

## **Session 9: Getting the Most Out of Your Data Analyst**

**Moderator:** Good afternoon ladies and gentlemen. The session will begin in a few minutes. We've got five minutes before we start the session. Before we start, I do want to cover some housekeeping items.

First, this is Session #9 - Getting the most out of your Data Analyst. This session has a lot of table-based activities. So if you are sitting at a table with only a few individuals, you may not be able to complete the task. So if we can get the tables as full as possible that would be great.

If you are at a table with a few people, you may want to look over and consolidate together. I do see a few tables around. To maximize your experience, we recommend you get into tables of eight as much as possible.

Thank you.

**Moderator:** Good afternoon everyone. Thank you so much for joining us today. So glad that you could make it to our presentation. We're going to begin now. This is Session #9 - Getting the most out of your Data Analyst. I'm very pleased to introduce John Wadsworth, Vice President of Client Operations at Health Catalyst®.

Along with John, we do have a team of analysts for this session who will be running polls and also sharing some analytic insights as well.

Now please join me in welcoming John Wadsworth.

**John:** Great, thank you. Ladies and gentlemen, welcome to Salt Lake City. It is a true honor to have you here. Hope you enjoy your stay. If you get a chance to get into the mountains, this is a great time here. Don't leave the conference for that. But if you do get a chance to enjoy the mountains, there's some real majesty there. Take advantage of that.

In this breakout session, we're going to have some fun. To do that, you're going to loosen up a little bit. I'm going to set the example. Lean back in your chairs; don't put your feet on the table. We don't want to pay for those extra cleaning costs. But we're going to have some fun.

You're going to get out of this, what you put into it. I promise you that.

I'll share with you some observations I've been able to make over my career in healthcare. Some of these are going to be pitfalls to avoid; some of these will be best practices. First, we're going to talk about the importance of making your data accessible or unlocking your data. Then we're going to jump into "Giving the right tools to do the job", then we're going to do a kind of a fun exercise.

We're going to talk about "Proving or Analyzing" and the perceived role of the analyst within your organization — both from an analytic perspective and from a leadership perspective.

Then we're going to talk about a theme that I call "Analytic Whiplash." Then finally, we'll wrap up with a conversation around "Readiness and Willingness to Accept the Truth."

To begin, you've seen we're doing polling question. Break out those apps. And Tim, you're going to help us. Take it away.

**Tim:** So we're going to start out this session with Poll Questions 1 & 2. Make sure you're in Session #9.

Question #1: How much time would you estimate your analyst spends gathering data?

- a. 20%
- b. 40%
- c. 60%
- d. 80%
- e. unsure

Question #2: How much time would you say that your analyst spends analyzing data?

So, I will give you a few seconds to fill that in, and then we will display some results for you.

All right, we're getting some results in. So for Question #1, "How much time would you estimate your analyst spends gathering data?" Overwhelming responses with C & D would mean that 60-80% of your analyst's time is spent gathering data.

Question #2, "How much time would you say that your analyst spends analyzing data?", and we see an overwhelming response at 53% say their analyst spends about 20% of their time analyzing data. All right, back up to you, John.

**John:** Well that's really interesting. If we just think for a minute as a group, between 60 and 80% around gathering data, and what was it, 53% say their analyst spends 20% of their time analyzing data.

I don't have a PhD in Math, but that seems to exceed 100%. So, some of you kind of answered two ways, right? Thank you.

I do need hecklers, okay? So there's the green light. So, we're going to spend a few minutes right out of the gate, looking at the bedrock of any analytic initiative. That is to unlock your data. I love this cartoon. If you can't see this on the back, it says, "I told you, I'm an analyst." It could be that this Paleolithic gentleman is just shirking his responsibilities to hunt. I don't know. But historically, hunter/gatherer societies spent the majority of their time foraging for a wild plant or roaming to hunt herds.

