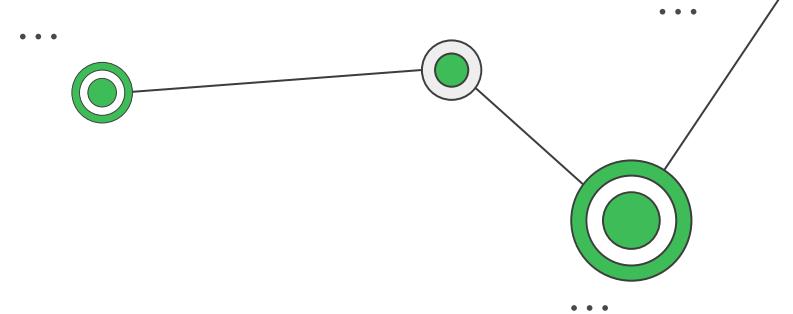
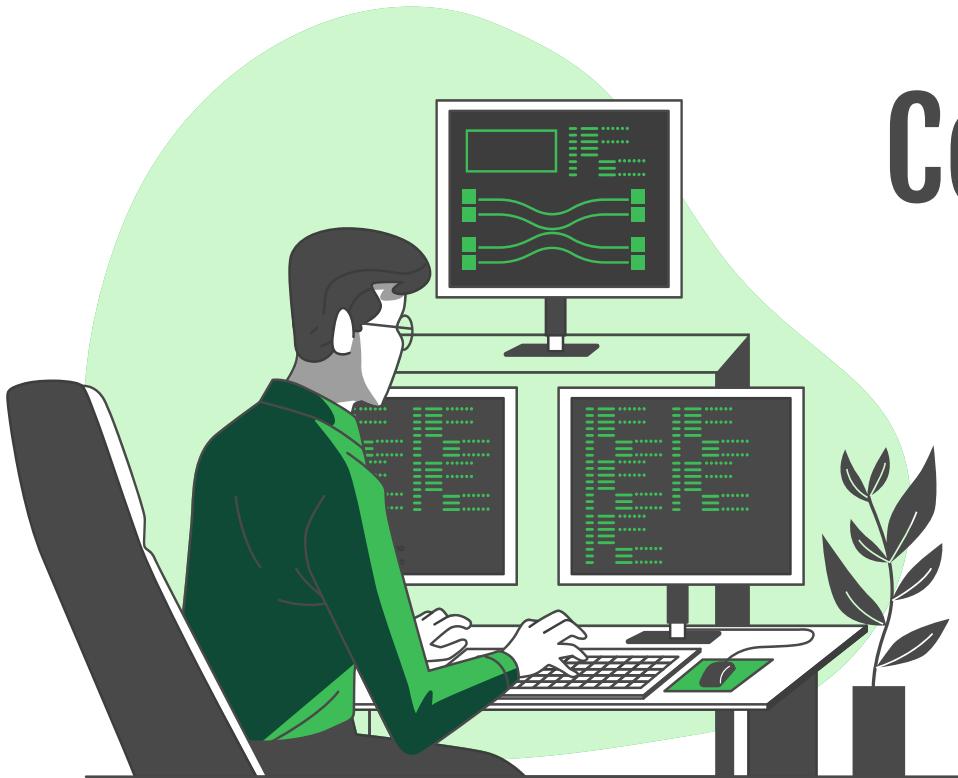




Pacmann



Cohort Analysis Using Excel

By Fariz Alfitra

Table of Contents



About Dataset

Quick Summary of the data

...



Background and Objectives

The reason for doing the analysis
and what objectives will be achieved

...



...

Our Process

Quick explanation
step-by-step of the analysis

...



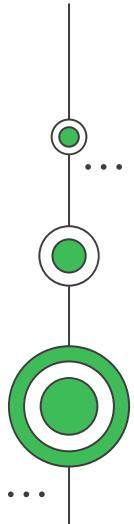
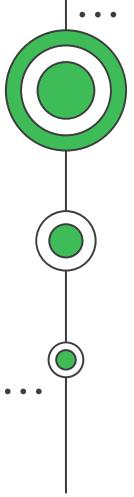
...

