

Analyzing demographics

1.

Navigate to Databel - Aggregate sheet.

Hint

Double-click on a worksheet to access it.

2.

We'd like to get further insight into the demographic variables relating to age.

- Create a new column "Demographics" next to the Group column using a nested IF() formulas that categorizes customers into the following categories: "Under 30", "Senior" and "Other".

You can utilize the [metadata sheet](#) for additional information on variables.

Hint

Your formula should look something like this: =IF([@[Under 30]]="Yes", "Under 30", IF([@Senior]="Yes", "Senior", "Other")).

3.

Create a blank *PivotTable* of the Aggregate table and place it in a new *Worksheet*. Rename this worksheet "Churn Analysis".

Hint

- Select any cell in the Aggregate table and click *Insert* then *PivotTable*.
- Ensure that the *Table/Range* input is Aggregate.
- Check *New Worksheet* and click *OK*.
- To rename a worksheet, double-click on it and type in the updated name.

4.

In the *PivotTable*:

- Create a calculated field "Churn Rate %" that divides churned customers by total customers, then add it to the PivotTable.
- Format the calculated field as a % to two decimal places.

We'll be able to re-use this calculated field throughout our analysis.

Hint

- Click on the *PivotTable* to make sure the *PivotTable Analyze* ribbon bar is showing.
- Under the *PivotTable Analyze* ribbon click *Fields, Items & Sets*, then *Calculated Field*.

- Set the *Name* to "Churn Rate %".
- The Formula should be ='Churned Customers' /'Total Customers'
 - Double click on the field names to easily bring them into the formula rather than typing.

5.

Now let's break this out even further and analyze churn by Demographics.

Hint

Drag Demographics to the *Rows* section.

6.

Which demographic group has the highest churn rate?

- Other
- **Senior**
- Under 30

Hint

Your formulas should look like the below:

- Demographics: =IF([@[Under 30]]="Yes", "Under 30", IF([@Senior]="Yes", "Senior", "Other"))
- Churn Rate %: ='Churned Customers' /'Total Customers'

In your PivotTable, you should have:

- Rows: Demographics
- Values: Sum of Churned Rate %

If you're still stuck, review the solution in 2_2_age_groups.xlsx from the Workbooks folder.

Age groups

1.

- Create a copy of the PivotTable from the previous exercise in the Churn Analysis sheet.
- Replace Demographics with Age in *Rows* and add Total Customers to *Values*.

Hint

- Highlight the entire PivotTable that currently displays Demographics by Sum of Churn Rate %.
- Using CTRL+C and CTRL+V, copy and paste the pivot table into a new cell such as A10.
- To remove a field from a PivotTable, de-select it from the *PivotTable Fields* pane.

2.

Create **groups** for Age with a split of 10.

Hint

- To group rows in a *PivotTable*, right-click any value and navigate to *Group...*
- The grouping will automatically work out the start and end values, leave these and set a grouping size in the *By:* section.

3.

Create a line and clustered column chart that shows the number of customers and churn rate for every age bracket.

Hint

To create a *Line and clustered column chart*, click anywhere in the *PivotTable* and navigate to *Insert > Charts* menu and click on *Insert Combo Chart* button and select the *Clustered Column - Line on Secondary Axis* variant.

4.

Format your chart and make the graph visually appealing.

Hint

- To rename the chart, double-click on the title above the chart and type in a new name.
- To hide field buttons: right-click on the gray chart buttons and select *Hide all Field Buttons on Chart*.
- To delete a legend: right-click on the *Legend* and select *Delete*.

5.

Which age group makes up the lowest number of customers but the highest churn rate?

79-88

In your *PivotTable*, you should have:

- Rows: Age
- Values: Customers, Churn

If you're still stuck, review the solution in 2_3_unlimited_plan.xlsx from the Workbooks folder.

Unlimited plan

1.

Create a PivotTable in Churn Analysis based on the Aggregate table that analyses the total number of customers who have an unlimited data plan, as well as the churn rate.

Hint

- Select any cell in the Aggregate table and click *Insert* then *PivotTable*.
- Ensure that the *Table/Range* input is Aggregate.
- Check *Existing Worksheet* then navigate to Churn Analysis and select a cell and click *OK*.

2.

It appears that customers who are on an unlimited plan are more likely to churn. To see if it is related to a certain amount of mobile data (GB) being used, create a new column in Databel - Aggregate called Grouped Consumption that classifies the average monthly GB download in the following groups:

- Less than 5 GB.
- Between 5 and 10 GB.
- 10 or more GB.

