

# **Community Dashboards - A Journey of Data, Information, and Storytelling**

**00:00 Gaither Stevens:** I want to thank the NHSDC. I really appreciate the opportunity to be here and I'm excited and thank you everyone. I see a lot of really familiar names in the sidebar. So that's really cool. One of things you might notice is I'm not wearing a tie. I'm wearing a very kind of a beachy, casual shirt because I'm in Southwest Florida and it's warm down here. It's about 90 every day. So, I like to keep things casual. If you've got questions, just feel free to type them in the chat. I'll do the best I can to address them as I go through. And I also kind of like to give people a chance to roll in the room slowly, so to speak. So, my first few slides are going to be just housekeeping and some general information about me, so we'll go ahead and start. So, the Webinar will last about 60 minutes, and participants are in listen-only mode. You can submit questions in the question and answer box on the right side of the screen. Webinar audio is provided through your computer speakers. For technical issues request assistance through the questions and answer box and access to the recorded version will be provided. Also, we are recording today's session, so just want to let everybody know that, so it'll be available later if anybody needs it.

**01:31 GS:** Also, let's see... Yeah, you can listen to your webinar through the computer or the phone and I think they're going to provide call information down in the chat box. So, let's get started. So, the basic agenda that we're going to cover today, will be an intro. I'll kind of tell you a little bit about myself. I'll roll through that pretty quickly as I said I'm going to give people a chance to get into the room. We're going to go through some basic data concepts that I think are especially important for HMIS, for data quality for dashboards, building the foundation. And then we're going to go into storytelling, and so how we can present information in a way that is useful to stakeholders and the community. And then I'll follow up with some question and answers and some demonstrations of dashboards in real time. So that's kind of the plan that we have going on. So, I'm Gaither Stevens and if you want to find out information about me or contact me, here's some pretty good information [gaither.stevens@gulfcoastpartnership.org](mailto:gaither.stevens@gulfcoastpartnership.org) or [gaitherdyn.com](http://gaitherdyn.com). There's my Facebook, my Twitter, LinkedIn, and my phone number, so call me, text me. I actually really enjoy talking about the world of HMIS and data dashboards and CPC and all that information and all that stuff. The topic fascinates me, and I love chatting about it.

**03:02 GS:** So, really quick I'm going to give you some fun facts about myself as people roll into the room. Bob Ross actually filmed The Joy of Painting less than a mile from my childhood home in Muncie, Indiana. If you try to text me and my autocorrect is Gaithersburg because my family, at one point, founded the city near DC, but my name is Gaither, not Gaithersburg. And there is a famous Gaither, Bill Gaither, you may have heard of. He has won six Grammy Awards, and 24 GMA Dove awards. If you don't know who that is, you're probably too young to know. So, I have five kids, two cats, two drum sets, and I've lived in Marion, Indiana, Muncie, Indiana, Fort Wayne, Indiana, Florence, Kentucky, Cincinnati, Ohio, Port Charlotte, and I am currently in Punta Gorda, Florida. So as far as my education, just quickly, I went to Burriss Laboratory School, Purdue University, Indiana Wesleyan, and Boston University. So currently, I work for Gulf Coast Partnership, which is a continuum of care in Southwest Florida, in Charlotte County and I am the Chief Technology Officer. So, I do everything related to HMIS, IT, local, state, and Federal reporting, and I work on the PIT every year. I do data analysis and dashboard. I'm also part of the community organizations active in a disaster.

**04:29 GS:** So, we're working right now through the COVID19, giving assistance and helping people through our website, taking applications, and processing them. I'm also CEO of Gaither Dynamic, which builds data dashboards for CFCs across the country and we also have something called the CFC Alliance, which I am a founder of. And it's basically a peer to peer group that is

available to anyone that wants to know more about CFCs or HMIS administration. We have about 400 members and it's a great resource if you need help in CFC-related areas or HMIS. Okay, that's the fluff. Now we get to the actual content of what I've come to talk to everybody about. So, I look at there being three keys to success when it comes to presenting data. It's kind of a process, and it's of something that you have to build on. So, just collecting the data isn't enough. So, you start with the data, but then you actually translate that data into information, and then finally, you take enough information and you present it somehow. So, there's actually a quote that I like, from Daniel Keys Moran, and he says, "You can have data without information, but you cannot have information without data." So it's one thing to have raw data, it's another thing to actually be able to have good information, or to be able to draw conclusions, or be able to use it in a manner that makes sense and helps you in your day to day life.