Foraging was a way of life. In fact, it was "the" way of life. Richard Lee from Cambridge states, "Hunting and gathering was humanity's first and most successful adaptation." Occupying at least 90% of human history, up until about 12,000 years ago, all humans lived this way.

While the modern world seems to have moved beyond the hunter/gatherer society, frankly speaking, as we travel around and partner with good groups we find corporations littered with hunter/gatherers posing as analysts. In fact, just this week, I had a fascinating conversation with one of our partners. I got about an hour or so with the VP of Ambulatory Care. She shared with me some concerns outlining several scenarios where the health system had entered in the shared savings plans, partnerships with payers.

Her frustration was this: the reporting that came back to her organization was inaccurate. As a consequence, they were withholding dollars. She was very frustrated by that because they were beholden to poor analytics. They could prove on her side that those analytics were wrong. So, to mitigate the risk, she went ahead and hired two nursing informaticists. These were practicing nurses who also had an informatics background and knew workflow well enough that they could find the dozens of locations that you could track the same clinical element. And these are also scattered across multiple systems.

So, the analyst came and joined us about halfway through that conversation. What she shared with us was, between 80 and 100% of her time was spent just gathering data. I think about it. You've hired two positions as analysts. And what she and this other gentleman report back is: less than 20% of the time, analysts are actually doing the job you hired them to do.

So, as healthcare leadership, is that where you want to spend their time? Analysts, how satisfying is it hunting and gathering data? Is that where you want to be spending your time?

Well some of you may be asking, "How hard can it really be to gather data?" Let's play a game and find out.

So your objective is listed up there on the screen. You need to determine the total value. Let's bring them out — the total value of the money in those buckets. Look at your table. In the center of your table, you'll see a color. It's

your table. And your color has a corresponding location around the room. Red is over here to my left; green is there on the back; blue is in the back in the center; and orange is over here.

Board game. You've got to work as a team. Everybody at your table needs to participate. Just send one runner. We don't want any injuries here today. Send one from each table and don't get your bucket yet until I say go. All teams are going to start at the same time. I know you're standing up. Don't get your bucket yet. Yes, I'm pointing at you.

You have a cowbell at your table. So brag a little. As soon as you've done that first analysis, ring that cowbell and we'll give you your next task. Complete as many task as you can in the time allotted. Okay? Clear? Ready, set, go.

**John:** Yeah, so validation is a key principle here. Excellent. Other teams had a really difficult time actually getting to analytics. I saw some people holding the data literally in their hands and they couldn't unlock it. It was duct-taped around the top, for those of you who didn't see it. But think about this from a source system perspective. You purchased an app, spent the money — sold on the analytics that came with it — and then your analyst is tasked with a new request that's outside the scope of that app, and they struggle. They've got that data right in front of them, and can't unlock it.

So, here I want to introduce you to a concept called the adapted data warehouse model. Some of you have seen this. For some of you, this may be new. Modern health systems or data systems in healthcare have made significant headway in the last decade or so, but there's a lot of room for improvement.

Around the perimeter of this slide, we see representations of source systems. We've got EMRs, financial systems, HR data. We've got departmental sources as well. In the adapted data warehouse model, we make direct copies of that data — warts and all. We copy it raw straight into the warehouse with minimal transformation of business rules and business logic as we bring it into this first ring. That's very important, because we don't want to clean the data yet. If there's a problem in your source system, we actually want to expose that, so you can go upstream and make those changes at the source, and not hide chronic problems.

Then, after we've brought your data into a warehouse, we will tie those together in this adaptive model through common vocabulary for linkable identifiers. And finally then, you start towards care transformation or improvement processes leveraging data, which is where we would apply heavy logic.

As an example, if you're going to build a diabetes registry, and you have access to every source system up here on the slide, you've got to have some way to bring together disparate sources of data, normalize or blend them so you have one trusted cohort. That is what we mean by a late binding approach. We're applying that transformed logic as late as it's pragmatically possible. This is not a sales pitch. We've made that absolutely clear.

