Free Training Transcript: Finding the Second Purchase Date with LODs

Welcome to this video on finding the second purchase date with LOD expressions. You can download the Exercise workbook to follow along in your own copy of Tableau.

Intro

A common need in analytics is to determine the date a second event happens—when a customer made a second purchase, a student was absent for a second time, etc. In Tableau, this is achieved using Level of Detail Expressions.

Breaking apart the question

For this video, we want to answer the question "What percentage of customers made a second purchase within 6 months of the first." To evaluate, we need to break it down into component parts. We need to know the first order date. We need to know the second order date. Third, we need to determine if the second order date is less than 6 months out from the first. Fourth, we need to determine the percentage of customers for which that condition is true.

First Order Date

To determine the first order date, we'll use an LOD expression. For each customer, we want the earliest order date. Or, in LOD syntax, FIXED to the level of Customer ID, we want the MINIMUM order date. Right click in the data pane and select Create Calculated field. We'll name it First Order Date, and the formula will be: {FIXED [Customer ID] : MIN([Order Date])}.

If we bring First Order Date to our data table, set it to be exact date, and change it to discrete, we see that for each customer, it's repeating the date of the earliest order across all rows. This is exactly what we want.

Second Order Date

The second order date is a bit trickier. Essentially what we need to do is look at each order date for each customer and determine if it happened after the first order date. Of those orders, we want the minimum.

So we'll create a new calculation, and we'll write it slightly out of order so it matches how we think about it. Is the order date after (greater than) the first order date? If so, we need

that date returned to us so we can keep using that value. We'll type IF [Order Date] > [First Order Date] THEN [Order Date] END. This will return a value for ALL orders after the first one.

We only want the earliest of those, which would be the second order date. So we'll wrap this expression with a Minimum (and don't forget the parentheses). MIN(IF [Order Date] > [First Order Date] THEN [Order Date] END).

But we want this to recalculate for each customer. That's where LOD expressions come in. We want this minimum per customer, so we'll FIX it to the Customer ID. { FIXED [Customer ID] : MIN(IF [Order Date] > [First Order Date] THEN [Order Date] END)}.

Let's name this Second Order Date and bring it out into the view (again, we want the exact date and for it to be discrete). For customers with no other orders, the IF statement gives us a NULL. For customers with additional orders, the second order date is repeated for each row. Perfect!

Comparing Dates

Now that we have both the first and second order date per customer, we could be done. But our original question involved how many of our customers made repeat purchases within 6 months. To solve that, we need to compare our dates.

Create a calculated field, and we'll name it Months to Second Purchase. To find the difference between two dates, we'll use the DATEDIFF function. First, we need to tell Tableau what date part we care about—days, years. In this case, we want months—and the word month needs to be set in quotes. Then a comma, then our first date. We'll drag out First Order Date from the data pane. Then another comma, and we'll drag out our ending date, and close the parentheses.

If we bring Months to Second Purchase to columns, we see many of our customers take far longer than six months to repurchase. But this is a small subset of the data, so let's keep going.

Repeat Purchasing

Let's build a calculation that will bucket customers for us. We want to know if they didn't make a second purchase at all, if they made a second purchase within 6 months, or if it was more than 6 months.

We'll create a calculated field, name it Repeat Purchasing, and we'll enter: IF [Months to Second Purchase] >= 6 THEN 'More than 6 months' ELSEIF [Months to Second Purchase] < 6 THEN 'Within 6 months' ELSE 'No second purchase' END.

If we bring that calculation into the view, yep, we see it's working properly. Now we're fully set up to answer our original question about what percent of customer purchase again within 6 months.

Final Analysis

Create a new sheet. Bring Repeat Purchasing to Rows. Right click drag Customer ID to columns and select Count Distinct. Now we see raw numbers of how many customers fall into each of these categories. If we bring up the pill's dropdown menu, and add a quick table calculation for Percent of Total, and turn on mark labels, we see that—oh dear, only 8% of our customers make a second purchase within 6 months, and a whopping 68% don't purchase again at all. Clearly we have work to do!

Conclusion

Thank you for watching this How-to training video on finding the date of a second event with LOD expressions. We invite you to continue with the free training videos to learn more about using Tableau.