**06:07 GS:** So, one topic that's really important when not just when you're dealing with HMIS which a lot of us are familiar with. Honestly, data quality is useful in all aspects of life. So whether that be, whether you're scientists or whether you're collecting information for surveys, data quality is extremely important because the data that you use, ends up being what turns into the information and then coming to the presentation that you're giving. And the last thing you want to do is present something, and have someone ask you a question about what you're presenting and realize that maybe your underlying data, was flawed or you left some numbers out or it didn't make sense? So a lot of times, I like to say once you get to the end of your process, make sure that your information and your presentation makes sense, because sometimes you might need to go back and check your underlying data. So, the data quality is a constant ever repeating process. It's not something that you're usually one and done, you have to keep going back as you receive your data, you have to keep cleaning the data and processing the data, and continuing making sure that the data has good quality.

**07:21 GS:** So generally what you'll do is you'll analyze it, you'll look for data inconsistencies, you'll compare calculations using maybe multiple reports or if you have an HMIS system or you have a system that will tabulate the data for you, maybe if you're doing your own calculations possibly check those against each other to make sure they agree and then move forward from there. If you do find inconsistencies or problems with your data, correct it because you want to do that before you start really building intense dashboards or presenting that information and then you want to monitor your data. So for example, here in Charlotte County, one of the things that I did when I came in, we had a lot of data that had come from organizations that may have not collected all the universal data elements that are normally required in HMIS. So, we went back to the cutoff date for many of the federal reports, which is October 1, 2012, and we took thousands and thousands of clients, and went through and fixed the data quality. Now that was a massive process that took a lot of buy-in by the providers.

**08:36 GS:** But a lot of times it was building relationships with individuals at the providers that I knew could help me make the changes, and then we could do it in an iterative process. So, I would give them the spreadsheets they would make changes and then we would rerun reports and then keep doing that process. And then once we did that it helped our system performance measures, our LSA, all our reports in general. It just made our lives so much easier. Excuse me. And so now when we do our data clean-up, I still run reports back to October 1, 2012, but now there's much less data quality to clean up, it's usually just the last month or couple of months. So, once you kind of get that big hurdle out of the way, you can just constantly do it slowly and then it'll work a little bit better. So, I'm going to try to talk a little bit louder. I've got some feedback that I'm a bit quiet, so if I'm too

loud, let me know, hopefully, I'll do the best I can. So, is this better if I talk a little bit louder? So, I'm going to continue on and hopefully this sounds better. Alright? So, once you go through your data quality, you clean that up.

**09:50 GS:** There's something that becomes important when it comes to looking at what type of data you have. And this is especially important with data that is from HUD or your HMIS. So, I would recommend breaking these, breaking your data out in the two different groups and understanding them. So, one area that you might come across is called aggregate. Aggregate data. And that is where your data has already been calculated for you, you're probably familiar with this in the report where you'll see a total already generated for you. It might be total clients, total households, average days. So, some kind of calculation has been done for you and you now have this aggregate data. So, aggregate data a lot of times you'll see it in the annual performance report, especially in the CSV, the caper CSV. System performance measures and data quality reports. Your final HIC and PIT reports. Dashboards are a good example. And then most local, state and federal reports will already be aggregated so that the information is easily digestible. So, here's an example of system performance measures and what it looks like pre-aggregated. So, this is aggregate data, it's something that you would look at in a report. Unfortunately, I do not have the ability to click on the numbers and dig down into the data, I can't see any more detail on the data.

**11:27 GS:** All I have is the raw number, that's already been totaled for me, which doesn't give me a lot of insight beyond just the number. So, here's an aggregate PIT example. The Point in Time count we're given just a general number. Sometimes we can maybe see how the numbers compare to each other, but you really don't have the opportunity to see the underlying data. So, finally this might be something that you see on an annual performance report, again. Another example of aggregate data, I think a lot of us have seen reports like this, it gives you the number of stairs, levers, veterans etcetera. But there's nothing I can do beyond these numbers. I can't see the demographic of these numbers, it's just a number that's being served to me and it's aggregate. This can be okay, but not always. I do want to show you, because a lot of people don't know what some of this aggregate data looks like. When you generate a HUD or actually an APR CSV out of your HMIS, a lot of times, they'll come in a zip file with multiple CSV files. So, if you open up one of these CSV files, like for example this Q5A...

