

## **STEP 3: WORKING ON POWER BI**

### **Exporting the Scorecard Table to SQL**

- The Python script was updated to export the final dataframe (df) to SQL using the following command:

```
python                                                                    Copiar código

df.to_sql(con=con, name='tablon_scoring', if_exists='replace', index=False)
con.dispose()
```

This stores the processed table tablon\_scoring in the SQL database, replacing any previous version and closing the connection after execution.

### **Importing the Table into Power BI**

- Once the tablon\_scoring table was uploaded to SQL, it was imported into Power BI Desktop using the Get Data → SQL Server connector. The server and database credentials were entered, and the table was loaded into Power Query for initial verification and data profiling.

### **Power Query Transformations**

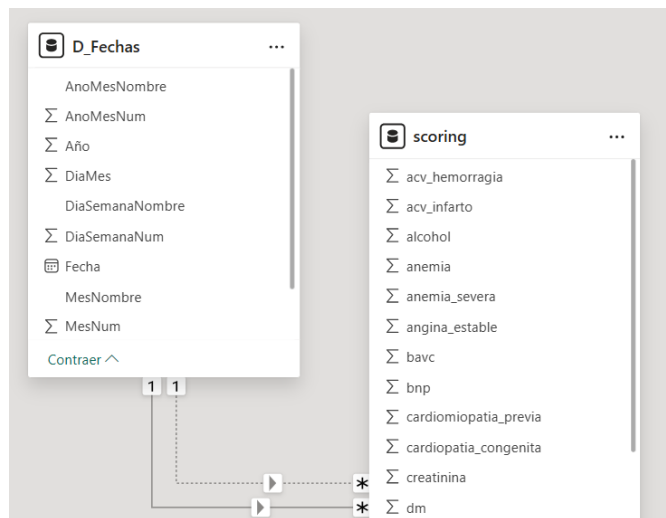
- In Power Query, the only adjustment made was changing the regional settings to “Spanish (Spain)” to ensure correct formatting for dates and decimal separators, since the dataset was originally in English locale.

### **Creating the Date Dimension**

- A custom Date Dimension (D.Fechas) was created in Power BI using DAX to enable accurate time intelligence analysis.

```
1 D_Fechas =
2 VAR BaseCalendar = CALENDAR(MIN(scoring[fecha_admision]), MAX(scoring[fecha_alta]))
3 RETURN
4 SELECTCOLUMNS (
5     BaseCalendar,
6     "Fecha", [Date],
7     "Año", YEAR ( [Date] ),
8     "Trimestre", QUARTER( [Date] ),
9     "MesNum", MONTH ( [Date] ),
10    "MesNombre", FORMAT ( [Date], "mmm" ),
11    "AñoMesNombre", FORMAT ( [Date], "mmm yy" ),
12    "AñoMesNum", YEAR ( [Date] ) * 100 + MONTH ( [Date] ),
13    "NumSemanaAño", WEEKNUM( [Date], 1 ),
14    "DiaMes", DAY( [Date] ),
15    "DiaSemanaNum", WEEKDAY( [Date] ),
16    "DiaSemanaNombre", FORMAT ( [Date], "dddd" )
17 )
```

- In the Data Model view, two one-to-many relationships were established between the Date Dimension (D.Fechas) and the main fact table (scoring) using the Fecha\_alta and fechs\_admision fields as the key.



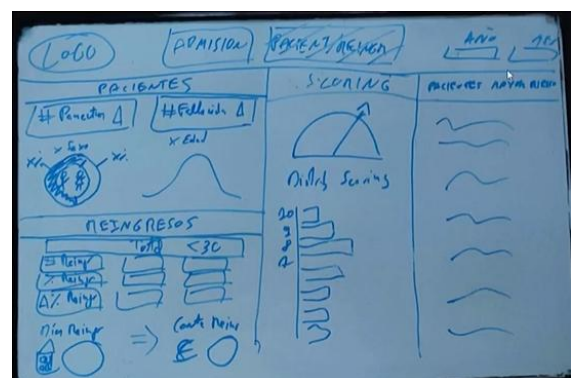
## Dashboard Design Planning

Before building the visuals, the dashboard layout was planned to ensure a clear and functional structure.

Two main dashboards were designed:

- **Admissions Dashboard:** focused on patient admissions, discharges, and overall hospital activity.
- **Readmissions & Risk Dashboard:** focused on patient readmission rates, risk segmentation, and scoring insights.

