all reviewed—we all talked and discussed what were the key things we want to include, and we came up with its initial list. And as Cindy said, we're still adding to it. So I'm going to talk about the very basic estimates. But as Cindy said, we're also still adding in a specific model for drug offenses where we're doing a deep dive into drug offenses. Those won't be talked about in these slides but as—we're still finalizing them, but they are going to be in the version that's published in the fall. And we're trying to do as much as we can and we're figuring out a way to how to add additional variables over time, so are the variables—are the indicators that I go over now the final set? The answer is no or yes, we can add more over time. So each year, I think we'll review, you know, the coverage rates, the number of reporters, you know, in each area that a crime—that—you know, for a particular indicator, and see if it can be added. So each year, I think you'll see more and more indicators built into the system itself. Next slide, please.

All right. So what are the indicators? So first at the top level, you'll see here the offense types that we plan to produce estimates for. And you'll see some have an asterisk next to them. Those are the part one offenses reported through the summary UCR. So we have all the part one offenses and then we have other offenses as well. And we break them up again by crimes against person, property, and then crimes against society. And so as I said, we're—we—you know, we're trying to cast as wide a net as possible in including all the key offense types across each of these three crime—basic crime groups. I'll pause here for a second to let people read in case, you know, without going through everything. Okay. Next slide, please.

So but now for each of those offenses, we have information both at the—about a victim, about offenders, about arrests, about the incident itself. And so at the individual level, we can then break, for both victims and arrestees, we can break up, you know, age. And you can see here when I talk about age, I don't—unfortunately I don't mean it as a continuous, each single age group. We are going to categorize it. And you can see here we'll have these sets of categories. But for these categories, we can break age up at both the victim and arrestee level. And as I said, we'll also have population for age, sex, and race. We're also going to have population estimates so you can create rates by all those groups as well. For, you know, so we can have a—the number of male victims or the number of male arrestees. Or the number of, you know, victim—male—you know—

or not—well, number of victims that are 15 to 17. We also are doing the cross of sex and race, so we are doing that cross. And so you are going to have the interaction with them at the victim and arrestee level.

And so I'll pause here. But you can see we're trying—so these are the individual level characteristics that we will break everything down. And this will be done for each of the offenses that you saw above at each of the geographic level, so at the national level, at the state level, the regional level. We'll use all of these estimates, and then we'll see what the uncertainty level is and make recommendations about whether or not to suppress. But we'll produce them all at the—at each of the level. So it ultimately gets to, as I mentioned, about 10 million estimates. Next slide, please.

So looking at characteristics of the incident, we'll have estimates for whether a weapon was involved, injury, multiple victims, location type. Location type is one where, right, we try to keep it, we're trying to keep it as refined as possible and as many levels as possible. We're trying not to collapse. You know, again, this is a sample size issue. So, you know, but you could—you know, location type is a good example where it could—it could just be really rare for certain location types. And there may be certain ones that have to get suppressed. Or we might we have to make decisions about collapsing. But collapsing, meaning combining two levels or something. But hopefully, that—you know, we'll see. And that'll vary. But you can see here what we're producing and we're producing these estimates, like I said, in these particular ones, some—all will be at the incident level, some will also be at the offense level, and some will be at the victim and the arrestee level. One thing I'll note in cases to the question, you know, we—you know, we're producing arrestee data but not always offender—information about the offender. And we are looking into that more. But with offenders, you have both offenders from exceptionally-cleared cases and those that are not cleared cases. And those are two very different people—types of people often. And in—when the offender is from a not cleared case, because they're—there are—their information is often missing. There's a lot more missing data. It's just because it's unknown. I mean, it just isn't known. It's not purposefully missing. And that—and that creates an additional level of uncertainty. So before we can produce information about the offender, we need to take greater care to make sure we can accurately measure that uncertainty and account for it in the process. So I don't know if that's a question someone has that they're not seeing—why they're only seeing victim and arrestee and not the offender category. Next slide, please.