**12:47 GS:** What you get is kind of like a mini report. So, you've got total number of persons served, you've got total number of adults, and each one of these CSVs is going to have information that has already been aggregated for you. Now the problem with that is trying to build deep understanding with that aggregate data. So, one of the things that I've done, because when you have all of these different CSVs and, for example, in the APR CSV, in that zip file, there is 69 individual CSVs. And data visualization software a lot of times does not like aggregate data by itself, let alone when it's in 69 different individual files. So, what I did was I wrote a custom script that would process each one of those CSV files and then turn it into what I call a Master Data Sheet, or a master data table. So, this is an example in Google Sheets where you can see the individual CSVs listed as sheets below, but all of the data is taken together to form one master sheet that I can then use for a dashboard. And this makes it much easier when trying to do something in say like Tableau or Power BI. Where you're not having to work with 69 individual files, you can deal with one flat data sheet, and then name your fields accordingly and work inside data visualization software.

**14:24 GS:** So, this has been a solution that's worked well for me, and if you have further questions about this, I'd be happy to answer them afterwards. It's just saved me a lot of time when dealing

with aggregate data. So, with aggregate data, the great thing about it is you can build a dashboard pretty quickly and easily, because the calculations have been done for you. So, this is an example of an aggregate dashboard where literally the number that was in a file is just translated over into the dashboard itself. I haven't done any calculations here. The 1,464 was in the file. I simply brought it back and threw into the dashboard. It's relatively easy once you've got the underlying structure done, all you're doing is taking a number and putting in a dashboard. So, there are pros and cons to aggregate data, some of the pros might be that the calculations are done for you. That's always great, you don't have to do the work. It is easy to simply grab numbers and re-display them, like I showed you in the example. Many reports have extensive aggregate data displayed. So, it might go into chronic homelessness, it might go into veteran homelessness, it might break it out by leavers, stayers, physical disabilities.

**15:45 GS:** And all of that's been done for you. It's not something that you have to worry about calculating or trying to dig through the data and make sure it's okay. But there is sometimes a little bit of trust when it comes to that, that whatever is generating your aggregate data is doing it correctly. And so, one pro too is that you can usually run a multitude of ways with aggregate data, depending on your reporting systems. You can do it by date or providers or groups, depending on your HMIS software. So, if you're just wanting to get fast numbers, then aggregate data and reporting that's already existing in your system might be a good way to go. However, some of the cons. The inability to modify or check background calculations. So I don't know about you, but I have had times where I've looked at a number and I thought, "Well, that doesn't look quite right," but unfortunately I haven't been able to calculate it for myself. I've just had to trust that the report is correct, and that's not always been the case.

**16:48 GS:** You also lose the ability to create custom calculations or maybe tweak calculations to fit a certain scenario that you're finding yourself in with your underlying data. You also lack the ability to drill down into the data, or, find multiple filters. For example, maybe I have a report that tells me how many... I have 1000 people and 300 are veterans and maybe 100 are chronically homeless, but I may not be able to tell how many of those people are chronically homeless veterans. I don't necessarily have the ability to combine two of the aggregate numbers, because I don't have access to that underlying data. This can also make it difficult to find correlations and really perform deeper data analysis. It will also kind of limits you to static dashboards, so if you're making a report or a dashboard for your website or for your stakeholders, all you could do really is taking the numbers that are given to you, and then regurgitate them out as a dashboard or print the report, and you're kind of stuck with whatever you're given out of your system. So that brings us to this disaggregate, the definition or disaggregate data, which I prefer to work with if I have a choice. Although it does take more work, I find that it provides much greater flexibility. So, this aggregate data is usually in what's called row level format or sometimes even in separate tables.

**18:30 GS:** So many people have worked with Excel spreadsheets, so we know that there are individual rows in Excel. That would be similar to what we're talking about here, a row of data for each transaction or slice of information. And you might have multiple columns or fields that you're working with, and you can then sum or do your own calculations, however you want with those rows, which is, I find to be fantastic. So, you could have one client, they could have multiple entries. That is something that could happen with disaggregate data, but there will always be some kind of unique identifier so that those rows are still individual and distinct in some way. Disaggregate is also granular and it contains detailed information about, whether it be transactions, the service transactions, entry, exits, or even maybe just individual clients.

**19:34 GS:** So, some examples that you may work with when it comes to disaggregate data would be the HUD CSV. And I'll share with you an example of that in a few minutes. The LSA export. PIT survey data. So, when you collect that data, you might go ahead and have all your survey information, but you haven't aggregated it yet. You haven't said how many people were actually surveyed on the PIT, all you have are those individual survey questions. A flat data table with the individual rows is example of disaggregate data, and also raw data before it has been aggregated. So, one of the things that you may deal with when it comes to disaggregate data, is you might have a flat file. So that's kind of like what we talked about with a spreadsheet in Excel where maybe you just have information in one sheet by itself with individual rows. And in a situation like that. It's easy because all the information is there for you. It's all kind of combined in the one master sheet that you work with, but it can also get more complex where you have multiple sheets or multiple tables, and then you have to join them together.