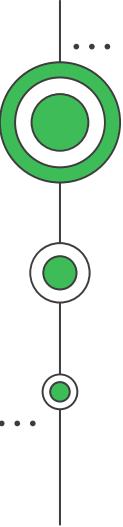
Result and Insight

Displaying results in the form
of graphs or insights from
analyzing the data



About Dataset

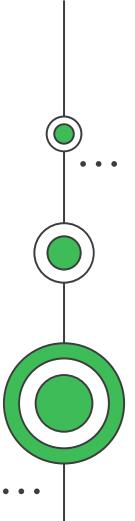




Online Retail Germany and Ireland



In this dataset there are 15,433 rows about online purchases from 96 customers that occur in Germany and Ireland. Columns in it include:

1. Country (Ireland and Germany)
 2. Customer ID (unique ID of each customer)
 3. Description (name of item purchased)
 4. Invoice date (date of checking out)
 5. Stock code (item codes)
 6. Invoice (ID of order)
 7. Price (price of goods)
 8. Quantity (number of items purchased)
- ...
- 
- 

[Link Dataset](#)



Background

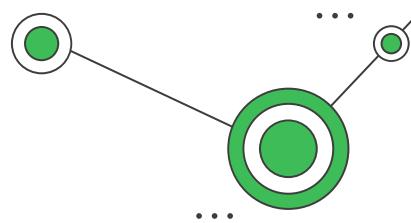
After completing the Mini Course Intro to Data and Analytics: Boost Customer Retention with Cohort Analysis Using Excel at Pacmann which lasted for 5 days, there were assignments as a condition for obtaining a certificate and to demonstrate what had been learned in the form of practical case studies.

Objectives

...

Objective 02

Using the results from
the survival analysis
into the cohort analysis



...

Objective 03

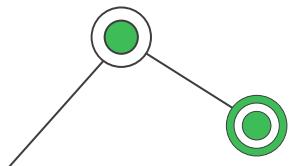
Gain insight from
analysis results



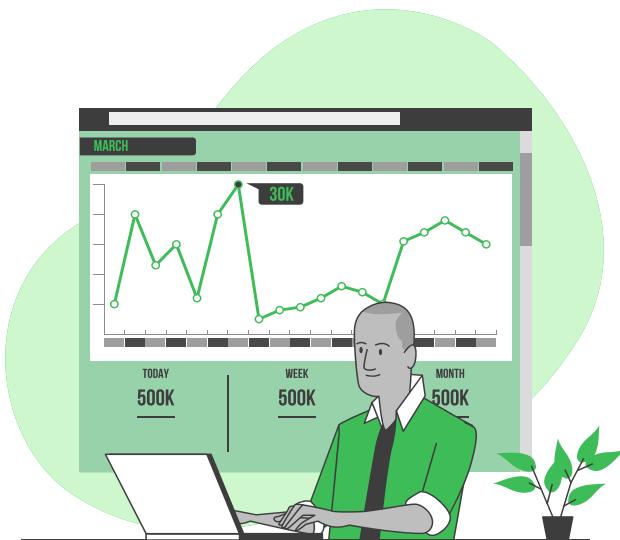
...

Objective 01

Analyze data using
survival analysis
method



Survival analysis



Survival analysis (time-to-event analysis) is a branch of statistics for analyzing the expected duration of time until one event occurs, such as death in biological organisms and failure in mechanical systems.

Cohort analysis

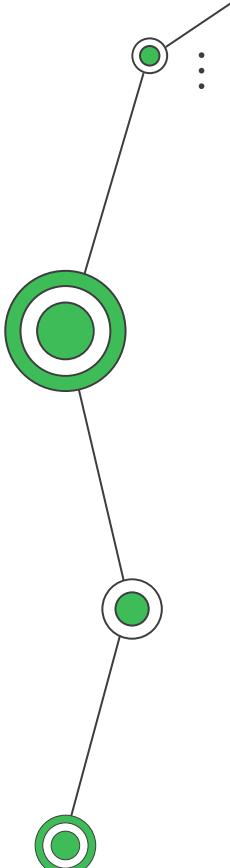
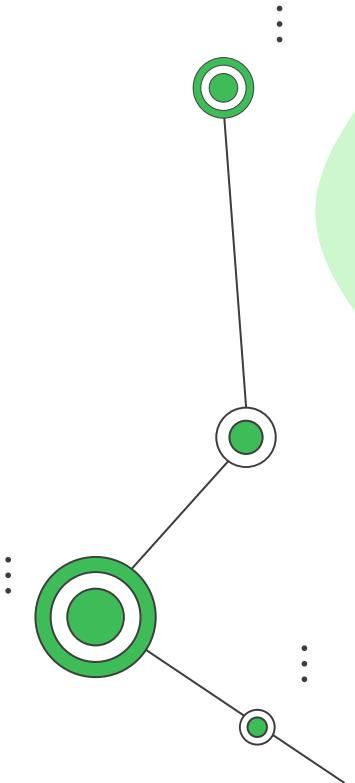
Cohort Analysis is a type of behavioral analytics in which group users based on their shared traits to better track and understand their actions.