Unlock the data from the source systems, bring those into a warehouse that is scalable, and link that information together now, so you get analytics. Tim.

**Tim:** Our second set of questions. We're still in session nine, questions three and four this time around. Question three, in your personal opinion, how important is the analyst's role in your organization?

- A. Not at all important
- B. Somewhat important
- C. Of moderate importance
- D. Important
- E. Very important
- F. Inapplicable.

Question #4: How important is the role of analyst viewed by your organizations?

And I won't read you the results again, or the actual answers again.

**Tim:** So, I will go ahead and close the results now. We see a lot of answers coming in. We will start with question three, and it looks like our average is about 4.5, and in your personal opinion, how valuable is the analyst's role, we are at 68% answering E, very important.

If we switch over to question 4, which was how your organization views the analyst's role, 32% at important, but we also had a lot, around 20% at somewhat important, at moderate importance, and very important. So pretty widespread there.

John, any thoughts on those results?

**John:** I refrain from doing math because I got called out on that last time. Very interesting, just to see how trusted analysts are perceived in the organization.

That's good. That's actually not what I had anticipated. So, I'm learning something there from this group.

For the analysts, you've made that investment in hiring them and transaction systems that I'm sure cost you a pretty penny, given the right tools to do the analysis. So, let's spend some time on what those analytic tools provide. So, we're going to do one more exercise. This is similar to the first exercise, but with a twist.

Reveal the rules of the game, work as a team. Everyone at your table needs to participate. Don't open your bucket. We have everybody on the same page. And then with each task you complete, ring that bell, and we can see how many you can get through. This one is the most important here. You are being handed tools. You've got to use those tools for your analysis.

Your first objective is group the coins by denomination. And then, when you get that one done, ring the bell, and we're going to the next one. Ready, does everybody have theirs? Ready, set, go.

**[Music playing][6:40]**

30 seconds down. Make sure you use your tools. And the winning team will get a prize. The red team over here hasn't even gotten their gloves on yet. This blue team is crushing it. I don't hear any cow bells.

One minute down.

There's the first cowbell. Second cowbell. Keep it up. I'm seeing a green team without any gloves on right here.

A minute and a half. Let's hear those bells. Stack them and group them together. We've got one minute left.

**Tim:** Do we have a team that finished all of them?

**John:** Every exercise. Anybody? Five? Okay. If anyone finishes all of them, just make a raucous. How much time David?

Thirty Seconds. This is a good one right here how they use their tools. Ten seconds, five, four, three, two, one, done.

**John:** Stop the counting. Analysis is over. We've got to keep going. Okay, we have a team that made it to seven. How many? You got to seven as well? All

right. Well at Catalyst, we would call this kind of predicament agile. We do have some prizes. The team that got to seven, you will get it.

So, please give us your names as you leave, and we will ensure that you get it. But this was the team I was aware of, so there you go. You've got gift cards here at the Grand America. You were the eight? This is not agile. That is a mistake. So I gave them a lollipop and took it away. There you go, orange team.

Now by a show of hands, the winning tables, what colors were you? All of you were orange. What was the difference? How come you were able to get so quickly to the analytics? What gloves were you wearing? Show us. They were not wearing gloves.

Let's review just what happened here. Some of you may have been very frustrated. I'm guessing maybe you thought the tools were too cumbersome. They were awkward, inappropriate for the job at hand, am I right? All right, a common complaint that we here from analysts is that they are handed tools that can't really do the job that they need.

Analysts are the folks who are going to be using those tools, not the executive giving them, who's writing the check. These are your analysts that are going to be using those tools. So, why not get their direct input during the sales process?

I'm not suggesting you hand over carte blanche account for purchasing analytic tools for your analytics team, but I am suggesting that as you're considering the purchase of the analytic tool, that you get the input from those who are going to be using it as a daily basis, namely your analysts.