**20:55 GS:** So, what you'd have to do in a situation like that is join those tables based on maybe a primary key. So, let's say, for example, you have a client table and it has... I think I might even have an example. So, here's, actually let me talk about this, this is what it would look like if you have a flat file. All the information is here in one particular file. This would be like a sheet or a spreadsheet you'd have in excel. And then at disaggregate structure where you have multiple files, each one of these affiliation assessments, assessment question, those are each individual table that you would have to join. And what you would have to do is you would have a unique identifier as you can see here. Personal ID is 768 in one particular table, and then in the next table you have that same 768 but they're in two separate tables, and then what happens is you join them together. So, for example, if you have enrollment as a table that 768 appears in that enrollment table and that 768 appears in your client table. And when you join those together, your visualization software will create a flat table altogether with all of the relationships. And this is actually called a Relational Database or relationships between tables.

**22:26 GS:** And once you do that, that's where you have your row level data all joined together and you can do your calculations, and everything will be fantastic. So sometimes things can get a little complex, but these are the kind of the Venn diagrams, I was talking about. So, for example, with the HUD CSV, this is one of the ways that I recommend doing the joins. You have more tables in the HUD CSV, but this has been kind of the information, that I have found that has been the most useful for me to pull and put together. So, this gives me client data, the enrollment transactions, it gives me their exit data, disability projects or if it's in a different project, the way they're joined. And then something I've done is called date scaffolding or data scaffolding where you see that master dates table. So that's something a little bit different, it's not included, in the regular HUD CSV, but it makes granular data-based dashboards, easier to manipulate. And if you have questions about that, hit me up after that and then I'll help you.

**23:44 GS:** And yeah, that particular screenshot is from Tableau, but the concepts are kind of the same, where you were going to be doing joins or putting together database files, that maybe are separate that have relationships to each other. So, the HUD CSV, you will need to do some work to put those together and figure out how to join them. Once you do that, this is an example of a disaggregate dashboard. On the surface this may not be that impressive, but I'm going to show you some examples later on, we're going to do actual some live demonstrations and you're going to see the difference between an aggregate dashboard and a disaggregate dashboard. So, kind of keep that in mind. So, some of the pros for disaggregate data is you have the ability to do custom calculation.

You could do great data dives, you could do amazing analysis, interactive dashboards. It improves your ability to inspect data quality. I'll share a really cool feature in Tableau that I use all the time for digging into the data. You have the ability to do custom joins which is really interesting. You can also do, if you have access to it to SQL, you can do some really interesting data polls that are very specific to your needs and then it also allows for dynamic dashboards, as opposed to the static dashboards that you have with aggregate data.

**25:14 GS:** So, disaggregate data does provide some extra challenges, because you have to have a deeper understanding of table relationships. You can't just necessarily throw the tables into a data visualization software and have it know exactly what you want it to do. You have to have an understanding about specifications, and the way that they relate to each other. And sometimes maybe that's just trial and error but you have to figure it out yourself and then kind of push past it and it gives you a great ability to do really neat things. So, you can also have some complex calculations and I'll give you a couple of examples of those in a few minutes. Trying to do things like figure out, first time homeless, or chronic status can be difficult, if you try and implement that yourself. It's a lot easier to just pull out of an aggregate report, but when you have to do it yourself, you begin to respect the people that have done the programming already, for you and spit out a number that you think might be easy, but it's not necessarily...

**26:22 GS:** So, one of the other things too, when it comes to disaggregate data, that you need to be especially careful with is protecting client privacy. So, if you take the HUD CSV for example, it has client name, social security number, and PII information, or personally identifiable information. So, I recommend that before you begin using that data in dashboards, or in reports, you go ahead and delete those columns. So, take out any of the PII or client information that you do not want in there and delete those columns. So, realize that if you've taken the HUD CSV file, and wanting to use it, but those columns are there, and you need to make sure you're protecting data privacy. So, you may also need to do more complex data checks. So just because you have put together a dashboard or a report based on disaggregate data, that doesn't necessarily mean that your number's right. So, I highly recommend using small data sets initially, and very simple calculations to make sure that you are building correct information, and dashboards, and stories, and reports before you completely go complex and are doing massive numbers. And you try it on a small group of people or one project and then build up from there. And that's just something I would recommend from personal experience.

