Hello, class. We are going to do our next tutorial, and this one is on budgeting. And started a worksheet here for us. And we're going to take a look at-- there's a couple functions that we're going to use in this one that are pretty cool. I think I think you guys are going to like this.

So on a typical budget, we have we have historical data here that we're going to be able to use. And if you look through the lecture on budgeting, one of the things was that kind of a typical budget, we would be using historical information to be able to project where we think our current budget's going to be.

So in this case, we have we have actuals from 2013, 2014, and 2015 related to the surgery department for this hospital, Greenville Hospital and their profit and loss statement. So we have surgery revenues, their expenses. This is a typical operating budget with all of the components in it. The number of surgeries that are performed, the average charge per surgery. This is the statistical part of the budget that, in many cases, is the most difficult part to predict and to and to obtain that information and project out into the future.

So our budget that we're going to put together here is kind of twofold. One, we're going to use this historical information. And we have some tools that we're going to use to be able to make our best projection for that using historical information.

The second piece of it is that additional information that we receive. And I'm going to cruise down the page here, and at the bottom of the page, you see this on this template, or these input boxes that we have. And we come up with these scenarios of most conservative, most aggressive, or neutral.

And in a lot of cases, this information may come from the folks at the highest level of our organization. They may know of things that are out there that are going to affect the number of surgeries that we're going to do, or the average charge that we're going to be able to fetch, or expense lines that we may not know of.

And what this does-- this model that we're going to put together here does-- is it incorporates that information into our budget as well. So we're going to use this historical information, and it's pretty straightforward. And we're going to use the financial function to be able to project that.

But then in addition to that, we've got the second piece, and that is this additional information that comes to us year to year, and it may change. And it may just have to do with the approach that we want to take in this upcoming year. Do we want to take a conservative approach on our budget, or an aggressive approach, or do we want to stay kind of neutral on this?

And these inputs that we have here can change. The real power behind this is going to be the calculations that we

put in this box here. But first let's handle the historical information and how we're going to project that. And like I said, we have kind of an exciting tool that we're going to use to do this. And I think when we come out of this, you guys will be able to use this and incorporate this some into your own work.

So in this case here, we've got these three years of historical information, and we're going to project where we think that we're going to be in 2016 and 2017. And we're going to project the number of surgeries and our average charge per surgery, as well as we've already dropped in here increases for salary expenses and non-salary expenses. And we'll be able to make changes on those as well.

But we're going to go back to something that we learned in The Time Value of Money module, and we're going to use this rate increase. And we're going to use it in a way that it's going to allow us to use this historic information to project where we think we're going to be in 2016 and 2017.

So in this box here, let's start our formula. And if you recall, it's under the formulas in the Financial functions. And we're going to go find the rate function. And the way that we're going to use this here is we're going to count the number of periods. So we're going to use information from 2013 to 2015, which is counted as two periods, and it's actually counting these periods in between. So between 2013 and '14 is one, and between 2014 and 2015 is another. So that's two periods in this problem.

There are no payments in this. There is a present value in this, and that present value is this 1,200 for the number of surgeries. And if you recall, we have to put that in as a negative number. And the future value that we're going to use is the 1,400. So what we're doing is we're measuring this increase across time. And we're measuring it with this compounding effect again, like we talked about in the Time Value of Money module.

So when we pull that up, we find that the increase from 2013 to 2015 on an annual basis, with compounding inflation that takes place, was 8.012%. Now we know, across that period of time, that in a typical year, we would see an increase of 8.012% increase in the number of surgeries. If we had more years, we would be able to incorporate those in as well. We could do this over-- if we had five or 10 years worth of data, we would be able to use that.

The other thing that we could do is we could we could weight this differently, too. If we had, say, five years of data, or say we had 10 years worth of data, we may want to weight the first five years different than we do the last five. So we could come up with this weighted average to put more weight towards the more recent years in this, too.