All right. So more characteristics of the incident here, you know, time of day, different type of—you know, we'll produce these estimates for each type of agency type, so we'll produce them for city agencies, county agencies, as I talked about, university or

colleges. You know, we'll produce those special types, tribal. We'll do that where we can and go from there. Next slide, please.

Okay. I know we're trying to wrap up this part, but I do—but I do want to talk about data quality. So the other big thing when you're moving from summary statistics, from summary counts to NIBRS is data quality. The—as I—as we just talked about with the indicators, the amount of information, the difference in the amount of information is astronomical. And with that, it—you have to take great care to make sure that the estimates you're putting out are from high quality data. So we are taking great care to try to evaluate the data quality and make sure that it is a good quality when we put out an estimate. So what is meant by that? So, you know, NIBRS today, any record that's submitted via NIBRS goes through a rigorous set of checks, data checks when they're accepted by the FBI. So that's always been the case. And so at an individual incident level, no record will be used if it doesn't pass those checks. So that's first and foremost. But what we need to also do is we need to then go—take the—look at—you know [INDISTINCT] pass at the checks and look at in an aggregate level and see if something makes sense. Because sometimes while a valid value might get entered, when you—when you start looking at things in the aggregate, you're like, "But did that make sense? Was it a value that made sense?" Even though it was technically a valid value, was it a value that made sense? And so you don't do that until you start looking at things, you know, in aggregate. And if there are too many of those values that don't make sense, that can skew your estimates. And we want to make sure that doesn't happen. If there's just a few, maybe it's fine. But if it starts to be a lot of these types of erroneous—what we will suspect are erroneous answers or values, then that could really well skew your estimate for a certain characteristic.

So what measures are being taken? First, data review. We're reviewing the data to look at outliers' responses at an aggregate level, that's sort of what I just described. And the second is imputation. Imputation is—statistically fills in a missing or unknown value. And we're going to do that in some cases too, and we'll talk about that—both of those in a second, right now. Next slide, please.

Okay. On the data quality front, what is being reviewed? All—well, all the indicators that we planned to estimate. This was another—you know, another reason we had to select key indicators. We just couldn't—the NIBRS is too aggressive, it's too much for us to really review every single possible, you know, indicator and estimate in the—in the system, in the NIBRS system. So that's the reason. So all the ones that we are going to publish on, we are going to review, and obviously if we're going to add something in the future, we'll review it prior to determining whether or not it can or cannot be added. So how is the review conducted? Outlier agencies for each data element are flagged.

We're going to flag agencies that are at, like, the 95th percentile if for a certain element, they're on a very extreme edge of giving a certain selection, we will flag them. We will then look at the distribution as a whole and say, "Okay, is that 95th percentile extreme or not?" I mean, just because you're the 95th percentile, there's always a 95th percentile. And so—but that doesn't mean it's actually extreme if everything is tightly bunched together. So we'll then look to see if that is extreme or not. If it is determined to be an extreme subset, then we will identify those agencies and we'll, you know, try to create what I'm calling a feedback. Ultimately, the ultimate goal is to try to create a feedback loop with the agencies or the UCR coordinators for those states. Talk to them, let them know what's going on and have them either correct the data or, you know, certainly in the future correct the way they're entering the data. But even possibly in the past correct the data. And so that's what our hope is to do, when having going to flag an agency—flag agencies. Next slide, please.

Imputation. On the other side—so on the one side with data quality, we see extreme value, we don't know if it's right or wrong, so we're just going to flag it, have the feedback loop. On the other side when there's missing data for certain elements or unknown in cases where we don't want an unknown, I mean, I'll tell you what that is in a second, we're going to impute the data. And so imputation is a statistical process where we fill in a valid value. And so what are the situations where we're going to impute? Well, like I said, with NIBRS, we want to create these rates by age, sex, and race. We want to be able to do that. So in order to do that, we need a valid age, sex, and race for every incident and offense. So if it's missing or if it was an unknown, we're going to impute it. So even unknown because there is no unknown race in the—you know, that's not a real race, it's just unknown, we have to impute it and do that. So we're going to do that for both—we're going to do that for victims, we're going to do that for arrestees, and we're going to do that for cleared cases of offenders. So that's one type of imputation. So that's item—what we're calling item imputation.