**27:56 GS:** These might look very similar; these are examples of what is inside two different CSV ZIP files. So, on the left, you have the HUD APR and that has 69 CSV files in it, each one is a table that has aggregate data. On the right, you're seeing a partial example of the HUD CSV, affiliation, assessment, assessment question. Now with those, this is all low-level data in the files you see on the right. So, this requires joins and relationships, whereas the files on the left are already aggregated for you. So, it can be a little complicated when you're working with the HUD CSV on the right and not so much for the HUD APR. So really important when your building dashboards, you start out with something that's aggregate, you can build something quickly. You work with something that's disaggregate, know that it might be a little more complex. So, here's an example in the specification, and I have the link down there to the HMIS Programming PDF, this is an example of literally homeless. So, you're looking at your specific project types you're looking at living situations, and you're doing... And this honestly isn't extremely complex, but it's a lot simpler than just grabbing a number right out of a report. So, when I build my dashboards and I'm using disaggregate data and low-level data, I have to take something like this, that's in a HUD

specification and recreate it.

**29:36 GS:** And as someone pointed out earlier, I do use Tableau quite a bit. So, this is an example of that same calculation, being translated into a Tableau calculated field. So what you can do is you can take this calculated field, which gives you literally homeless, and then you can combine it with other calculations, or use it right in your dashboard, but this is kind of what you're expected to do when you're dealing with disaggregate data. So just realize things can get pretty hairy, pretty fast. So that kind of covers data. I wanted to kind of move into information a little bit. Information and data analysis, typically what I work with runs with the first two categories you see right here, but it moves in kind of a linear progression. So, you begin by describing the data and that might be something as simple as we've had 174 clients, 30 people were veterans, seven were children. That's just descriptive, you're just talking about the numbers themselves. It might be aggregate but you're not really drawing any kind of conclusions or information too complex out of the numbers that you have. That's where you come in with diagnostic analysis.

**31:03 GS:** So, this might be more in-depth of a question like, "Why is the number like this?" And that can be a little tougher and requires something a little deeper than just describing how many people are in a project. So, beyond that, and you go into something even more complex, which is predictive data analysis. So, what's going to happen? What are we going to see when it comes to our numbers, are we going to see them go up or down? How many people are we going to have in a shelter? How many people... Or it just becomes more kind of what's going to happen in the future? And then the final step is prescriptive. So, what can we do now that we have this information and we know what's going to happen? What can we do to make sure that it's being addressed, and policy will affect and take into account what we've learned and the information that we've uncovered? So descriptive definition, really, it's kind of what? That's all you're kind of getting out of it. Like I said, it's kind of the basic building blocks, it's giving out certain numbers and a lot of dashboards are good at this and it kind of just tosses the...

**32:24 GS:** The calculation out at you it gives you length of time, homeless or first time homeless. But it really doesn't do a lot necessarily to give you context, and that's really where diagnostic information comes in. It gives you context where you begin to understand why the numbers are the way they are. So, if, for example, right now, our emergency shelter has lower numbers than it usually does. Just knowing that doesn't really help us. If it normally has 100 and, right now, it's at 50 that's descriptive. But knowing that we're in the middle of a pandemic, that might begin to explain the why we have lower numbers in the shelter. We started... Stopped taking new intakes, then you're now doing diagnostic data. Why have the numbers changed? Why is there a difference? You're doing diagnostic. Predictive would be they continue to go down, or maybe the shelter lifts its restrictions and the numbers go up. That would be predictive. And then prescriptive would be, what can we do about that, how do we affect policy or make a change to help or process those new people that are coming in. So here are some more descriptive examples. I kind of went through some of these already. It can be something as simple as total number of clients or increase in the PIT count.

**33:57 GS:** And then the diagnostic examples would be why did the PIT count increase? Why are there more people? Maybe even racial disparity. That's something that could be more diagnostic, a deeper understanding. As you look at numbers you can uncover deeper truth. So, increase in rent services due to the recent pandemic, that might be a diagnostic example. So again, I kind of summarize this. So descriptive information is generally what is shown on dashboards. That's also



what you're going to see assistant performance measures. Your PIT, HIC, LSA, your local, state, and your federal reports, whereas diagnostic information is generally used in narratives. This is really important in something called the NOFA. So, you might have a simple number where you say, this increase or that increase, but maybe you need to explain why that happened, and that's where context and narrative come in. And it's really important to understand the diagnosis of what you're seeing. So, I've kind of gone through data and then we talked about information. So now we're going to talk about presentation, which is kind of my favorite part to be honest.