Cohor Analysis allows to targeted questions and make informed product decisions that will reduce churn and drastically increase revenue.





Our Process





Survival Analysis

01

New Columns

Added new columns:
first_invoice, month_group,
and month_age

First invoice is used as a reference in finding the range that will be displayed in the month age, how long does it take from the first invoice to the invoice date.

While the month group is used as a reference for the month group of the year.

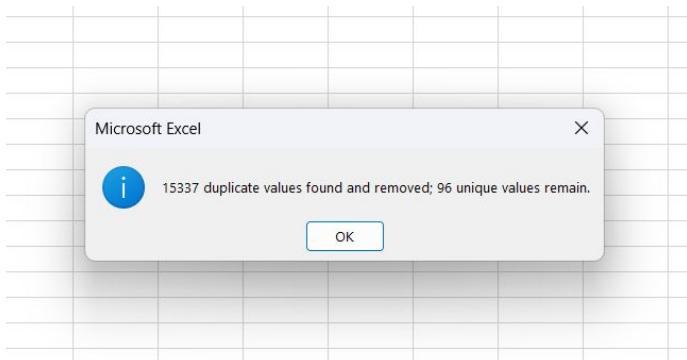
02

Unique Customer ID

To find the first invoice, we must first find the unique value from the customer.

Then it is known that there are 96 unique customer ID.

Survival Analysis





Survival Analysis

03

MINIFS and VLOOKUP

Continue to look for the first invoice with the minifs function in a new sheet (first_invoice_lookup) so that it can later be used in the vlookup function.

```
=MINIFS(online_retail_II_germany_and_ir!D:D;online_retail_II_germany_and_ir!B:B;first_invoice_lookup!A2)
```

```
=VLOOKUP($B2; first_invoice_lookup!$A$1:$B$97; 2; FALSE)
```

If it has been obtained, then it can be continued by using the vlookup function in the column first_invoice_date main sheet.

04

Month Group, Month Age and Pivotting

Fill in the month group column that outputs month and year data without a date.

Meanwhile, to find the month age, use the function =ROUND((D2-I2)/30;0)

After the data is filled in, open the data in the pivot table.

Survival Analysis

Survival Analysis

Pivoting

Create a summary of the month_group and month_age data with the value count customer_id

The screenshot shows a PivotTable in Excel with the following structure:

Years	month_group	month_age	0	1	2	3	4	5	6	7	8
2011	Jan		878	73							
2011	Feb		214	428							
2011	Mar		216	51	752	89					
2011	Apr		176	13	136	416	5				
2011	Mei		168	68	100	192	733	28			
2011	Jun		182		12	6	138	729	125		
2011	Jul		263	4		76	90	75	648	215	
2011	Agu		193	37	50	30	19	38	57	867	97
2011	Sep		144	96	93	42	32	45	111	66	696
2011	Okt		200	48	44	80		99	21	133	138
2011	Nov		123	52		63	29	81		19	93
2011	Des		38	24	13	13	18	28			37
Grand Total			2795	894	1200	1007	1064	1123	962	1300	1061

The PivotTable Fields pane on the right shows the following settings:

- Choose fields to add to report:
 - Customer ID
 - Description
 - Invoice Date
 - Stock Code
 - Invoice
 - Price
- Drag fields between areas below:
 - Filters: month_age
 - Columns: month_age
 - Rows: Years, month_group
 - Values: Count of Customer ID
- Defer Layout Update
- Update

Formatting

Then format it into a structured table form

Paste Value

And paste the value into a new sheet to make it easier to analyze

05

Detailing

Make some changes to make the appearance easier to analyze, such as moving the grand total column to the front, creating a new column using the concatenate function of the month and year column, and some other detailing so that the result looks like this:

This is a summary of user loss.