So, tools play a significant role in the transformation from the hunter-gatherer societies into a stable agrarian community. Earlier we spoke to a group of frustrated nursing informaticists who are really stuck in a manual effort of data collection, data gathering. Tools, the right tools, can help move them from that role of hunter-gatherer into the analysts that they want to be. So, let's talk for a minute about what are the types of tools and their skills needed.

I'm going to list off some very geeky things here. Bear with me. Structured query language or SQL, that's just fancy talk for, "I know how to speak with the database. That might sound really weird. You can unlock that, get inside the database, and pull out data elements.

Data analysis. Once they're inside that system, we need them to make sense of all this data. There's so much information that's stored, and not all of it is

really relevant for the analysis you need done. They've got to be able to mine volumes of data.

Next, they are in a pivotal position now to translate very technical algorithms into a simplified message. Many of us learn visually, and that's how we benefit from that visual representation, having a graph, having a bar chart, some way to tell a story that you can pick up without having to mine through lots of tabs of data. And then communicate meaningfully to a story. We want nerds with personalities. You've got to be happy looking at a database for a long time and then happy being with people too. Sometimes that might feel like chasing a unicorn. But if you can do that, you can become invaluable to the organization.

And to the extent that you can have domain knowledge in the area that you've been given charge over, the analysis that you provide to your leadership will become ever more valuable.

All right, some recommendations now, not on an analyst level, but at a system level. Give them access to those source systems. If you're purchasing a new EMR, if you're purchasing a new HR system, let your analyst be sure or at least make a copy to make an interface that you could pull, and put that into another location. That you have the right tools visually, you can represent that information back. These are expensive.

If you're going to go with an enterprise license, it is expensive. But you don't have to start there. Don't get pressured to buy one. Test those tools. Let your analyst give the feedback, and then pick the tool that really allows them to do the job that you've hired them to do, not least, having an enterprise data warehouse. Some location you can now mine for secondary use out of those transaction systems.

I hope no one in this audience feels that this is a daunting, overwhelming task. This can be done incrementally. You can start with one system. You can start with Excel as your visualization piece. Start, get a win, get another win, and make sure as you go to purchase and build on an analytic platform, that it can scale with you. But do it incrementally.

Tim, we've got a couple more poll questions here.

**Tim:** Yes, we've got two more questions here: questions 5 and 6. Question #5, how often do you act on information provided to you by your analysts? Never, seldom, sometimes, often, always, or unsure.

Question #6. From the analyst perspective, how often does management act on your analysis and/or recommendations? Never, seldom, sometimes, often, or always.

We're getting a huge response from this, and it helps us a lot when we make it interactive like this. Let's start with the results for Question #5, how often you act on information coming from your analysts. We have 51% coming in at D, often. Overwhelming response that often we are acting on those.

Let's look at Question #6, which is management. How often does management go with your recommendations, and we see a pretty good response here. 43% say often, and then we get quite a few sometimes. We're seeing that often they act on these recommendations.

John, any thoughts up there?

**John:** Yes, I'm curious this really is slanted towards the analysts out there. Paul, can I ask for a show of hands? I'm just curious how many analysts we actually have in the audience. That's fantastic. Somehow, you've been able to demonstrate through credible analytics a high degree of trusted information that your organization is acting on.

One thing that I will point out on the 43%, just because an executive team chooses information that they go perhaps don't use, you still informed them. And to the extent that you can keep that trust in front of them — I hope we don't feel that that is a not worthwhile exercise. Many times, we do make recommendations as analysts — full picture perhaps of external influence in the market — and leadership may need to take a different direction from what you had recommended to them.

Let's go on towards an interesting story that played out not too long ago. With your data unlocked, and the tools in place, you're really poised to begin reaping an investment, or a return on your investment rather, that you've made in that data warehouse.

I want to share an experience with you. We had a client partner come to us and say, "We've got to build an observation wing. We have to do this because our ED has been clogged with observation patients." Anybody not know what an observation patient is? Okay, we're on the same page.