**35:17 GS:** So some of the things that I like to focus on when I'm working on presenting the data and information that I've uncovered or that I've been working on is, I like to be able to provide dynamic content, I like to make sure that it's accessible, especially on mobile devices. A lot of people forget that component. Honestly, I find it greater accountability when I present information to the public and the stakeholders because they can come back to me, and they can ask me if what I'm seeing is correct. Or they have the ability to realize, "Wait, we only have 30 beds in this project. Why are there 40 people currently showing up? Maybe there are 10 people that have not been exited from a particular project." And also, it's economics. If you're printing out hundreds and hundreds of reports with 10, 20, 30 pages each, that can be extremely expensive and time consuming. Whereas if I could publish a data dashboard to a website then it's instantly available to everyone and there's no... There's not a limited access and I don't have to worry about printing out tons of reports for everybody. So, this is one of my kind of data flows that I use when I'm creating a dashboard. The first thing I do is I generate the data.

**36:40 GS:** So, this can be the aggregate or disaggregate, however I really want to do it. But on this particular instance, let's say I'm pulling out disaggregate data. Once I do that, I import the data in another format, which I prefer Google sheets. It's just something that I've learned to use, and I like it because Tableau works well with it, which is my preferred data visualization software, but you can use Power BI, or Click, or Looker, or anything you want, or even Google Analytics, anything's fine. And then I like to take my data and then I connect it in my visualization software, for me that's Tableau. And then, once I've built the dashboard, I will usually publish it, either to an internet on maybe sites that only my organization can see, or to Tableau public, in my case, where then I can embed those dashboards in the websites. And this makes it freely available and I'm going to go to some demonstrations in a second to show you what that looks like.

**37:46 GS:** So, one of the problems you have with dashboards or reports, that come out of a particular system is sometimes they can be locked to that system. And they can be perhaps old or not updated and your kind of stuck dealing with whatever is in your current system, whether it's even a CRM software, or any kind of software. But if you want to increase portability, it's always good to be able to have access to your data and then present it however you want to. And that's my opinion, but I think that that's great to be able to break the data out of a shell and put it out to the public. Okay, so this is actually... I have a lot of slides here for people that maybe would look at this later. I have examples but what I'm going to go ahead and do now is share my screen, and I want to show you some data dashboard examples. This is kind of the fun part, so what do we have going on.

**38:54 GS:** Okay, so hopefully you can see my screen now, and I've got our CoC website up and I'm going to scroll down and I'm doing this right now you have to realize in real time. So, this is literally our website and I'm going to give you a couple examples, actually the first thing I'm going to show you is what it looks like when you have an aggregate dashboard. So, this dashboard is built using the HUD APR and I cannot interact with this dashboard. I'm kind of stuck with these

numbers. I can display them in maybe a pretty fashion that other people can see but I'm kind of stuck with what I have. I built a little bit of interactivity in it because the HUD APR does break a data down into veterans and chronically homeless, so, I have a little bit of simulated interactivity, but I'm still kind of stuck with what I have in an APR. And again, I want you to realize, these are all being looked at in real time. These are all interactive right now.

**40:26 GS:** So, another example of a static dashboard would be the system performance measures. I can't interact with these numbers, I can't adjust these numbers, all I can do, yes, and Jack that's a great question, the dashboard I just showed earlier is based on the APR CSVs that I put into a Master Data Sheet and then to feed the dashboard. So, this dashboard is based on the report that comes out of HDX, its all the system performance measures and it's interactive in the sense of you can click on a button and you can dig a little deeper, but these numbers are very static. I really can't adjust these if I click on something, the numbers don't change and there's not a lot of flexibility. So that brings me to a disaggregate dashboard. I am doing the calculations for this in the background. So, what that allows me to do is look at something like inflow versus outflow for my coordinated entry system. And not only that, I can begin to really dig in, to looking at monthly enrollment. So, what does it look like month by month on a coordinated entry system? How many people we had total? Which of course you're used to seeing that, but I can also break things down into exits. Where did people go? There we go.

**42:12 GS:** So here are our exits by category and I could do some of this with the APR, but not quite as in-depth. This is one I like to show. So, this is based on the VI-SPADAT and the people that have come through our coordinated entry system. So, this gives you the total number of people at each score. I put it into a percentile and then this is people that are recommended for individual rapid re-housing and then permanent supportive housing. So, people above this line it's recommended they go onto permanent supportive housing, people above this... In this grey area or this area right here, should go into rapid re-housing but you can see by far most of our clients do require some kind of housing assistance. And this is a great way to visualize this.