The second type of imputation that's going to be done is agencies of—sort of going back to the slide where we talked about the large agencies. That's why the best—since I didn't it notified, not all agencies provide all 12 months of data. And when that happens, we need to make sure that that agency is fully represented, and so we're going to impute whatever number of months they didn't report. Now if they don't report a lot of the months, we're going to consider it a non-respondent, we don't want to over-impute. And so we're defining that as if they—if they provide only—if they provide three or months of data, we'll impute the number below 12. But if they only provided one or two months, we'll consider it a non-respondent. But basically for those that do provide partial year data, we're going to fill in what those—what—how many incidents there were and then we're going to fill in what those incidents were to get the full incident

counts, so that we're fully representing each agency when we produce the estimates. Okay. Next slide, please.

So, as I—so this is just more detail on the imputation process, this is the last slide I have. Just a little more detail, as I said, we're going to focus block imputation on those that have provided at least three months of data. Missing months, we're going to use a statistical technique called hot deck. If you have a question about that, I can talk about that. But basically, it finds a donor—it finds another like agency using a statistical process that finds a like agency and uses the—that other agency's data to fill in the missing month. On the item imputation side, here you can see this measles chart that identifies what we're going to impute. We're going to look at age, sex, race, and we're also going to impute victim offender relationship where we can, where there's a direct link between the victim and the—and then the arrestee [INDISTINCT] and so once we have that imputed values, we should be able to then calculate the rates we talked about, and we shouldn't have any bias for an agency that doesn't provide all 12 months of data. All right. Next slide, please.

And that's the—that's the meat of the estimation process. So I have—we are now— Cindy and I, and—or Erica, too, are willing to hope—and hoping to take all your questions. Thank you.

ERICA SMITH: Thanks, Marcus and thanks, Cindy, for this presentation. We had several questions in the Q&A box. I believe that I was able to respond to most of them. But I will go back actually and see if—Cindy or Marcus, if either one of you wanted to comment on any of these questions as well, just to elaborate beyond what I may have put in the answers here.

So one of the—one of the questions was actually related to the regions and how those regions have been determined. Do either of you know if those census regions that are used—that are typically used with—for the crime in the United States publication, if those line up to the same designations that the Census Bureau uses?

MARCUS BERZOFSKY: They do, yes. Yes. They do, yeah.

CYNTHIA BARNETT-RYAN: Yeah.

MARCUS BERZOFSKY: They're—yeah, they're the census-defined regions, yes.

CYNTHIA BARNETT-RYAN: Yeah, and they do.

ERICA SMITH: Okay. Great.

CYNTHIA BARNETT-RYAN: Yeah.

ERICA SMITH: Oh, I thought so but I didn't say specifically because I wasn't a hundred percent sure. Oh, and then there were a couple of questions related to how race and ethnicity are determined within the NIBRS specification. So one of the responses that I put in was specific to how those data are collected and that it's generally observational, typically collected in the field by a law enforcement officer and that right now, the specification does not allow for more than one race category to be quoted. Cindy, I don't know if you want to speak to that. I know obviously this has to be something—or this is something that has to be addressed when you go to seek clearance from the Office of Management and Budget to actually conduct the data collection. So I'm not sure if there's anything that you want to say specifically about that or if there's any more that you could add.

CYNTHIA BARNETT-RYAN: Yeah, I could add that this is obviously something that we also recognize is of right value and interest to the communities that we serve with our data. But what we are trying to do right now in the context of that conversation is really trying to understand how UCR sort of is situated within the broader community of all kinds of criminal justice data that we request from the law enforcement agencies and so it's a—it's a little bit of a bigger problem in that respect, than just making a decision, say, if you had, you know—well, I mean, I'll just—not as an expert in the NCVS but the victimization survey for example, there's a little bit more control over, like, how those questions get developed. We have to work really closely with the law enforcement community to really understand how their data is recorded at the agency level, and how that interacts with other systems that they're using the same information for as an administrative dataset, right? So all I can say at this point is we don't have anything definitive but we are taking it under study and really trying to see it within this broader context of its impact across all CJIS or Criminal Justice Information Systems, so.

ERICA SMITH: Thanks, Cindy. And we have a couple more questions that came in here too. So, one question is relative to the zero population agencies, those special purpose agencies. Will we be imputing counts and rates for those non-reporting zero pops? Marcus, did you want to comment on that?

MARCUS BERZOFSKY: Well, we won't be imputing counts or rates. What we'll be doing if we do imputation for those special purpose agencies, it'll be that same as the general. So we would either say, "Okay, here—an incident was reported, but they didn't provide an age." Either they left it missing or they said unknown. We would impute that,

that age for our victim, say, for example. Similarly—or not similarly, but the all—the other where we would do imputation for one of those agencies is if a tribal agency reported data but they only provided eight months of data, there were four months where they didn't report any crime counts. We would—we would use block—what we call block imputation to fill in the data for those four months. And then we would use that the—you know, and then after that imputation is done, we would then combine all the tribal agencies, they're all this university agencies that would—whatever those [INDISTINCT] agency type is. And we would create, you know, the estimates, the counts, the percentages, and if we have a population, you know, which we would do with universities, tribals are a little trickier to get a population—an accurate population. We'll produce a rate as well. So what—we'll apply the same process to those special agencies as we are to city agencies or county police.

ERICA SMITH: Thanks, Marcus. And could you talk a little bit, too—I'm sorry to give you questions back to back here, but there is a question about what variables or characteristics of the agencies will be—or the data will be used to identify like agencies for the hot deck imputation process.

MARCUS BERZOFSKY: Yeah, good question. So we looked into this a lot, we actually looked at a lot of models and ultimately, what we found is that once you look at the total crimes, that that's the best correlation. We looked at—we looked at agency type, we even broke crimes up by whether it was, you know, a person crime, or property crime, or other, we split them up that way to find donors. But ultimately at the end of the day, they were no different than if you just looked at the total crime for—it—within a month, you know, for a given month, you know, it looked at a different crime, and so we're actually met—you—we're using—we're going to—we use a predictive mean model to predict what we think the crime count should be for each agency in a given month. And then once we have that, we then identify the donor using the nearest neighbor technique of randomly-selected nearest donor, something that's within a certain small radius of the one that's missing. And then once you identify that donor, you go in and you take their actual incidents and you impute them with a hot deck. So while we did look at more complicated models, taken into account a lot more different types of agency characteristics. Well, I guess, we were probably surprised anyway, because like I said, we started with a much more complicated model. That really—it wasn't necessary. You end up with the exact same results if you just look at the total crime in a month through an agency.

ERICA SMITH: Yeah, and I would add on to that, too, that this particular work that we're doing with the full NIBRS dataset isn't the first time that BJS has worked with RTI to do this type of imputation and weighting, we had done, I guess I would call it a smaller

scale piece of work looking directly at crime in the Bakken oil producing region and we had used data from three states, North Dakota, South Dakota, and Montana, to try to understand changes in victimization related to some of the fracking industry work that was being done there. And we did start off with this much more complicated model for how to match agencies and do the imputation. So that ultimately, it took a really long time to run those imputations. And the weighting scheme was on just three states worth of data. So we had a little bit of, I would—yeah, maybe not a little bit, I think we have a lot of experience, actually, before we even started this full scale effort for the, you know, for the entire NIBRS dataset. We had done that work back in the mid-2010's. So we were able to bring that to bear to this work as well.

I'm going to keep hammering on you, Marcus, my apologies. But another question here, I think this one's relatively simple, though. When block imputation is conducted, are the incident, offender, and victim details imputed? And I think you might have touched on that a little bit, but I don't know if there's anything else that you want to add or something like that.

MARCUS BERZOFSKY: I touched on it, yes, but yeah, no, it's good to—it's definitely worth repeating. Yes. And the short answer is yes. And what is done is—as I said, so it's a two-step process. So the first step, we're going to use this predictive mean modeling to predict how many incidents it—or should have been reported from that agency, as well as all agencies whether they report or not. So we want everyone to be on the same scale. So we use this predictive mean model to predict the number of—the number of offenses that each agency would have in each month. And then for those that had a missing in that month, we then find based on that predictive mean model, the nearest neighbor, the one that had the closest number of predicted offenses as well. Then we say, "Okay, we've now got the donor." So now we actually go to the real data for that donor, and we take it, and we copy—and so this is what hot deck is. Hot—this is how hot deck always works. You would take that donor and you take its actual data, and then you would use it to fill it in. So it's not the predicted model value anymore, it's what the actual number was, so like those two numbers could be slightly different. And you then copy that, and you copy, and then the entire incident record, from all, you know—you know, the entire, the—you know, all the same—all the same. So at the detailed level, so it's now, you know—you know, if they had so many robberies, so many aggravated assaults, so many et cetera. You know, all those—all the entire incident record for each of those would get copied into the—to the missing month. So you'd have all the NIBRS information available. And that's generally speaking how hot deck would work. In this—in this—so in this case, you're—it's blocked because you're taking the entire record. You're not imputing each value separately and getting it from a whole lot of different places. You're saying, "Okay, we have this one donor, we're going to take

all of its data, and just use it to fill in for the—-for the one that's missing." That's why we're using block. The block is the idea is that you're taking a whole set of characteristics all at once and imputing them simultaneously with that one donor.

ERICA SMITH: Thanks, Marcus. Cindy, this question I think is the—would be best answered by you. There's a comment about the UCR previously allowing users to see city statistics and there's—but now it seems to only be by state. Will city statistics be available for 2021 and beyond? I'm kind of adding that piece there. Could you speak to that a little bit?

CYNTHIA BARNETT-RYAN: Yeah. Yeah, absolutely. Yeah. Just to kind of clarify, maybe even, you know, perhaps it wasn't always obvious in our previous publications, but if you take crime in the U.S., for example, the first six tables of crime in the U.S were our estimates of summary data. So those tables took into account incomplete and non-reporting agencies. Much like what Marcus walked us through in terms of this brand-new method to deal with this within NIBRS. Everything else that you're used to seeing in our releases of data with the UCR program is based off of actual reporting, including that city or county agency level view. That will not change. And in addition to the fact that we'll have estimates that will account for some of this variation and reporting that you may see from year to year, because it is a voluntary program, we will also—the FBI will be making available just the actual reported data for NIBRS data. So you don't necessarily—what you see here isn't the only thing that's going to be available. You will have access to the reported data at the agency level, much like you've expected to see with summary.

ERICA SMITH: Thank you, Cindy. So another question that we have in the Q&A boxes, in addition to the indicator estimates, are you planning to release a version of the incident level data with imputed values and weights so that researchers can make custom estimates? I don't know exactly—Cindy, maybe you want to take that. I know that we're still in discussion about exactly how we are looking to release the final weighted and imputed file. I'm not sure if you want to say anything about what the FBI might be looking into right now.