So, the questions they wanted answered in this partnership with us were, "How many beds do we need?" So we jumped into the clinical data. We could see that would inform the bed count based on historical trends. They also asked, "What

clinical staffing will be needed for the new wing?” We dove into HR and clinical data to answer that.

And then finally, “What do we think it would cost to repurpose or build this wing for the observation patients.” We gave them some estimates. Then we took a big step back and said, “Now hold on, have you already made the decision to just go ahead and build the wing?” They kind of scratched their head and said, “Why does it matter?”

If a decision has already been made, do you need an analyst? Do you need an analyst to spend that time? Probably not. If you have already made that decision as a leadership team, then you’re looking for something else entirely different, something to confirm the decision you’ve already made.

So, to help us out tell the rest of the story, we have a special guest.

**[Music playing][21:09-21:28]**

Maybe, we don’t actually want an analyst. We want a minion, someone to validate. We heard about this, this morning. We love validation, don’t we? I’m hearing laughter. Yes, we love to be validated. To help us tell the rest of this story, we have a minion. Do you have a name? We do. Rose. Rose is going to tell us how this story played out.

Rose if you were to look into the data, what can you tell us? Well, that’s interesting. That’s interesting because my slide didn’t advance. Here we go.

So, looking at the data, we ask, “What can we learn from the data before you just execute on this decision?” We learned, 70% of those observation patients had a chief complaint — a chest pain. Seventy percent is an interesting figure. It’s a pretty acute distribution. You would think, “Wow 70%!” Maybe these are new patients. This could be a good thing for the hospital. And no, what Rose confirmed was, 90% of those were existing patients. We’ve already seen them before.

What else could you tell us? Well, that’s fascinating. 80% of those that are showing up with chest pain have already been diagnosed with heart failure. Not only have they been diagnosed, but they already go to clinic or primary care setting. So, think about this from your perspective, those patients already have access and have used your primary care and cardiology clinic. What in the world are they doing in your ED, as an observation patient? Seventy-five percent of those are arriving between five and 10 PM. So, what’s the real problem here?

**Rose:** The clinic closes at five PM.

**John:** That's fascinating. A cardiology clinic they've been using closes at five. So, as you can see, we do not have a minion before us, we have a brilliant analyst.

So analyst, what would your recommendation be?

**Rose:** I would extend the hours of the clinic to 10 PM, and thereby you would also save 2.5 to 5 million dollars.

**John:** Which is exactly how this played out. That is a true story and they chose not to build that information wing, but instead staff until 10 PM that cardiology clinic.

All right, one other point. Think about that decision not to build. If you were paying your analyst, say the base salary, and she was able to share that information, she just justified her role for 25 to 50 years. Now think about that.

As an analyst, you helped them avoid an expense they didn't need. But sometimes, it's frustrating to be on that end because you don't get to see those dollars necessarily realize. I found ten million dollars. That's a different story, but it's just as important because you didn't have to go with that capital expense.

Recently I spent some time on the Northwest, on a family trip and got to do some fly fishing there. Years ago, my brother-in-law pictured here on the screen, taught me an important lesson. He's a master fly fisher. He showed me that in order to catch a fish, the fish needs time to study that fly. It's got to be confident that if it's going to put the effort for that fly, and for the fish to get comfortable, you've got to make the presentation of that fly flawless. It's got to land with the seemed delicate balance that the real flies landing on the water are, so you can trick it. It's a technique called perfect presentation, and it takes a long time to master.

As a river guy he saw this as a common problem. We're out on the river. He's got high paying clients, and they're just whipping it. Instead of letting that just land on the water, what could have been a perfect fishing hole, they fly their hands up in frustration and say, "There's nothing here."

More than once, I was guilty of that same mistake. I would move on from a fishing hole, and ten minutes later I would see he's pulling a big brown out of

the river, and he'd laugh and say, "John, I could catch a trout on a dusty road."