**43:06 GS:** So, this is my favorite dashboard, and this is only done because I have disaggregated data. So, I'm going to show you a little bit about this. So maybe I just want to look at project type. Maybe I just want to look at my emergency shelter. All my filters will kick in and adjust the numbers, to just looking at my project type. I love that. This is the power of disaggregate data. And you're going to see my numbers up here change, return to homeless, stays in project, first time homeless. Say for example, I just want to look at one particular agency. So, I go through here and I find one agency, I just want to look at the projects there, apply that. And again, now I'm just looking at one agency for about the past year. So, this is also completely interactive in the sense that I can hover, and I can look at active clients by month. Oh also, I have instructions built in, which gives you a minimum and maximum date. So, let me show you some cool stuff. So, let's say I want to be crazy. So, look at this, what this says down here. My minimum data date that I have access to, is October 1, 2012. So that means if I go up here and I change this date to 2012, now it's going to go back a little bit... I didn't have data back to April, I only had it to October 1st. So, I want to put this to October 1st.

**44:56 GS:** All of my dashboard visualizations are going to change. And again, I can hover, I can see my active clients, but watch this, maybe I just want to know, okay let me scroll down a little bit before I get too far into this. Again, here's inflow and outflow. Here's all your demographic, here's your children, your veterans, your domestic violence victims, people broken down by age, race,

ethnicity and gender. So, what happens, if I just want to look at the active clients in April 2019, not a problem, let's click on that and see. I'm only looking right now at clients in April of 2019. I had 834 people, 436 households, 215 were homeless. All of my visualizations were filtered. But I'm not satisfied yet. Yeah, sure I'm looking at an April of 2019, but I'm really only interested in the homeless people in April of 2019. So, I'm going to add another filter and you're going to see that all my visualizations have filtered out. So now, I want April 2019, homeless veterans... And Tammy. Yes, you're right, the data underneath is row level so it's disaggregated data and I am using tableau public. Now one of the things you'll notice is I sort of the just... I'm looking at April 2019, homeless veterans, where did my children go? That's a sign of good data quality. I should not have any children that are veterans. I have had that in the past.

**46:43 GS:** And it's a great way to discover problems with your data. Now I'm looking at April 2019 homeless veterans that are 44 to 64. Samantha that's a great question. I actually have a custom script that does that for me, that I built. But you can do it in Tableau. So here let me... Here is the dashboard itself in Tableau, so let me show you something cool about row level data, if you're in the actual software. I can right click on this hopefully. So, say I want to right click on this, I can view the data. So, here's my aggregate data, but I can even go further, and I can look at full data. So, for data quality, this is amazing. Samantha, I update about once a month. So here is my row level data, so if I got, let's say a client that is showing up as a child veteran, I can find that client ID by digging into row level data. So, disaggregate or row level data is extremely powerful when using a data visualization tool. Now in the example I was showing with this dashboard, I have turned off the ability to download the data because people don't need necessarily to have access to it, but I do when I'm using it in the actual software.

**48:32 GS:** So if I want to go ahead and back out of this, I can click my instruction box here and all the filters will reset for me and I can go back to the data as it was before. And again, I can look at all kinds of things. I can hover over these; I can look at the... One thing that I might want to do is look at, say for example, all of my projects and maybe I just want to look and say, "Okay, so 19.2% Black or African American and then I could go through and maybe look at other projects, like maybe the homeless shelter. And this is a really interesting way to quickly look at something like racial disparities. So, I'm seeing that 23.2% now, when I'm looking at the general population versus the homeless shelter that we have. And then maybe I want to dig a little deeper like I said. And maybe I want to look at male, male people in the emergency shelter. So, the flexibility of row level data, I just cannot begin to tell you how much I really enjoy being able to do that. The other thing I'd like to show you really quick, is say I'm looking at two dates, like say you want to look at your... You want to get a preview of what your system performance might look like.

**50:21 GS:** So, as you can see, I'm typing in dates in and my numbers are all adjusting for me. And as I hover, I do have some tips, kind of letting you know what each thing means. Alright, so that's kind of the dashboard demonstration. I did want to leave some time for questions. So, I'm going to kind of look at the chat box now, so if you have questions, go ahead and toss them in there and I'll see what I can do. So how do you go about 10 demographics need to be looking across all project enrollments? So honestly, it really depends how you want to do it, but right now this is duplicating across all projects. So, what that means is, if I have all my projects selected, and a person shows up in any of these projects, they're only counted in that demographic box one time.