But for now I think you guys will get the idea and kind of the power behind what we're doing here just through example. So now that we have that increase, we can apply it to year 16. And we do that in a similar fashion to what we have in the past. And it's the prior year times 1 plus this rate that we just calculated.

And so we can come up with a good, solid projection for our number of surgeries now based on our historical data of what we think 2016 would look like.

We can do the same thing for the average charge per surgery. So we can see that in 2013 our average charge was $5,000. And by 2015 we were up to $5,400. So let's calculate what that increase is by the year over this period of time. And so we go back to that same rate calculation. And again, the number of periods here are two. And our present value for this is the $5,000, and our future value for this problem is the $5,400, which is 2015 data.

And what we find is that over that period of time, again, was a 3.923% increase. And if we apply that to last year's actuals, we can project what we believe we will look like this year. And our entry for that is we're projecting that this year's average charge is going to be $5,612 per surgery. And you can see we had filled in the formulas below. Again, surgery revenue is simply the number of surgeries that we do per year times the average charge per surgery that we do each year. So we can easily drop those numbers in.

So once we do year 2016, then we can now project what we think year 2017 is going to look like. And I'm just going to run this through. And I'm pretty sure I know what the output is going to be, but I want to show you guys something. So now that we have this extra year here, what we could do is we could say let's span across from now year 2013 to 2016, and use this 2016 data to project where we think we're going to be in 2017.

So if we go back to our rate calculation again, and this time we're going to use these three years from 2013 to 2016. So we're going to call up three, and we're going to now go back to this $1,200 entry. And then for future value this time we're going to call up the $1,512. Now I'm pretty sure I know what this is going to come out. But I want you guys to see this, and then we can kind of talk through why this is happening.

So when we do that, we get the exact same output that we got in 2016. And you may be thinking, well, how did that happen? And the reason that it happened is because if you thought about averaging three numbers, and we wanted to take the average of 7, 6, and 5, and if we summed those we did a simple average for these, we would we would find that the average of these three entries is 6 or 18 divided by 3.

Now if we took, then, and added another 6 to this, we added another 6 to this sequence and we averaged this, well, we didn't change our average at all. And that's in essence what's happening here. So now we've got 24 divided by 4 is still 6, and in essence that's what's happened here. So it doesn't make sense to just span this over three years. But another method that we can do is we can just move this up one year. So we can take 2014, 2015, and our projected 2016, and we can project where we think we're going to be in 2017.

So let's take that approach here and see what we get. So in this case, the number of periods is going to be two again. And our present value this $12,500 because we're going to start at year 2014 and we're going to go through 2016, which is this $1,512.

And when we do that, we get an output of 9.988%, And this makes sense, too, because what this is telling us is these later years, or between 2014 and 2015, there was actually a larger increase in the number of surgeries. And that's taking this into account now. So we're using this more recent data to project 2017. And I think that's a solid approach to putting your statistical part of your budget together.

So what we want to do now is take this 2016 information and apply this 9.898% increase. And when we do that, we get an output of 1,663 surgeries for 2017.

Now let's do the same thing for the average charge per surgery as well. And we're going to use the rate formula again, go down and get that. And number of periods, again, is two. The present value, we're going to use 2014 data through 2016 here. And when we do that, we find that it's pretty close to the same. It's not ramping up quite as fast as it did in those earlier years, though. So a little bit slower.

And we'll apply that one into our input box as well and multiply that times 1 plus this rate again. And when we do that, we find that there's pretty significant jumps here when you look at the revenue just with kind of modest changes between these two. But they both ripple through our worksheet. And as you can see, between 2015 and 2016, we're looking at almost $1 million additional revenue just on these increases, and then about the same amount, actually more, than $1 million from '16 to '17 with these changes that are taking place.

Now there are some formulas in here for salary increases and for non-salary increases you can see. We're just simply applying this 5% here. And that's rolling through. Now there is one item that's calculated differently, and I'll let you look at this formula. But it's basically using this as a variable expense.

And what we're saying is, for this calculation here we're saying, what is the rate that physicians are costing us? And it's based upon the cost for their services divided by the number of surgeries that they did. And then we're assuming that if they do more surgeries, it's this variable cost and there's going to be additional cost for those surgeons. That's what this calculation does.

So that's really the only variable cost that we have through this worksheet. But take a look at that. We also apply the salary increases in there to make sure that that gets applied as well.

So for our historical budget, this is a solid way to go ahead and apply and to increase the statistical part of this, which ends up really being the most difficult part to project. It's the charge that we're charging for our services and the amount of volume of business that we're doing. This is a really solid approach to do that.

Again, if you had more years, more history of data, you would certainly want to use that. You may want to weight that. You may want to weight the more recent years more heavily, and less weight towards the data that's older.

So what we have to do now, though, is to take that other piece that we have, and it's that additional piece of information that we're looking at our budget with. And sometimes this information is going to come from marketing people. Sometimes it's going to come from possibly the CEO of our organization , or folks that really have their pulse on what the organization is doing, and different opportunities that the company has for growth. And any of that is going to get built into this assessment here.

So the way we're going to look at this is we're going to look at this in three different possible scenarios. And we call the most conservative, most aggressive, or neutral. And if you look at this, the most conservative approach says that the number of surgeries per year are going to go down by 5%. The average charge per surgery would go down. That's a conservative outlook. If we apply that to these percentages here, then it's going to drive our numbers down.

The most aggressive-- and this is if we have information within our company that we think that-- outside of this historical data that we have-- that there are opportunities there to either increase our cost to our customers or increase the volume of business that we're going to do, then we would then we would choose that approach.

And then neutral is fairly neutral with just modest changes across the board. And this may actually want to be a negative 1%, or negative 1 in this case here, too. So we're going to build this in a way that it's going to be set up in a way that anybody can participate in this budget exercise and our budget module. And all you have to do is-- and we're setting it up, or again, folks that may not know how all this is put together, but can certainly talk on if they believe that we should take this most aggressive or most conservative approach or a neutral approach to this.

So we're going to set up these different conditions, and we're going to use an if statement, logic statement, to drive this. So under our formulas, and under logic statement, we're going to pull up the if statement and we're going to run these logical tests. And the first one that we're going to do is we're going to say does neutral equal the entry that we placed here as the column header for this?

And you can see it says false. That's not true. But if it was true, we would want it to bring back this entry here. And if it's false, we want it to bring back 0. And the reason we want it to bring back 0 is because we're going to run the conditions for each one of these. We're going to add these together. And you'll see as we kind of work our way through the logic behind this.

So in this first case, we've started this formula, but we have two more entries that we have to make and add to

this. So we're linking these if statements together. So the next one is we're going to add another if statement to this. So we put a plus sign in, and then we go back to our if statement, and we say if neutral, again, equals most aggressive, then we're going to bring back this entry under most aggressive. And if that's not the case, then we're going to ask it to bring back 0.

We're almost done with this one, because we have one more, and that's this last condition here. So we're going to say plus, logic statement if, if neutral equals neutral, and that's true-- says right there if that's true-- then bring back this entry here, whatever we put in there. Right now we have a negative 1 in there. If it's false, then bring back 0.

So it's responded to that. It did what we asked it. Now what's really cool about this is now anybody can come in. And let's roll through the rest of these parts of our conditions and our budget, too. So the average charge, let's do the same entry. So if neutral equals conservative, if that's true, then we're going to bring back this negative 5 for the average charge per surgery. If false, it's going to be 0.

And same thing. Plus logic statement. If neutral equals most aggressive, if that's true, then bring this 3% in. If false, bring 0 back. And then we finish this one up with our last if statement, and that is if neutral equals neutral, if that's true, then bring back this 1. If false, back 0. You can see that it brought back the negative 1.

So this last one we're going to work the same formula. If neutral equals most aggressive, then bring back this 8% increase in expenses. If not, bring back 0 plus their logic statement. If neutral equals most aggressive, bring back the negative three. If not, 0. And then plus our last logic statement. If neutral equals this header neutral, bring back 1. If not, bring back 0.

All right. So let's kind of test this. So what we have here now is we've got logic statements here that cover each of these different conditions. So if we dropped in most conservative, let's see if our setup's working properly. And it does, and it changes to the negative 5. And if we said that the average charge per surgery we want to be aggressive on this line, and by the way, it has to match exactly what that is. I put aggressive. It has to say most aggressive for this to work. And you have to spell the words properly, too. Otherwise you won't get the correct one.

So most aggressive, and it brings back the entry for that piece. And if we said that this one, again, was most conservative, then we would find that it brings back 8% under that one. So it looks like our logic statements are working correctly. You can easily have somebody roll in with just a couple of sentences of description of how to go about entering this. You wouldn't want them to touch these formulas, but certainly folks can weigh in on it if they believe that this is the approach that can be taken.

And we're going to check this in just one second. Now what we have to do, though, is we have to link this information up to the top section here because right now it's not there. So what we need to do is, through these boxes here, we need to add each of these for the different conditions that we've set down below here in our input box. So since we're measuring number of surgeries here, we can link this to this first box here. And it drops that.

And if we do the same thing for year '17, you can see how it really affects our rate increase that we're pushing through, and it affects the number of surgeries that we're projecting. And we can do the same thing for the average charge per surgery line. So if we say that we want this to be entered into this box here, and we can do the same thing for the next year, you could easily put another box out here, and year '17 data would be maybe different than what you want to use for year '16. So there are some variations on this that we can do.

And then for our expenses, it actually already is linked. So we've put in a 5% increase. And then what we've done is we've linked it down here to this. Now we can now roll through here and test some of these assumptions that we have as well.

And let's do that. So if we wanted to go with the most conservative budget possible, let's start with a neutral position with this and see what our output looks like. All right. And when we do that, we can see that in year 2016, we're projecting a positive bottom line, budgeting a surplus of 1,022,000. And then in year 2017, we have a positive bottom line of 772.

Now the reason why this year is going down even though our revenue's going up, is again, it's because our expenses are outpacing our revenue. And it's primarily because of these salary increases and non-salary increases at this 6% increase that we have rolling through here.

So we're calling this a neutral budget. But if we changed this to-- and I want you to watch the outputs here as we go through here-- if we change this to most conservative, you can see how this starts to really affect our bottom line. And now we're underwater with this one when we changed our average charge per surgery. And then our expenses, then, if we change that to most conservative as well, we can see that in year 2016 we're almost at break even, and then by year 2017, our budget is well underwater. We have a plan deficit for that year.

So we can do the same thing. If we run the most aggressive line here, then we're going to see something that's very different. And I'll just drop those in as well and you can see. But it gives us the opportunity to make a lot of changes quickly and to incorporate ideas from folks that are possibly outside the finance office, and to get them involved in that.

And you can see now, under this most aggressive approach, the numbers got significantly better. So we would use this in a way that we'd be able to incorporate that information out there that's, again, it's beyond the historical

piece. And it gives other folks an opportunity to be involved in the budgeting process that don't necessarily know what all these numbers are, but they do know what marketing plans look like and what opportunities in the marketplace look like, and possibly what type of competition is coming into the market, and that type of thing.

So we're able to incorporate their views through these input tables here using these logic statements. And they're pretty cool tools that I hope you get used to using, and you're able to use those in your own field and in your own work as well.

So that completes this tutorial for the budgeting section. And again, you're going to have an exercise that's similar to this. You're going to be able to build these logic statements and these formulas yourself to run your budget.

So that completes this. And I'll see you in the next tutorial.