Survival Analysis

10	obs_group	Grand Total	0	1	2	3	4	5	6	7	8	9	10	11
11	2011 : Jan	951	878	73										
12	2011 : Feb	642	214	428										
13	2011 : Mar	1108	216	51	752	89								
14	2011 : Apr	746	176	13	136	416	5							
15	2011 : Mei	1289	168	68	100	192	733	28						
16	2011 : Jun	1192	182		12	6	138	729	125					
17	2011 : Jul	1371	263	4		76	90	75	648	215				
18	2011 : Agu	1388	193	37	50	30	19	38	57	867	97			
19	2011 : Sep	1848	144	96	93	42	32	45	111	66	696	523		
20	2011 : Okt	2157	200	48	44	80		99	21	133	138	1320	74	
21	2011 : Nov	2105	123	52		63	29	81		19	93	101	1175	369
22	2011 : Des	636	38	24	13	13	18	28		37		89	376	
23	Grand Total :	15433	2795	894	1200	1007	1064	1123	962	1300	1061	1944	1338	745
24														
25														
26														
27														
28														
29														
30														

Survival Analysis

06

User Profile

The next step is to find the user profile from the same table, by subtracting the grand total with the number of user loss.

User Profile:													
obs_group	Grand Total	0	1	2	3	4	5	6	7	8	9	10	11
2011 : Jan	951	=B11-C27	0	0	0	0	0	0	0	0	0	0	0
2011 : Feb	642	428	0	0	0	0	0	0	0	0	0	0	0
2011 : Mar	1108	892	841	89	0	0	0	0	0	0	0	0	0
2011 : Apr	746	570	557	421	5	0	0	0	0	0	0	0	0
2011 : Mei	1289	1121	1053	953	761	28	0	0	0	0	0	0	0
2011 : Jun	1192	1010	1010	998	992	854	125	0	0	0	0	0	0
2011 : Jul	1371	1108	1104	1104	1028	938	863	215	0	0	0	0	0
2011 : Agu	1388	1195	1158	1108	1078	1059	1021	964	97	0	0	0	0
2011 : Sep	1848	1704	1608	1515	1473	1441	1396	1285	1219	523	0	0	0
2011 : Okt	2157	1957	1909	1865	1785	1785	1686	1665	1532	1394	74	0	0
2011 : Nov	2105	1982	1930	1930	1867	1838	1757	1757	1738	1645	1544	369	0
2011 : Des	636	598	574	561	548	530	502	502	465	465	376	0	0
Grand Total :		15433	12638	11744	10544	9537	8473	7350	6388	5088	4027	2083	745
Nbr of User Loss													
obs_group	Grand Total	0	1	2	3	4	5	6	7	8	9	10	11
2011 : Jan	951	878	73										
2011 : Feb	642	214	428										
2011 : Mar	1108	216	51	752	89								
2011 : Apr	746	176	13	136	416	5							

Survival Analysis

07

Retention % Per Age

After that, look for the retention % per age with the same table by dividing the user profile by the grand total and then converting it to a percent.

08

Color Scales

Then it's time to find the retention rate through the period or overall, using the Retention % per Age table.

To highlight the data, use conditional formatting color scales.