CYNTHIA BARNETT-RYAN: Yeah. I can't speak—I cannot speak definitively right now because there's a lot of discussion going on right now in terms of, you know, as you said, exactly how this is going to be shown on our various, you know, agency platforms. We know that the Crime Data Explorer is going to be their primary conduit for releasing that information. But I also want to, sort of—and I hope I'm not misunderstanding the question. There might be an element maybe even that, Marcus, you might want to speak to, that the data is not going to, like, even if—like the system doesn't produce,

say, an incident level file with estimates, right? Like, I don't know exactly in terms of, like, producing your own imputed values. Like, what we would—aside from the fact that—as I said, like, incident level data from—based on the actual reports will be available. I don't know if you can maybe—I don't know if that's maybe not in the direction that the question really was going at. But I kind of feel like there isn't that incident agency level record being created by this estimation procedure.

MARCUS BERZOFSKY: Yeah, that is true. I will say that—and Cindy, not to put it back on you but I'll just put this analogous out there and maybe you can speak to it. But the analogous in today's—in summary world, as Cindy said, they do do estimation to account for partial reporting agencies that only report six months of data, they fill in the other. But they don't publish the six months that they imputed. They do address that and account for that, but they don't publish it. And the reason that's not published is because once you put out there that an agency had this value or incident had this value, and if it was imputed and it's wrong—imputation is meant to be correct at the aggregate level. It's not meant to be correct, you know, with a hundred percent certainty at that incident record level. And because of that, if you—if you just put it out there, it opens one's up—oneself up to a lot of criticism, because it could be wildly wrong at that individual record. But at aggregate, it should be fine. And so it's tricky to just put that out there. And so—from my point of view, at least. And so especially when you're imputing as much as, you know—it's not as much, you know, when you're doing all the blocking imputation and stuff like that, and as I said, as I just described in the last answer, we're just taking someone else's, another agency's incidents and putting it in to that other agency, that could upset that other agency that we just filled in. And so it's a very—it's a tricky business to then put that out there. And so as Cindy said, the reported data will be released. And then we're producing—as Cindy said, we're producing a database with all the estimates that take into account the estimates—the imputation process and the weights. But it's another matter of care if you're going to actually release that imputed data, that's another level of review that I think personally that would have to get done before that could occur. So that's—so that's right now—that's why I might put it back on Cindy or Erica, it's not for me to make that decision. But it is—but it is—but I just wanted to point out the challenge in doing it, that there is—it's not as straightforward as one might think.

CYNTHIA BARNETT-RYAN: Right. Yeah.

MARCUS BERZOFSKY: Anyway.

ERICA SMITH: Thank you both for that. I think I can take this next one. The question was whether we use a standard crime classification for the list of indicators, something

that would say be akin to the International Classification of Crime that was published in the NAS publication in 2016. My answer to that would be, yes, the—that NIBRS is governed by a very clear set of definitions for all of the indicators that are collected within the—within the data itself. And then a clear set of technical specifications. And then there are quite a number of different, I would say, training programs, you know, whether they're manuals or some additional information, specific to how one would actually—how a law enforcement agency is supposed to code their data. So it does not align 100 percent with the ICC classification. But there are a lot of similar overlaps as well.

And I know that in the—that NAS publication, there was—it was identified that this transition to NIBRS was the appropriate first step toward, you know, getting this much more granular data, such as in the ICC classification. So hopefully, that's helpful in there. And I could say too, the FBI has some really great resources online, not just to take a look at the NIBRS user manual, which gives a number of different scenarios about how data should be coded. The technical specification also provides a lot of background. But then there are these other publications like the Hate Crime User Manual, which delineates how an agency is to verify that an offense was bias motivated and what they should do in different circumstances. I think there are some additional data on—or additional information on cargo theft and things like that. So lots of resources on the FBI website as well.

We have a question here about county level crime estimates and whether researchers and other interested people would be able to get those county level estimated rates as part of this—as part of the estimation process. Cindy or Marcus, can either of you speak to that?

MARCUS BERZOFSKY: I'll just say that I know, you know, our goal and I was, you know, our goal, from my point, and I know both Cindy and Erica have expressed this goal to me, it is to go below the state, right? We want to—ideally, yes, we would drill down further and further, and a lot will be driven, you know, by coverage, you know, counties are made up of many agencies. And so—and some agencies cross county borders and things like that, so you have to take care, you know, with that. And so that is—I'll just simply say at the outset, that is, I think, an ultimate goal. And certainly the process that we've described here today can be used to do that. But there's just a little bit more work that needs to be done, from my perspective, before, you know, that is possible. But yes, I know that is—that is certainly a possibility in the future. Now I'll pass it to the actual deciders of that.

CYNTHIA BARNETT-RYAN: I mean, I think it—what you said is, you know, there's a lot, I think, as we've made this transition into a NIBRS data collection that we have now the ability to sort of debate some of these things, that maybe were too difficult to do under sort of the limited set of data that were available with summary reporting. So as Marcus said, I think that that is definitely on the table. But there's a lot of stakeholders and a lot of conversations that need to be included in that conversation. You know, since it is really quite a new area that we would go into to have something like a county level estimate. That being said, again, I—not to just keep banging on this drum, the incident level data will be available to any researcher, and there are going to be county codes associated with all of those incident and agency level information that'll help you even with some basic, sort of, for lack of a better term, sort of demographic type information on these entities. So, you know, by all means, even in the meantime, you know, as we're kind of progressing and learning and growing the estimation sort of program around NIBRS, researchers will have granular data available to them, that if they wanted to do their own methodology to account for missing and incomplete data that will be available to them. No problems there.

ERICA SMITH: Thanks, Cindy. Thanks, Marcus. We have a question here too about—again, going back to questions about how race is captured about—or relative to victims in the file. I actually think this one may be—may be different from NIBRS. So Cindy, I think this may—this may be one for you. And there may be some resources that you might be able to point to. But the question is, we tell victims on state protection order forms that we use either black or white because that's what the FBI requires for the National Protection Order Registry in NCIC. If the FBI added a biracial category, wouldn't that drive change at the state and local levels? I realize it's expensive to add a field, but society is changing. Cindy, would you be able to speak to that? I'm not sure what kind of overlap there is between the specifications in NIBRS on the race and ethnicity categories and how that marries up to some of the other CJIS systems that you all maintain.

CYNTHIA BARNETT-RYAN: Yeah, I mean, it's a good point. You know, it kind of—I'd even just reference my earlier answer that these are all highly interconnected systems. I apologize. Someone's like vacuuming right behind me.

ERICA SMITH: Of course.

CYNTHIA BARNETT-RYAN: But—yeah, I know, it's all good. But anyways, yes, especially at the agency level. And I think the attendee that references, I mean, I think has put their finger on sometimes the issues surrounding making changes in the UCR program is that oftentimes, as is the case with an administrative data collection such as

UCR, you know, you're reliant upon operational systems that have a set standard associated with them. And it can't be easily disentangled, especially as automated as lots of agencies have become in recent years. That being said, as the attendee, you know, mentioned, you know, society is changing. And I think that the FBI is trying to do its due diligence to really look at this issue and see if we can come up with a comprehensive answer for some of these questions about the way data are collected. But it really is something that has to be done sort of in lockstep with all kinds of CJIS systems. You can't just, you know, take one system, say, like UCR out of the mix of, say, NCIC, or, you know, other systems, you know, fingerprint, biometric, criminal history type information, for example, all of these things at some level are interconnected. So our hope is to start seeing some of those progressive changes in the near future. But it is a larger problem than just trying to, like, go to the UCR technical specifications and make the change.

ERICA SMITH: Thanks, Cindy. We have just a couple more questions left, I think, if I'm following the Q&A in the chat appropriately here. One question is relative to how the arrest data are captured. The question is, what will the final imputed data be able to say about arrestees? Will it be limited to arrests that occurred in 2021 for crimes that occurred in 2021? I think this is more about whether those arrests data will be updated for previous years. And I'm not sure if—Cindy, that seems like one that you—it's probably best suited for you too, in terms of how the data flow is handled at—on the CJIS side.