So, what this fly-fishing experience has to do with analysts is that we've seen this same frustration with analysts. Leadership gives them a problem. They jump in, start providing some insight. They're studying this problem. Data begins to be gathered from one or more systems, and then analyzed. They start seeing some potential patterns emerge, correlations that can be drawn, and then they're handed another problem.

They're tasked with wrapping that up and moving on to the next one. For organizations that seem somehow developed patience in analytics and success, we see this type of a cycle emerge. They start out the same, they're given a problem. Data begins to be analyzed, patterns and correlations begin to emerge. Something different begins to happen here.

Assumptions that are built into the code that they are writing against the database now can be verified by knowledge experts closest to that process. This is pivotal. Think for a minute. If I'm building a report tracking physicians, physicians are going to be measured through my analytics. And if I get push back from a physician, that's a great thing.

It may not feel that way as an analyst, but two things happen there. One, your physician is going to ensure that what you're measuring is accurate. You've got engagement. And two, the algorithm will be accurate and it lends credibility for trusted data. So bypassing that bullet is just going to shoot you on the foot.

And then adjusting the logic — you're not going to get this right on the first time. We find that this is an iterative cycle that happens over and over. You iterate through until you are able to validate all of the logic needed by those closest to the process.

The recommendation would be to give sufficient time, not only for analysis and discovery, but a full-blown recommendation as well.

What are the risks of under-resourced analytics? This is probably just very obvious, but I'm going to call it out. Insufficient time for the analysis. You're going to get half-baked analysis, which is going to undermine your credibility, and ultimately is going to create dissatisfaction, and employee dissatisfaction as well. Who wants to be an analyst that nobody trusts?

If you're just being whipped back and forth from project to project, we can't ever finish, that is exasperating for an analyst. On the other side, maybe

leadership doesn't understand that you need more time. So if you need more, what do you do as leadership? You hire more analysts.

Before going this route, ask yourself if it's more time that they need? If so, let them have that time, otherwise you'll probably just create an increased capacity for incomplete analysis. Analysts just need the time to work smarter, not harder.

Unless they're put between a rock and a hard place. They have to choose, "Do I work on this false report, or should I be working on patient satisfaction?" That burden of prioritization should not be on the analysts themselves. That should be on the leadership of the organization. So, leadership has become proficient, they say "yes" to those things of highest priority and "no" to those things that could wait.

How gratifying that is for an analyst in that environment where you know, "I'm given a task and I can complete it."

Please resist the lure of shiny new objects. There are a lot of really good sales people out there. Don't get sucked into the new shiny objects until you've completed what you set out to do with that strategic vision and commit resources for top projects to completion.

**John:** Okay. You've got a prioritization place or process in place. Communicate back to them how those decisions were made. If they don't have that communication, they get frustrated, and then there is a temptation to really circumvent the whole process by buying favors from your analysts. All right. So I'm going to just wrap up quickly.

I think I may have just a couple of minutes here. So, which is more important, telling your senior management what they want to hear or reporting bad news in an honest way? An example of this flawed thinking is illustrated with a CLABSI example. Up until 2014, acute care hospitals had to report only CLABSIs, which is a central line acquired blood stream infection only for ICUs.

One analyst at a partner organization actually found, not only did they have pretty good outcomes for the ICU, they're really low rates there, but they found a lot of CLABSIs that were all around the organization. At the end of the day, this analyst scratched her head and said, "It doesn't affect financial outcomes at least from a reimbursement perspective from the government. I'm not sure how well our senior leadership will respond to this, so my decision is to do nothing." She's in a position of tremendous influence, and yet chose not to act

on that information by sharing it, but to hide that. The reason for that was she just feared how leadership might react to that information.