Survival Analysis

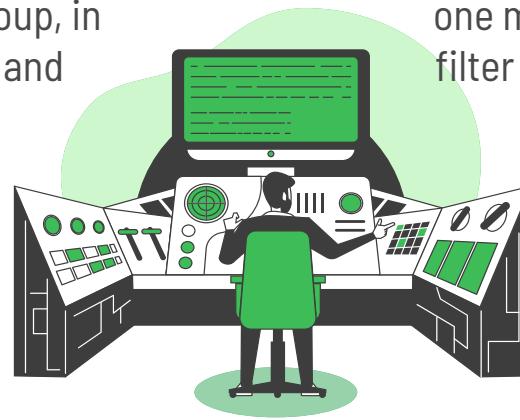
Retention % Through Period													
obs_group	First Transaction	0	1	2	3	4	5	6	7	8	9	10	11
2011 : Jan	100%	=C25\$B25	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
2011 : Feb	100%	66.67%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
2011 : Mar	100%	80.51%	75.90%	8.03%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
2011 : Apr	100%	76.41%	74.66%	56.43%	0.67%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
2011 : Mai	100%	86.97%	81.69%	73.93%	59.04%	2.17%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
2011 : Jun	100%	84.73%	84.73%	83.72%	83.22%	71.64%	10.49%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
2011 : Jul	100%	80.82%	80.53%	80.53%	74.98%	68.42%	62.95%	15.68%	0.00%	0.00%	0.00%	0.00%	0.00%
2011 : Agu	100%	86.10%	83.43%	79.83%	77.67%	76.30%	73.56%	69.45%	6.99%	0.00%	0.00%	0.00%	0.00%
2011 : Sep	100%	92.21%	87.01%	81.98%	79.71%	77.98%	75.54%	69.53%	65.96%	28.30%	0.00%	0.00%	0.00%
2011 : Okt	100%	90.73%	88.50%	86.46%	82.75%	82.75%	78.16%	77.19%	71.02%	64.63%	3.43%	0.00%	0.00%
2011 : Nov	100%	94.16%	91.69%	91.69%	88.69%	87.32%	83.47%	83.47%	82.57%	78.15%	73.35%	17.53%	0.00%
2011 : Des	100%	94.03%	90.25%	88.21%	86.16%	83.33%	78.93%	78.93%	78.93%	73.11%	73.11%	59.12%	0.00%
Grand Total :		100%	81.89%	76.10%	68.32%	61.80%	54.90%	47.63%	41.39%	32.97%	26.09%	13.50%	4.83% 0.00%
Retention % per Age													
obs_group	Grand Total	0	1	2	3	4	5	6	7	8	9	10	11
2011 : Jan	100%	8%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
2011 : Feb	100%	67%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
2011 : Mar	100%	81%	76%	8%	0%	0%	0%	0%	0%	0%	0%	0%	0%
2011 : Apr	100%	76%	75%	56%	1%	0%	0%	0%	0%	0%	0%	0%	0%
2011 : Mai	100%	87%	82%	74%	59%	2%	0%	0%	0%	0%	0%	0%	0%
2011 : Jun	100%	85%	85%	84%	83%	72%	10%	0%	0%	0%	0%	0%	0%

< > pivot analysis_all online_retail_ll_germany_and_ir first_invoice_lookup +

Cohort Analysis

Cohort analysis, namely survival analysis per group, in this case is Germany and Ireland.

The first step is to copy and paste one more pivot then add a country filter to it, to separate the German and Irish analysis.



Then copy and paste the analysis_all sheet (germany and ireland) to make a survival analysis for germany and ireland respectively



Cohort Analysis

To turn it into a survival analysis specifically for ireland / germany, change the data below (number of loss and user profile) with the filtered pivot data.

Cohort Analysis

Then the rest will change automatically according to the data provided (Germany or Ireland).