Hint

- Your formula should look something like this: `=IF([@[Avg Monthly GB Download]]<5, "____", IF([@[Avg Monthly GB Download]]<10, "____", "____"))`.

3.

Refresh your PivotTable and re-arrange your table to analyze churn rate by Unlimited Data Plan and Grouped Consumption.

Hint

- To refresh a *PivotTable*, right-click and select *Refresh*. Your new field should appear in the *PivotTable Fields* pane.
- Drag Unlimited Data Plan from *Rows* to *Columns* and place Grouped Consumption in *Rows*.

4.

- Create a stacked bar or column chart to visualize Churn Rate by Unlimited Data Plan and broken out by average consumption levels.
- Format your chart and make the graph visually appealing.

Hint

- To create a *Stacked column chart*, click anywhere in the *PivotTable* and navigate to *Insert > Charts* menu and click on *Insert Column or Bar Chart* button and select the *Stacked Column* variant.

- To rename the chart, double-click on the title above the chart and type in a new name.
- To hide field buttons: right-click on the gray chart buttons and select *Hide all Field Buttons on Chart*.
- To delete a legend: right-click on the *Legend* and select *Delete*.

5.

What's the churn rate for people on an unlimited plan who consume less than 5 GB of data? (Answer format: XX.XX%)

34.69%

Hint

Your formulas should look like the below: =IF([@[Avg Monthly GB Download]]<5, "Less than 5GB", IF([@[Avg Monthly GB Download]]<10, "Between 5 and 10GB", "10 or more GB"))

In your PivotTable, you should have:

- Columns: Unlimited Data Plan
- Rows: Grouped Consumption
- Values: Sum of Churned Rate %

If you're still stuck, review the solution in 2_4_international_calls.xlsx from the Workbooks folder.

International calls

1.

Create a PivotTable in Churn Analysis based on the Aggregate table that displays a matrix of churn rate by State and whether a customer is on an Intl Plan

Hint

- Select any cell in the Aggregate table and click *Insert* then *PivotTable*.
- Ensure that the *Table/Range* input is Aggregate.
- Check *Existing Worksheet* then navigate to Churn Analysis and select a cell and click *OK*.

2.

Remove grand-totals from the *PivotTable*.

Hint

1. Click on the *PivotTable* to make sure the *PivotTable Analyze* and *Design* ribbon bar is showing.
2. Under the *Design* ribbon click *Grand Totals*, then *Off for Rows and Columns*.

3.

Apply a Red - Yellow - Green colour scale on the churn rate values within the PivotTable.

Hint

- Highlight all cells that you need to apply conditional formatting on.
- Under *Home* click on *Conditional Formatting*, then *Color Scales* and select the appropriate scale to display high churn rates in **red** and low churn rates in **green**.

4.

It seems there is a state that has customers on a international plan that has a particularly high percentage of churners. Write the name code of this state (e.g., MT).

CA.

Hint

In your PivotTable, you should have:

- Columns: Intl Plan
- Rows: State
- Values: Sum of Churned Rate %

If you're still stuck, review the solution in 2_5.xlsx from the Workbooks folder.

Contract type

1.

- Create a PivotTable in Churn Analysis based on the Aggregate table that displays churn rate based on the customers account length.
- Remove *Grand Totals* from the *PivotTable*.

Hint

- Select any cell in the Aggregate table and click *Insert* then *PivotTable*.
- Ensure that the *Table/Range* input is Aggregate.
- Check *Existing Worksheet* then navigate to Churn Analysis and select a cell and click *OK*.
- Click on the *PivotTable* to make sure the *PivotTable Analyze* and *Design* ribbon bar is showing.
- Under the *Design* ribbon click *Grand Totals*, then *Off for Rows and Columns*.

2.

Create **groups** for Account Length (in months) with a split of 12.

Hint

- To group rows in a *PivotTable*, right-click any value and navigate to *Group...*
- The grouping will automatically work out the start and end values, leave these and set a grouping size in the *By:* section.

3.

It seems the churn rate does decrease over time. Now, investigate how this decrease behaves through the different types of contracts.

Hint

Drag Contract Type to *Columns*.

4.

We can see that Month-to-Month contracts have the biggest churn, as expected, but which Account Length group has the biggest gap between One Year and Two Year contracts?

- 37-48
- 61-72
- 25-36

Hint

In your PivotTable, you should have:

- Columns: Contract Type
- Rows: Account Length (in months)
- Values: Sum of Churned Rate %

If you're still stuck, review the solution in 3_1_overview.xlsx from the Workbooks folder.