##### [00:00:00.490] - Speaker 1

Welcome to this Community Viz Video tutorial. This tutorial is about the formula editor. It's part two of three. We're going to cover an indicator formula example.

##### [00:00:11.210] - Speaker 1

Here's the project that I've been working with. As you can see on the map, I have a layer called buildings and it has several different types of buildings in it. There are single family homes, there is multifamily, there's mixed use, etc. For now, these buildings are described in a GIS database by a number of properties called attributes. One obvious attribute is what type of building they are, as I just mentioned.

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But features can have many other kinds of attributes as well. One way to see those attributes is to right click on the name of the layer and the table of contents. Open the attribute table and you get a table like this that has one row for every feature on the map and these columns or fields or as they're called, attributes listed in the table. So here, this highlighted building on the map is also highlighted in the table and you can see it's. Object ID is 47.

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It's building use is mixed use. Its number of dwelling units is 149, et cetera. Now, one thing I'd like to know in my project is how many total dwelling units in all of these buildings put together. In other words, I'd like to add up all the values of this dwelling units attribute to get a sum total. That's something that an indicator formula can help me with.

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So to set up a new indicator and give it a formula again, I go to 360, set up indicators, I click the new indicator button and I give my new indicator a useful name. I'm going to call this one Total Dwelling Units. I go to the formula tab and choose Edit Formula to open the formula editor. Now, we looked at this form in the first video and we focused on this area, which is where the formula is going to appear. This time I'd like to work through it in the manner it's normally used, which is from top to bottom.

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So at the top I start with a description of the kind of function I want to use. So for example, I might type the word total, click Return and it will search for functions that are related to that operation. Here's one called Sum. I think that's right. If I have questions, I can click here for more help on this function and that'll bring up the community that help, which gives me much more detail about the sum function.

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I can confirm it's the one I want to use and maybe learn more about it. Once I've decided which function to use, I can double click it or use this down green arrow and it populates the formula area here. Now, you'll recognize this from earlier. This is the function sum with two parentheses. The inputs look a little different from last time.

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That's because it's a form that's actually going to help me fill it out as I go. What I look for is these words in curly brackets in blue and underline those indicate that there is some information I need to provide for the formula to work. So for example, I'm going to click on this attribute and it's asking me what attribute I want to sum. Well, if you remember, we are working in the buildings layer and we are working on the dwelling units attribute. So I'm going to from this form select the buildings layer and I'm going to locate the dwelling units attribute.

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Click OK and that gets populated into the formula. Now here's a note on notation. Attributes are a lot like assumptions and indicators when they appear in formulas with one slight difference. So it's again the square brackets, the word attribute, a colon and then the layer that we're talking about and then another colon and then the name of the actual attribute, the layer makes it clear which attribute we're talking about. So for now, let's just pause on that.

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This is where I'll get to in a second, but I want to get rid of it for now. So I'm going to right click and choose remove where clause in there. That's my new formula. Some of this attribute and what that's going to do is add all the values in that column in the attribute field. If I check formula and preview, I discover that in alternative A scenario there's 9291 dwelling units.

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Now remember, that's a current value. This is a dynamic formula. So as I continue to work with my analysis, maybe edit the map, maybe change some assumptions, that number could change. That's just the current value.

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Okay, but now let's go back and talk about that where clause. That was the total number of dwelling units in all buildings. What if I just wanted to know the total number of dwelling units in say, multifamily residential buildings? That's where the where clause would come in. So let me start this formula over again.

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Double click on sum. Again, populate that attribute and this time I'm going to leave the where clause in and click on it. So I click and it brings up a where condition assistant which asks me if I want to set some conditions, make basically a subset of features in the function that I'm using. And in this case I want a subset that is those features whose land use designation is high density multifamily. So I just fill out that form, click okay.

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And that is also populated into my formula. So now this where clause sits inside the sum clause and gives me a smaller number because now it's just the number of dwelling units that are multifamily. $2,720. Now again, this has been a very simple example. Using the sum function, there are dozens and dozens of other functions available.

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You can see them all here. You can find them by using the search, and you can string them together to make more complex formulas if you wish. Once you've created your indicator with an indicator formula, remember that it's a dynamic indicator. It will update as you work. You can see its current value in the Analysis Indicators list.

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Here it is. And here's the one I just created. Or in Charts if you've chosen to make charts. So that's an introduction to using the formula editor for indicator formulas. Look for a different video on using the formula editor for attribute formulas.

##### [00:06:55.230] - Speaker 1

Thank you for watching this community Viz video Tutorial. For more video tutorials and community, visit resources, please visit the website.