**51:46 GS:** And absolutely. So, Bethany was asking about how we do data quality. So, one of the first ones I did was I started pumping out reports to people, but then what I started looking at doing,

was actually posting for example, a simple report the APR does actually have a little bit of data quality at the bottom. So, this is something that the agency would have access to. And Rachel, Honestly, Rachel so that depends on your vendor. So, my particular vendor, yes, I create a reporting group for all of the projects that I want to have in that HUD CSV and then I do, yeah so then I do the export of the projects I need. And one of the things I did want to point out too, for me what's really important is the ability to have mobile. So, this should be better on the phone. I don't know if doing it in the browsing, I don't know if it helps much, but if you want to go to [gulfcoastpartnership.org](http://gulfcoastpartnership.org) the browser will automatically resize to your mobile screen. Oh, here we go. So, here's what a mobile version would look like. And I think it's important that when you're doing dashboards that you take into account that people are going to be looking at them on their phone.

**53:41 GS:** Yeah, so Ashton, that's actually a great question. So, I'll tell you what, when I started out doing the dashboards, I used a lot of what I would call HUD speak. So, I talked about system and performance measure one or I don't know, just things that were very... You had to be in the industry to know what people were talking about. And that's where I kind of changed things over to rather than saying system measure one, two, three, four, whatever people, first time, length, housing, and then I started asking questions. How many people are experiencing homelessness on a daily basis in our community? This is obviously a system performance measure, but it's worded in a way that people can understand that isn't necessarily reading a specification document. And then like I said, I've even tried to build some narrative into the page itself. So, it says this is a snapshot of Homeless Persons identified during the annual Point-in-Time count. So that way, if somebody comes to this page, they're not just left with a number that doesn't make any sense to them. So, I find that natural language makes a lot of sense. And honestly ask someone that's not in the business. Have your friend or a neighbor, look at the dashboards and say, "Does this make sense to you?" And if they say, "No," say, "Well, what part of it doesn't?" And then let them help you out.

**55:26 GS:** And one thing I really liked about doing this particular dashboard, is that I was able to just take the XLS file, the Excel sheet that came out of HDX, pop it into this dashboard and I could automatically see what my next year system performance measures are going to look like. Even though I hadn't turned them in yet, which I found to be really helpful. Oh yeah. Honestly, once you're working with low-level data you can do about whatever you want. It's amazing. And the HUD CSV file breaks everything down by project. So honestly, I've had some... So, here's what I did with this dashboard when it came to dates. So, I don't always update these, the same time each month. So, what I've done in this particular dashboard, is I had it default to the last day of the full month that there is data for. So, since there's only data up to 4/29 it looks at the last day of March and then I don't know why it's 4/2, I think that should be 4/1. I probably have, that might be just a calculation where I added a plus one and just need to take it off there, but what this dashboard will try to do, when it loads every time is it will look at the most full month last date and then the start date will default to one year prior. Just because that fills out the numbers up here nice and fresh.

**57:15 GS:** I could do, if I wanted to get it, if I wanted to know, what does it look like on one particular day, I could easily do that by doing March 31st in both fields. Oh, sorry, somebody was just asking about dates and how I frame the dates for the reporting period. So, when I'm looking at just one particular date, you can see how things can get a little wonky, with some of the measures that are meant for a year. That's just kind of a problem with the specifications and how they're implemented, but this is going to be now looking at one particular day. And what I like to do for example is look at the shelter. So, I like doing this for like a census for example. So, if I've uploaded

data, that's accurate up till today, I can get an idea of how many people are in a particular project. It's a real nice kind of day snapshot of what's gone on. So, on that particular day they had one client exit, non-entered, and this is a nice little. Kind of like what the APR does with a snapshot, it gives you just a little... What was going on during that day.

**58:51 GS:** I calculate for this dashboard, so again, aggregate data, calculating dashboards is easy. You just grab it from the CSV file, it's already aggregated. In this case, I believe I used household equals one, or head of household. I think I used head of household. So sometimes I do have to go in and look at how I did my own calculation. So, for example... Yeah, I remember off of my head. Yeah. Well, I think we're actually getting close to wrapping up, but if anybody has any questions afterwards, my slide did have the information and I will go ahead and put my contact information in here. So that's my email, I do want to thank everybody for being here today. Hopefully I didn't talk too fast...