obs_group	First Transaction	Retention % Through Period											
		0	1	2	3	4	5	6	7	8	9	10	11
9 2011 : Jan	100%	42.20%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
10 2011 : Feb	100%	100%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
11 2011 : Mar	100%	91.53%	91.53%	9.04%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
12 2011 : Apr	100%	100.00%	100.00%	100.00%	1.63%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
13 2011 : Mei	100%	100%	100.00%	93.90%	93.90%	5.33%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
14 2011 : Jun	100%	100%	100.00%	100.00%	100.00%	19.29%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
15 2011 : Jul	100%	100%	100.00%	100.00%	100.00%	92.69%	92.69%	34.90%	0.00%	0.00%	0.00%	0.00%	0.00%
16 2011 : Agu	100%	100%	100.00%	100.00%	100.00%	100.00%	100.00%	11.97%	0.00%	0.00%	0.00%	0.00%	0.00%
17 2011 : Sep	100%	100%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	46.79%	0.00%	0.00%	0.00%	0.00%
18 2011 : Okt	100%	100%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	8.50%	0.00%	0.00%	0.00%
19 2011 : Nov	100%	100%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	34.36%	0.00%	0.00%
20 2011 : Des	100%	100%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	0.00%
21 Grand Total :	100%	97.90%	91.83%	85.02%	79.97%	72.51%	65.80%	59.14%	48.46%	39.15%	20.32%	9.65%	0.00%
22													
23													
24													
obs_group	Grand Total	Retention % per Age											
		0	1	2	3	4	5	6	7	8	9	10	11
25 2011 : Jan	100%	42%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
26 2011 : Feb	100%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
27 2011 : Mar	100%	92%	92%	9%	0%	0%	0%	0%	0%	0%	0%	0%	0%
28 2011 : Apr	100%	100%	100%	100%	2%	0%	0%	0%	0%	0%	0%	0%	0%
29 2011 : Mei	100%	100%	100%	94%	94%	5%	0%	0%	0%	0%	0%	0%	0%
30 2011 : Jun	100%	100%	100%	100%	100%	19%	0%	0%	0%	0%	0%	0%	0%
22	pivot	analysis_all	analysis_ireland	online_retail_il_germany_and_ir	first_invoice_lookup	+	...						

obs_group	First Transaction	Retention % Through Period											
		0	1	2	3	4	5	6	7	8	9	10	11
9 2011 : Jan	100%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
10 2011 : Feb	100%	27.70%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
11 2011 : Mar	100%	70.36%	61.53%	7.11%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
12 2011 : Apr	100%	60.00%	57.05%	26.14%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
13 2011 : Mei	100%	78.01%	69.11%	60.21%	35.08%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
14 2011 : Jun	100%	72.13%	72.13%	70.29%	69.37%	48.24%	3.22%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
15 2011 : Jul	100%	65.17%	64.64%	64.64%	54.57%	48.61%	38.68%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
16 2011 : Agu	100%	75.72%	71.07%	64.78%	61.01%	58.62%	53.84%	46.67%	3.27%	0.00%	0.00%	0.00%	0.00%
17 2011 : Sep	100%	81.37%	68.95%	56.92%	51.49%	47.35%	41.53%	27.17%	18.63%	2.59%	0.00%	0.00%	0.00%
18 2011 : Okt	100%	84.45%	80.72%	77.29%	71.07%	63.37%	61.74%	51.40%	40.67%	0.00%	0.00%	0.00%	0.00%
19 2011 : Nov	100%	88.77%	84.02%	84.02%	78.26%	75.62%	68.22%	66.48%	57.99%	48.77%	2.01%	0.00%	0.00%
20 2011 : Des	100%	88.01%	80.44%	76.34%	72.24%	66.56%	57.73%	57.73%	46.06%	46.06%	17.98%	0.00%	0.00%
21 Grand Total :	100%	68.93%	63.36%	54.80%	47.09%	40.65%	32.91%	27.03%	20.42%	15.52%	7.97%	0.93%	0.00%
22													
23													
24													
obs_group	Grand Total	Retention % per Age											
		0	1	2	3	4	5	6	7	8	9	10	11
25 2011 : Jan	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
26 2011 : Feb	100%	28%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
27 2011 : Mar	100%	70%	62%	7%	0%	0%	0%	0%	0%	0%	0%	0%	0%
28 2011 : Apr	100%	60%	57%	26%	0%	0%	0%	0%	0%	0%	0%	0%	0%
29 2011 : Mei	100%	78%	69%	60%	35%	0%	0%	0%	0%	0%	0%	0%	0%
30 2011 : Jun	100%	72%	72%	70%	69%	48%	3%	0%	0%	0%	0%	0%	0%
22	pivot	analysis_all	analysis_ireland	online_retail_il_germany_and_ir	first_invoice_lookup	+	...						

Cohort Analysis

Cohort Analysis

Combine the results of each analysis into a new sheet as a cohort analysis

3	Germany and Ireland													
4	obs_group	First Tran	0	1	2	3	4	5	6	7	8	9	10	11
5	2011:Jan	100%	7.68%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
6	2011:Feb	100%	66.57%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
7	2011:Mar	100%	80.51%	75.90%	8.03%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
8	2011:Apr	100%	76.41%	74.66%	56.43%	0.67%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
9	2011:May	100%	86.97%	81.69%	73.39%	59.04%	2.17%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
10	2011:Jun	100%	84.73%	84.73%	83.22%	71.64%	10.49%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
11	2011:Jul	100%	80.82%	80.53%	80.53%	74.98%	68.42%	62.95%	15.68%	0.00%	0.00%	0.00%	0.00%	0.00%
12	2011:Aug	100%	86.10%	83.43%	79.83%	77.67%	76.30%	73.56%	69.45%	6.99%	0.00%	0.00%	0.00%	0.00%
13	2011:Sep	100%	92.21%	87.01%	81.89%	79.71%	77.89%	75.54%	69.33%	65.96%	28.30%	0.00%	0.00%	0.00%
14	2011:Oct	100%	90.73%	88.50%	86.46%	82.75%	82.75%	78.16%	77.19%	71.02%	64.63%	3.43%	0.00%	0.00%
15	2011:Nov	100%	94.16%	91.69%	91.69%	88.69%	87.32%	83.47%	83.47%	82.57%	78.15%	73.35%	17.53%	0.00%
16	2011:Dec	100%	94.03%	90.25%	88.21%	86.16%	83.33%	78.93%	78.93%	78.93%	73.11%	59.12%	0.00%	0.00%
17	Grand Tot	100%	81.89%	76.10%	68.32%	61.80%	54.90%	47.63%	41.39%	32.97%	26.09%	13.50%	4.83%	0.00%
18														
19														
20														
21														
22	Ireland													
23	obs_group	First Tran	0	1	2	3	4	5	6	7	8	9	10	11
24	2011:Jan	100%	42.20%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
25	2011:Feb	100%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
26	2011:Mar	100%	91.53%	91.53%	9.04%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
27	2011:Apr	100%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
28	2011:May	100%	100.00%	100.00%	82.30%	52.20%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
29	2011:Jun	100%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
30	2011:Jul	100%	100.00%	100.00%	100.00%	92.69%	92.69%	34.92%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
31	2011:Aug	100%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	11.37%	0.00%	0.00%	0.00%	0.00%
32	2011:Sep	100%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	46.70%	0.00%	0.00%	0.00%	0.00%
33	2011:Oct	100%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	8.50%	0.00%	0.00%	0.00%	0.00%
34	2011:Nov	100%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	34.36%	0.00%	0.00%
35	2011:Dec	100%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	0.00%
36	Grand Tot	100%	97.90%	91.63%	85.62%	79.87%	72.51%	65.80%	59.14%	48.46%	38.15%	20.32%	9.63%	0.00%
37														
38														
39	Germany													
40	obs_group	First Tran	0	1	2	3	4	5	6	7	8	9	10	11
41	2011:Jan	100%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
42	2011:Feb	100%	27.70%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
43	2011:Mar	100%	70.36%	61.53%	7.11%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
44	2011:Apr	100%	60.09%	57.05%	26.14%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
45	2011:May	100%	78.01%	69.11%	60.21%	35.08%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
46	2011:Jun	100%	72.13%	72.13%	70.29%	69.37%	48.24%	3.22%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
47	2011:Jul	100%	65.17%	64.64%	64.64%	54.57%	45.81%	38.68%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
48	2011:Aug	100%	75.72%	71.07%	64.78%	61.01%	58.62%	53.84%	46.67%	3.27%	0.00%	0.00%	0.00%	0.00%
49	2011:Sep	100%	81.37%	68.95%	56.52%	51.49%	47.35%	41.53%	27.17%	18.63%	2.58%	0.00%	0.00%	0.00%
50	2011:Oct	100%	84.45%	80.72%	77.29%	71.07%	63.37%	61.74%	51.40%	40.67%	0.00%	0.00%	0.00%	0.00%
51	2011:Nov	100%	88.77%	84.02%	84.02%	78.26%	75.62%	68.22%	66.48%	57.99%	48.77%	2.01%	0.00%	0.00%
52	2011:Dec	100%	88.01%	80.44%	76.34%	72.24%	66.56%	57.75%	57.73%	57.73%	48.06%	46.06%	17.98%	0.00%
53	Grand Tot	100%	68.93%	63.36%	54.80%	47.09%	40.65%	32.91%	27.03%	20.42%	15.52%	7.97%	0.93%	0.00%

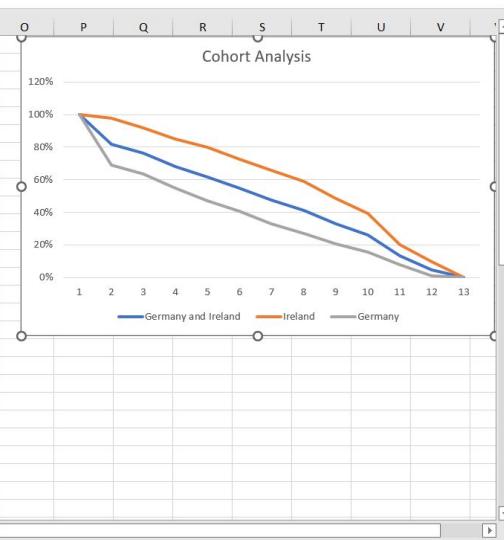
pivot | analysis_all | analysis_ireland | analysis_germany | cohort_a

Cohort Analysis

Visualization

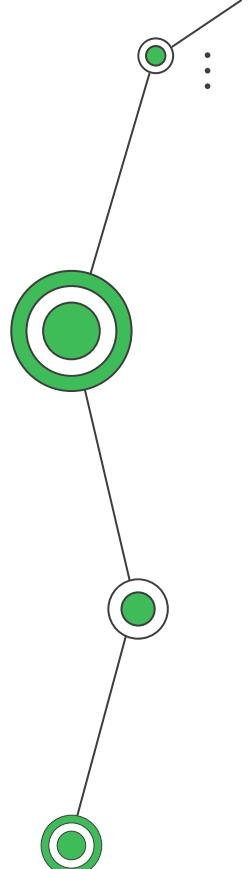
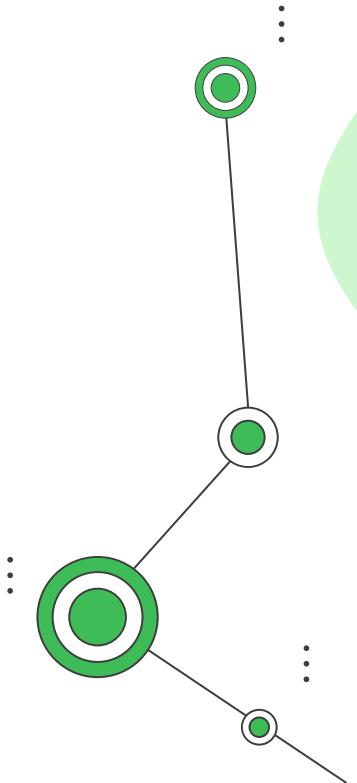
The last step is visualization, to display the visualization, collect a summary of each data.

Insert a line chart to display the trend from time to time.

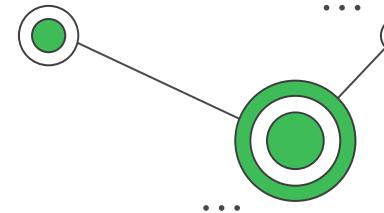




Insights



Top Retention Rate

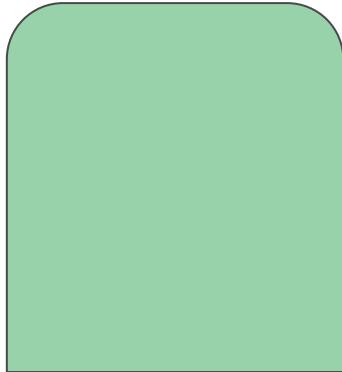


Ireland



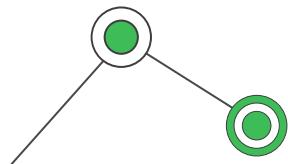
Ireland and Germany

Their combination produces
a chart in the middle



Germany

The lowest retention
rate of them all





Summary

01

Ireland

Irish retailers are able to maintain consumer loyalty better than German retailers

02

Germany

German retailers should analyze more deeply the causes of lack of consumer loyalty



Thanks!



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linkedin.com/in/farizalfitra/