CYNTHIA BARNETT-RYAN: Yeah. I mean, I think they raised a good point that, you know, NIBRS does allow for the updating of that information, even after the calendar year. So you may have a previously reported incident from the previous year, for example, an arrest that occurs in the current year. And so we are looking at producing updates to angle estimates. Right now, what we have proposed, we don't have a set schedule right now, but there will be an opportunity to go back one prior year and update those estimates, so some of this clearance type information does have the opportunity to enter into the—to the picture, at least, on that sort of two-year window. As we get to know kind of the estimates a little bit more clearly and how they may shift from year to year, that's still open for discussion, I think. But that's—right now, what's being proposed is to do at least one additional refresh of the annual estimate to allow for updating of those NIBRS incidents.

ERICA SMITH: Thank you. Another question, going back to the special purpose, what we used to call the zero population agencies, what will the system do if the zero population agency does not report it all? Will there—will that agency contribute to the total crime estimate or will it—or will that be reflected as zero?

MARCUS BERZOFSKY: I'll take this.

ERICA SMITH: Marcus, that might be a good one for you. Yeah. Great.

MARCUS BERZOFSKY: Yup. Yup. Yup. I'll take this. So, yeah, I guess I didn't delve into the specifics here. So every reporting agency, and Cindy set this up for us but I did go also over this, it—every reporting agency is given a weight. And that weight is just that it's a number that says it—what it represents of itself, and what it represents of all the people who provided no data or only one or two months. And so every reporting agency is going to represent more than just itself. And that's done at the agency level. So in the example you just gave of a—of a university that didn't provide any data, so it's a non-reporter. So there will be another university agency, another like agency that will have a weight that accounts for that non-reporting agency. So what we would be saying is, in the estimation process, that we're only going to estimate among those that reported, but we have these weights to account for those that didn't. And the way we construct those weights takes into account things like agency type, agency size, and all those sorts of characteristics. So that we get as, you know—the reporting agencies represent as like as possible non-reporting agencies. So in the case of the universities, you know that a university agency will be representing that non-reporting university. And that's—and so when you produce the estimates for universities, you know, it will be accounted for in the estimation process through that weight. Yeah.

ERICA SMITH: Thank you. And one last question. And I think we will have barely made it under the wire. Can the data be used for analysis of crimes and guns? So Cindy, did you want to speak to that?

CYNTHIA BARNETT-RYAN: I mean, in terms of what's available in NIBRS, there is a weapon data element that is available on the offense segment that indicates whether a gun or a firearm was used in the context of that crime. It does, unfortunately, not specifically say whether or not the firearm has been discharged. That is something that's been under discussion quite a bit with stakeholders and with the law enforcement community. We do have some upcoming changes that we're hoping to propose to NIBRS, now that we've kind of crossed over the threshold of the full transition in January 1 of 2021. So we hope to start seeing more data when it comes to the use of firearms and whether or not it was discharged in the context of that particular criminal incident. But right now, that's what's available in NIBRS.

ERICA SMITH: Thank you. And it looks like we have exhausted the questions that were in the Q&A and in the chat. And we—I just want to say thank you to everyone for

attending. We really appreciate it. We really appreciate the back and forth here that we've had in the discussion section. And if you have any questions, feel free to reach out to any of us. And also, if you are interested in having a recording or seeing the slide deck here, information from this webinar will be available sometime within the next couple of weeks on the BJS website, it's bjs.ojp.gov. And we hope to continue engaging with you all in this conversation. Daryl, I'll turn it back over to you to close this out.

DARYL FOX: So, definitely I want to thank everybody for joining. So on behalf of the Bureau of Justice Statistics and our panelists, thank you for joining today's webinar. This will end today's presentation.