For analysts to be able to act as real analysts, management has got to be able to listen to both good news and bad news. We heard this morning analytics are scary. I love how Dale says that. They are scary. They're going to reveal facts that maybe we don't like, but that's a starting point for us to turn things around instead of thumbing the wind and acting on a gut.

So, I'm just going to wrap up here. Recommendation then is please if you're buying a new system, unlock it. Make sure that it is information that could be used for secondary reuse by your analysts. Get the right tools in the organization.

If you've already made the investment in your analysts by hiring them and you've got to give them the ability to analyze the data and help your leadership organization become truly proficient in saying yes to the right things and no to the wrong things. Last of all, develop a culture of accepting the truth, warts and all. Thank you.

**Moderator:** Thank you so much, John, for such an engaging session. Well, now we'd all like to move on to the question and answer portion of this session. We'll actually start by turning the time over to Mark to see what insights the analyst team has claimed from your responses.

**Mark:** Yes. Thank you. First off, one of the things that we noticed is the thing that seemed to resonate most with this group was when you mentioned the inability to unlock data. So, I thought it kind of fits with the group. We did get a question during this session about whether or not there was a bias in this session.

As you look at this, you'll see compared to the attendees here at this session, 17% of the attendees are analysts. In this session, 31% are analysts. So there was a bias, but interestingly enough, that bias didn't translate into how questions three and four were answered. As you see, the analysts answered them pretty much the same as everybody else in the room. So, that's what we gleaned. Any comments on that, John?

**John:** No. We'll just open it up for — do we have a couple of minutes for Q and A?

**Moderator:** We do. We do have a few questions. We'll start with — we have some app submitted questions. If you have questions, you can submit them in the app.

**John:** I only want the easy ones. Okay.

**Moderator:** Do you want to? Well here's the easy one. Can we obtain copies of the slide deck? Actually yes, all the presentation slides will be available. We'll share with you how to get those. Here's a question. What tactic do you use to convince management that analysts should review tools and participate?

**John:** Even though they're purchasing it, it's the analysts themselves that are going to be using that tool. So, that seems to be a fairly convincing argument. That's a tactic. Did that answer the question?

**Moderator:** So, our next question is what fundamental skills does your analytics team need to have before you consider the team sufficiently skilled to use a robust enterprise data warehouse?

**John:** So, I go back to those fundamentals. Can they actually query? Does it actually have to be SQL? I've come across some phenomenal analysts who have become very adept at leveraging Cognos or Cristal Reports where it's riding that SQL for them. They just know the sources so well that it's easy for them.

So, that one is the ability to query and mine data. I would say also consistent representation through visualization. If you've got analysts doing things in very inconsistent ways, 3-D bar charts, pie graphs. Some have very clean try and shepherd that effort into a best practices. Let them drive it. I know Intermountain Healthcare years ago started a group called ASWG.

It was an analytic services working group. Periodically, analysts throughout the organization and data architects along with people who had vested interest in those reports came together to just share best practices among those visual representation, how to clean up your information. So, when you do put up a slide or a graph, you're not lying and that the story's very clean. Those would be a couple of recommendations.

**Moderator:** Great. Another question is can we take pictures with the minion?

**John:** Yes. If you want a picture of the minion, I think we can accommodate that.

**Moderator:** All right. Here's a question. What are some specific strategies to reduce analyst time to gather data?

**John:** Gathering data. Okay. Unlocking that information. This is a tough one. Let me give you an example with birth weight.

We found with one of our client partners about 18 months ago that there was an effort just to look at elective inductions. One of those key elements they wanted to study or collect needing from the metrics were how do we capture birth weight. What we found were, I think, around 15 or 17 different ways you had pounds written out. You had LBS. You had some indiscreet fields.

You had some that were written in text. By mining that information and showing all the different ways, that became a positive feedback loop at the source for nursing leads to say, "Okay. We've got to standardize on how we're going to actually capture birth weight." That's probably a good example of just how to go back to the sources. Mining the data now and going back and helping them see.

Do we have time for one more?

**Moderator:** We have. We've got five more minutes.

**John:** Okay.

**Moderator:** So, we do have just time for a few more. As a matter of fact, there is another point about the skillsets of an analyst. This was a comment that you're assuming many different roles that are called analyst.

**John:** Yes. Okay. So business analyst, that's what we often come across are clinical analyst. Some of those technical skills that we outlined are probably out of scope of that current role. That's okay.

What we have described in this session is someone who really is technical. You've got to be able to query the data. They have to be able to analyze that. They could even do the analysis in Excel. We see a lot of that.

That is not a bad tool. Microsoft put a lot of effort into that for organizations that are just starting into this. That's really not a bad way to go. You've got some basic statistical components even in there and some basic visual representation. It's ubiquitously available. Everybody's got Office on their desktop.

**Moderator:** We have another question.

**John:** Wait. I just want to make sure I'm looking at the skillsets.

**Moderator:** Yes.

**John:** The difference with the role. Giving them access back those source systems might actually be a source of contention. You're going to have to work through some security. That's such a painful process. We do see that to the extent they can start getting access to those systems they will encourage you to just learn to write SQL.

If they don't, we found that people that really can't query the data are beholding them to information being pushed back to them. You may be making assumptions about that data model that are unfounded. So, bringing up just even the data modeling, if that analyst doesn't have the skills, leverage your DBAs. Leverage your data architects who do understand the modeling of that data, and let those who are closest to the process you're trying to measure come into that conversation as well.

So, I've identified actually three different people. Even though that analyst may not have all those skillset yet, if you can get those people in a room, you've probably covered your bases.

**Moderator:** Okay. Looks like we've got time for a few more questions still on there. Still coming in. This is great. So the question is do you see leadership complacently regarding analytics investments due to risk aversion or uncertainty in future ROI?

**John:** No. No. I see confidence, but they want to perceive with caution. Maybe one of those factors for the caution is the actual expansion of some of these systems. This is such an incredibly hot market right now. People seem to be just clamoring to gobble up and there's pressure to jump onto some system.

I'm not seeing the senior leadership as complacent. I'm seeing really just how do we make sense of all the noise? How many of you went to HIMSS this year? It was unbelievable. Just walking through and seeing everywhere population health, big data analytics, healthcare analytics. It's overwhelming. So, I'm not seeing complacency. I'm just seeing they're trying to sift through all the noise to make sense of it.

**Moderator:** Okay. We have time for one more question — a role question again. What's the difference between a programmer and analyst of business intelligence and decision support roles? Is there an optimal ratio for a programmer, harvester, to analyst?

**John:** This actually brings up an interesting point. That sounds like in this organization you've compartmentalized specific tasks. That can work. You may have programmer, which may be viewed as like an ETL developer. I am tasked with connecting to that source system and pulling data in, but I'm not going to do the analysis.

I'll throw that over to the fence to someone else. Then an analyst picks it up from that point. An architect may be on the other side of the fence from that source system saying, "I'm going to model how this information should be stored." We kind of advocate a generalist approach. There is some real value in being able to connect.

Although we back trace that data lineage all the way back to a breadcrumb trail to the source itself. There is a cost. You've got to balance your efficiency, but there's a cost in compartmentalizing those skills. Our architects that we hire at Health Catalyst, they can query. They can build ETL, or they can pull one system into another.

They can model data. They can build visualizations. They can tell stories. We kind of ask for the moon, but that really seems to work, especially if you're just starting into this. As you get bigger and bigger, you may need to compartmentalize.

It may be that you have so many sources that you're trying to load. You've got to have dedicated resources just on making sure those loads happen every night. You've got to have dedicated resources just on the analytics, but as you're starting out, you could probably go with a generalist model and be okay.

**Moderator:** All right. Well, we are out of time. Again, thank you so much, John.

**John:** Thank you.

**Moderator:** Thank you very much. Have a great day.