The following image shows the initial design sketch that guided the visual structure and KPI placement:

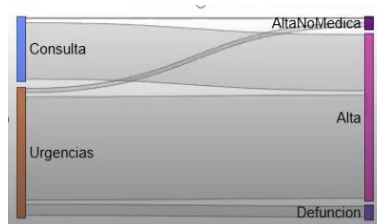


### First dashboard, admissions:

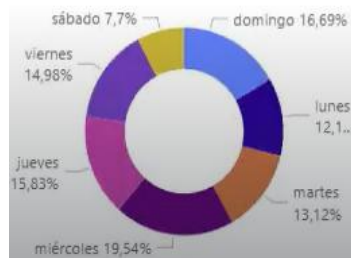
- We created **KPI cards** for: total number of admissions, average length of stay, and average stay in intensive care.
- We added **two slicers**, one for year and another for month.
- We enhanced the KPI cards by applying a **Month-over-Month (MoM) comparison** to display the variation in the last month of the study period.

```
1 MoM% Admisiones =  
2 var mes_actual = _Medidas_Admission[# Admisiones]  
3 var mes_anterior = CALCULATE(_Medidas_Admission[# Admisiones],DATEADD(D_Fechas[Fecha],-1,MONTH))  
4 var mom = DIVIDE(mes_actual - mes_anterior, mes_anterior, 0)  
5 return mom
```

- We created a **line chart** to display the evolution of the number of admissions over the last 12 months.
- We built a **Sankey chart** to analyze the relationships between the **type of admission** and the **final outcome**.



- We created a **bar chart** showing the **percentage of admissions** by day of the week



- We finished the dashboard with a **Treemap visualization**

Before that, **we created a new table in Power Query called treemap**, giving it the desired structure.

For this purpose, we kept only the **diagnosis variables** (from the diagnóstico table) and grouped the data by attribute to prepare it for visualization. We keep this table and group by attribute

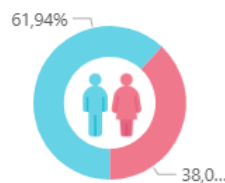
Atributo	Recuento
1 insuficiencia_cardiaca	5007
2 icfer	4835
3 icfen	4770
4 Ira	4583
5 iamcest	4396
6 sca	4339
7 anemia	2626
8 angina_estable	1229
9 itu	935
10 shock_cardiogenico	902

After that, we applied a **DAX measure to display percentages** instead of absolute values, allowing for a clearer comparison of categories within the Treemap visualization.

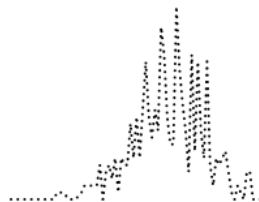
```
1 Porc Treemap =
2 var num = SUM(treemap[Recuento])
3 var denom = CALCULATE(SUM(treemap[Recuento]),all())
4 var porc = DIVIDE(num,denom,0)
5 RETURN porc
```

## **Second Dashboard, Readmissions & Risk:**

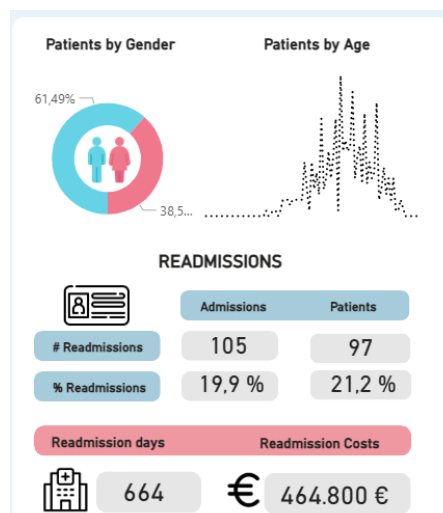
- **KPIs:** total number of patients, number of deceased patients, and percentage of deceased.
- **Gender pictogram:** visual representation of patients by gender.



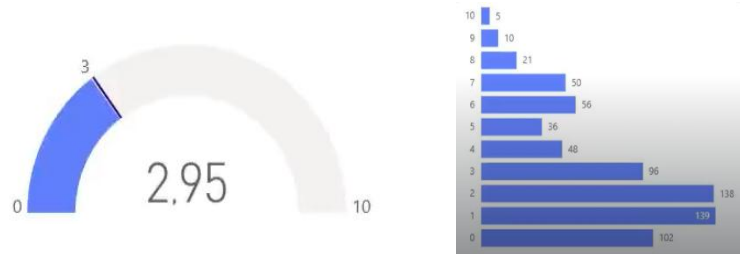
- **Age distribution:** chart showing the number of patients by age group.



- Additional simple visuals:
  - **Readmissions cross table:** displays basic DAX-calculated metrics such as readmission counts and related indicators.
  - **Readmission duration and cost table:** summarizes the total number of readmission days and the overall financial impact of readmissions.



- **Gauge chart for scoring:** displays the average patient score, while a complementary frequency chart illustrates the distribution of patients across different risk levels.



- **High-risk patient table:** lists patients with the highest risk scores, including their patient ID, admission ID, gender, age, and calculated risk level.

#### **Customization of visuals and dashboard:**

- First, an AI-generated theme (JSON file) was imported, containing the predefined color palette for visual consistency.
- Customized the layout with backgrounds, shapes, and rectangles to frame visuals; added icons, figure titles, a main dashboard title, and navigation buttons for a polished and cohesive design.

#### **Edited interactions:**

Adjusted how visuals respond to each other to ensure a clear and intuitive analytical flow. Only the most relevant filters and cross-highlights were kept active, preventing unnecessary interactions and improving the overall readability of the dashboard.

**Published to Power BI Service:** the final report was uploaded to Power BI Service to enable online access, sharing, and interactive exploration.

Final result:

