Breast Cancer Analysis

An analysis on the *Global Health Data Exchange*

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Case Study

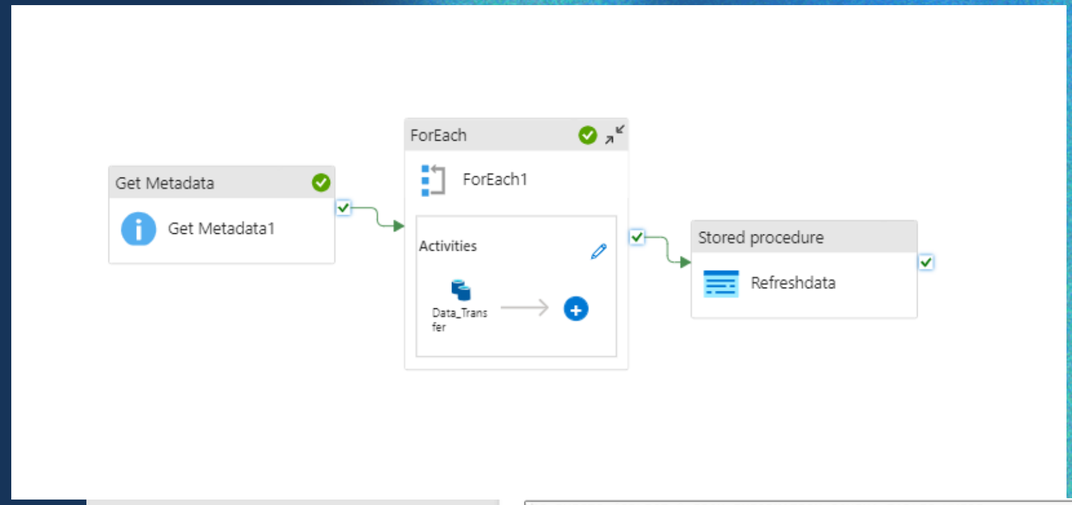
This study was effectuated in order to analyze and forecast recurring trends in breast cancer incidence and mortality rates

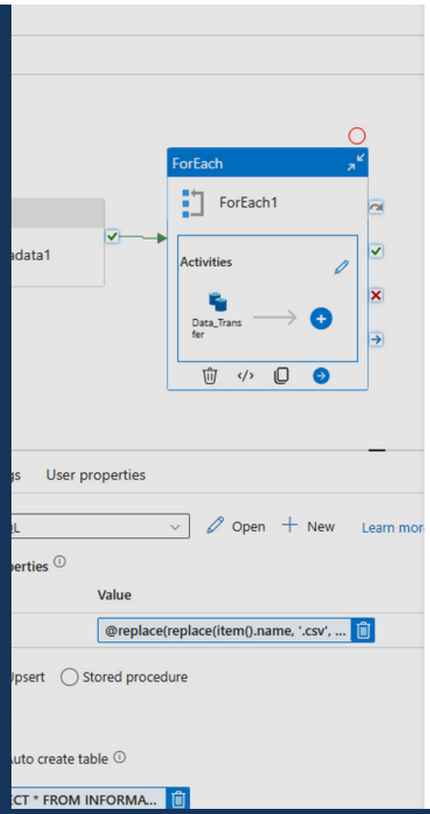
The data is obtained by the query tool which queries the data shared by Global Health Data Exchange provides

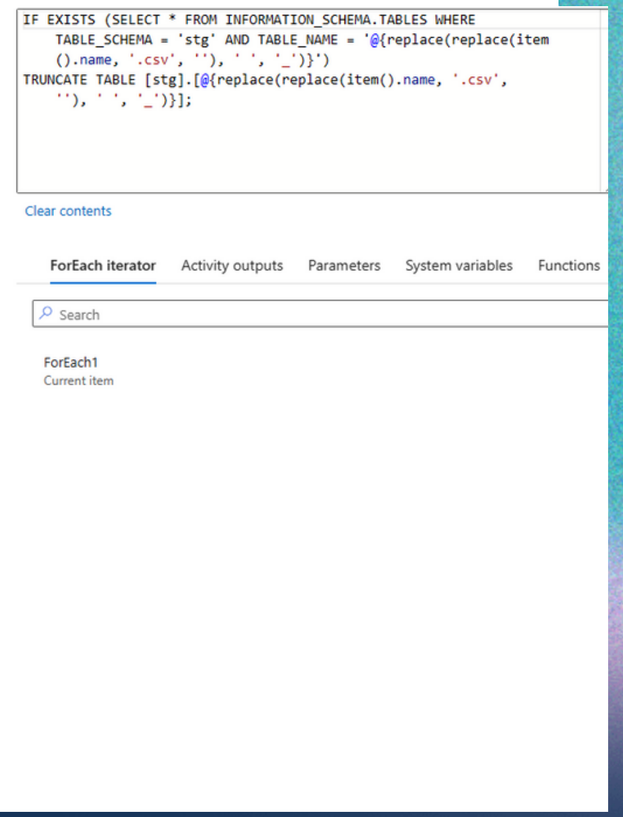
ETL

The data is extracted form the source storage account to the destination via the execution of the PowerShell script given by the commissioner.

After the transfer, an Azure Data Factory truncates all the previous tables and inserts the data auto-creating the tables if necessary







DWH

Once arrived in the database, the tables are processed by a stored procedure that unites the tables _1 and _2 into a third table.

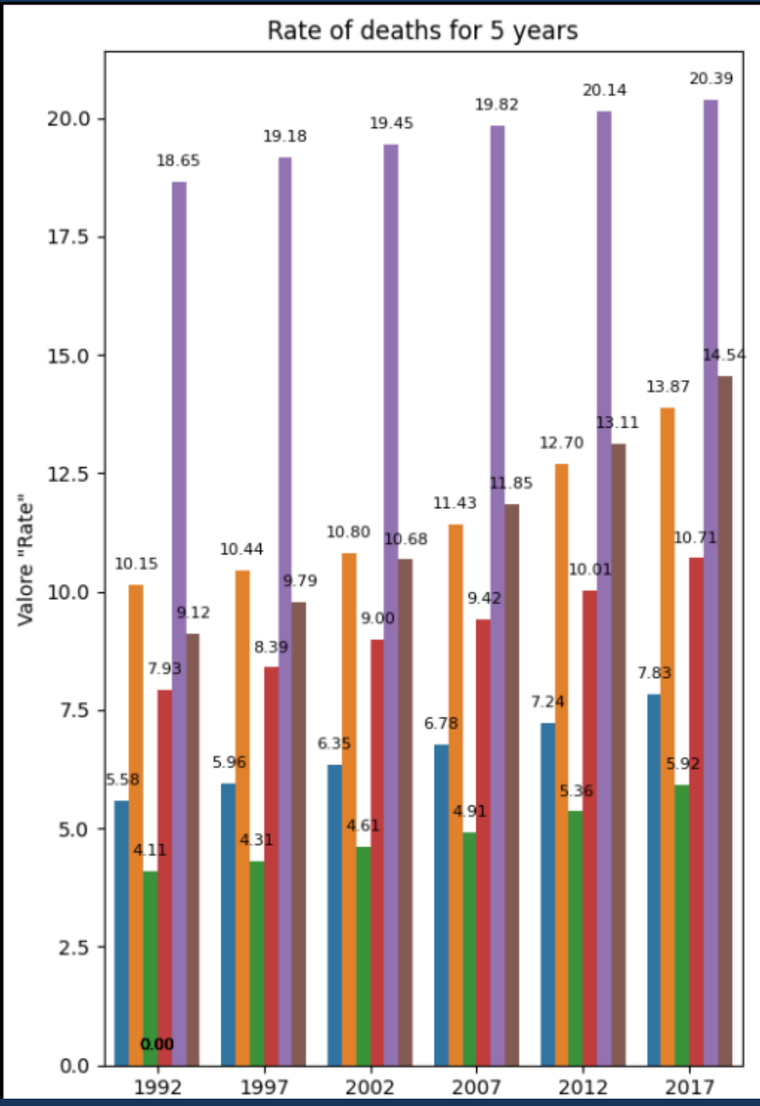
The third table is going to be the main source of the *dwh* schema views presenting clean data.

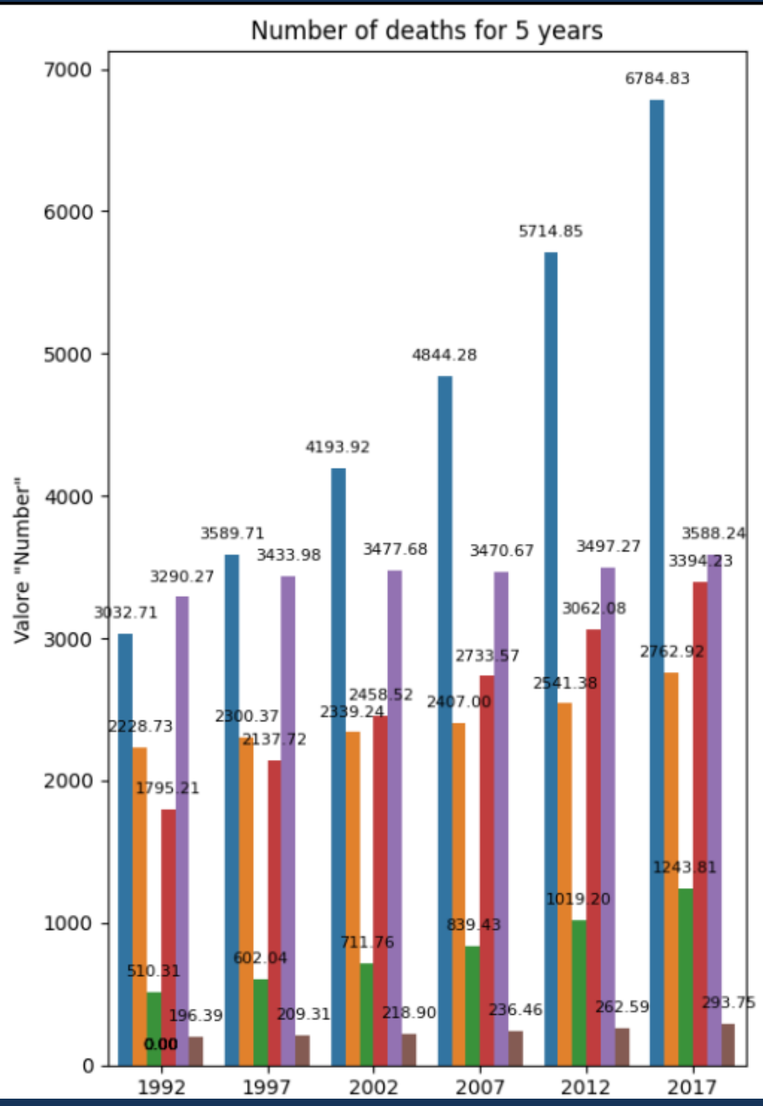
Supplementary Data

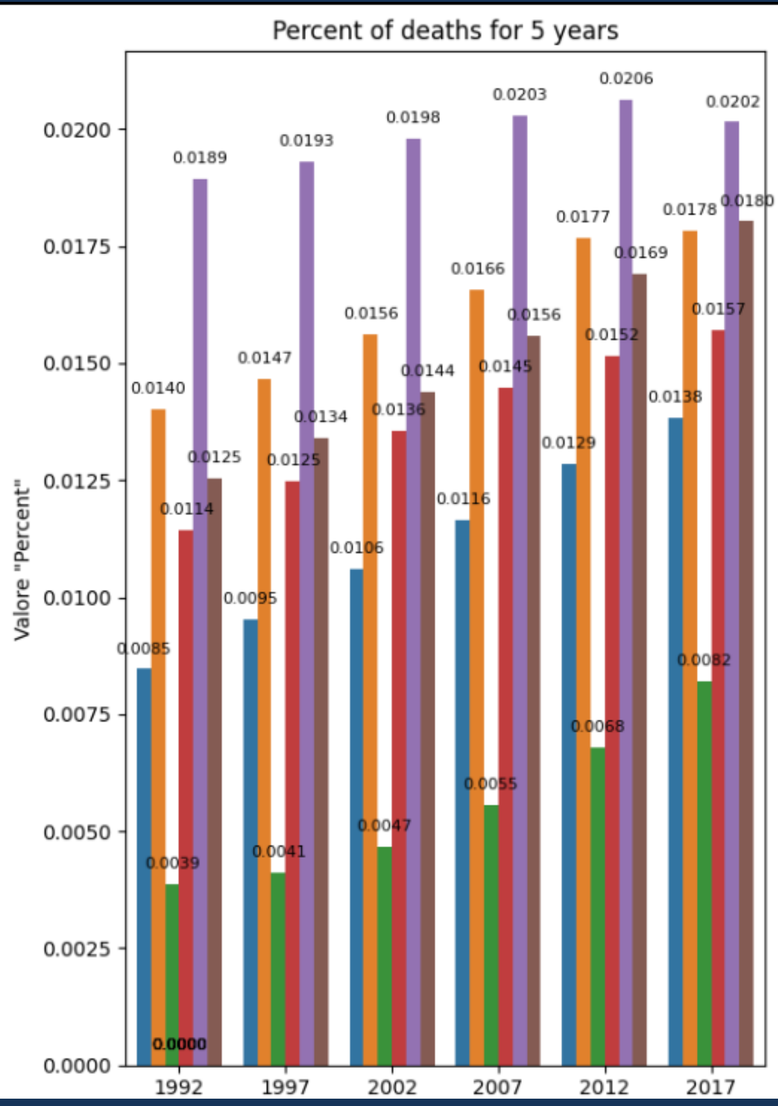
From the GBD query tool we extracted a table containing each country's sdi thorugh the years.

EDA

Overview

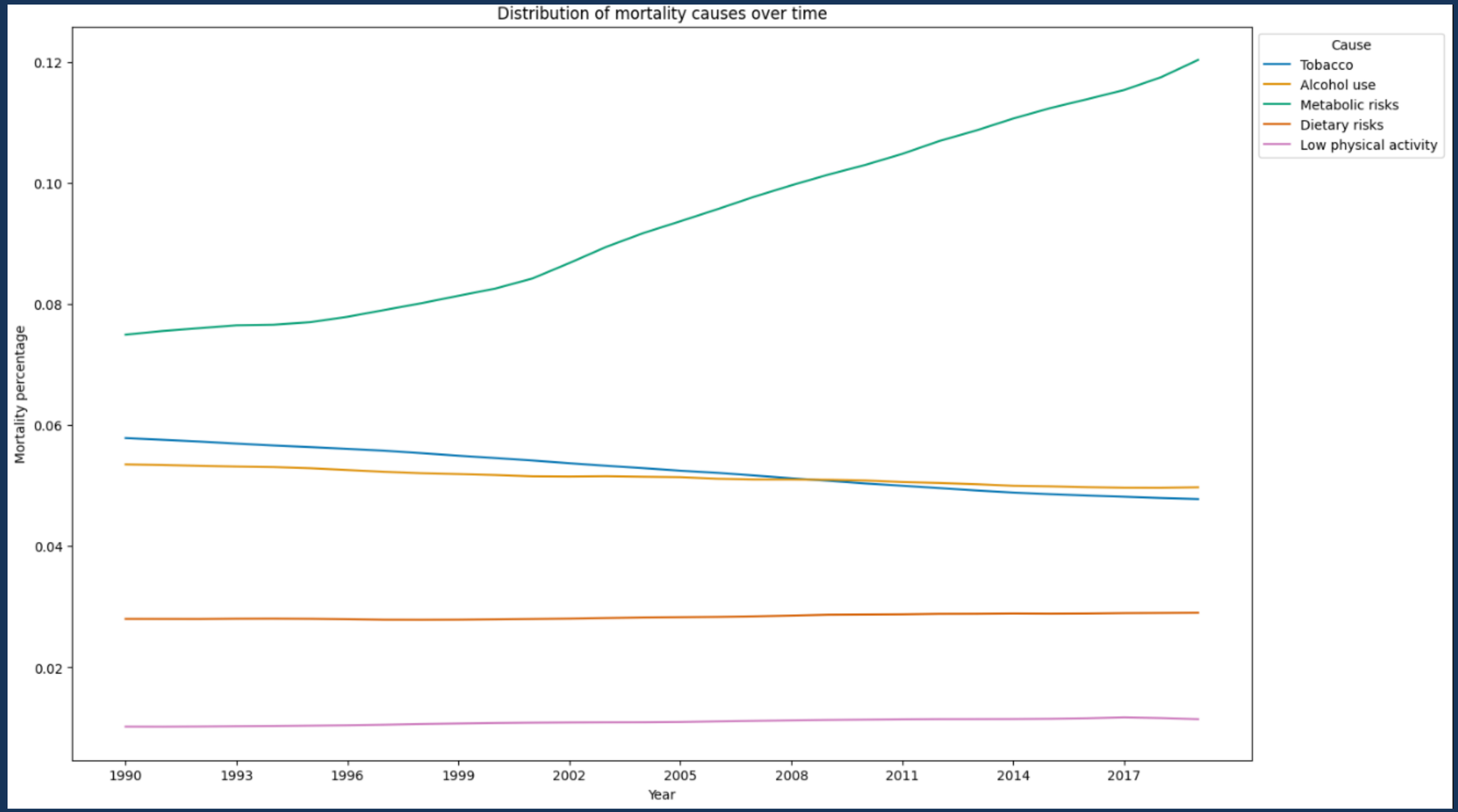

Rate of deaths for 5 years
Valore "Rate"
1992
1997
2002
2007
2012
2017


Number of deaths for 5 years
Valore "Number"
1992
1997
2002
2007
2012
2017


Percent of deaths for 5 years
Valore "Percent"
1992
1997
2002
2007
2012
2017


Continent
Asia
North America
Africa
South America
Europe
Oceania

Main cancer causes



DataFrame description

```python
stats_df = pd.DataFrame({df_name: df['val'].describe() for df_name, df in zip(['nation', 'region', 'region_sdi', 'percent'], [nation_df, region_df, region_sdi_df, percent_df])})

stats_df
```

✓ 0.0s Python

	nation	region	region_sdi	percent
count	18360.000000	630.000000	150.000000	1500.000000
mean	852.427615	9.676898	8.392783	0.263716
std	4540.150381	5.582889	4.605965	0.452682
min	0.000575	3.455839	3.694908	0.007054
25%	0.018210	4.830952	4.567857	0.033176
50%	6.541604	7.937454	6.352434	0.075622
75%	81.512116	15.054146	10.832264	0.230662
max	96306.310780	23.588512	16.859194	2.494516

PowerBI

Machine Learning

Here are the first rows of the tables used for machine learning:

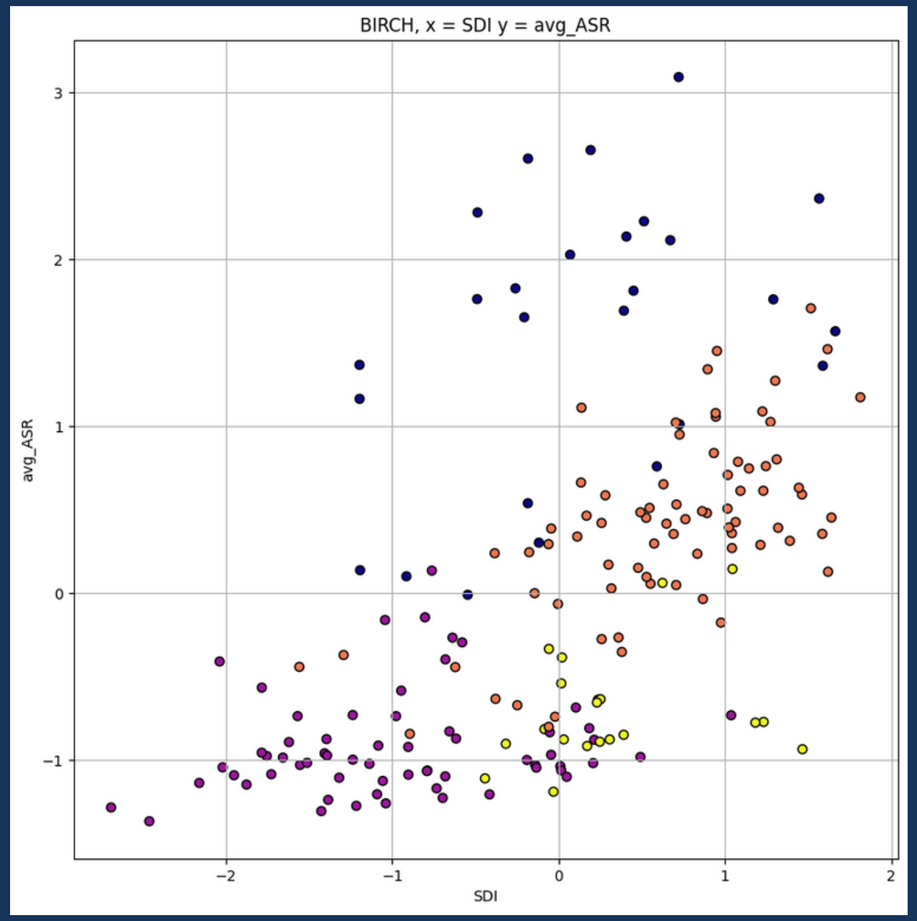
Clustering:

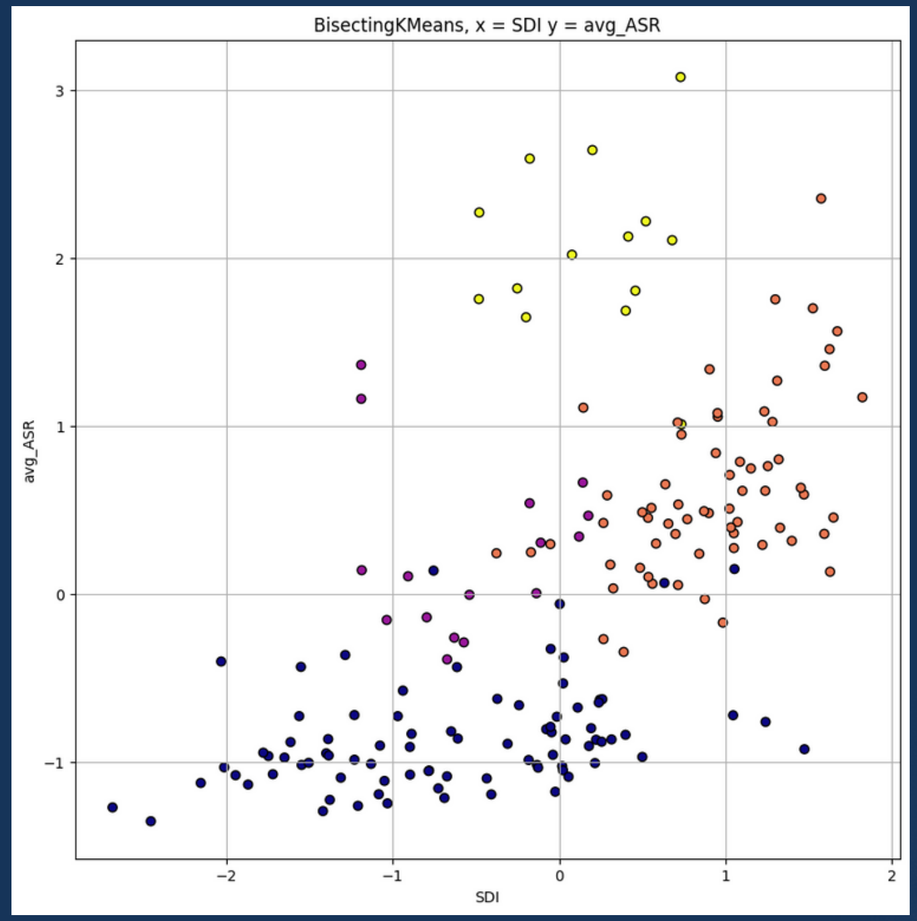
country	avg_ASR	SDI	upper	lower
Afghanistan	0.2671	0.2379	10.1512	6.1042
Albania	0.2511	0.6016	6.9838	5.2458
Algeria	0.2699	0.5547	9.5287	6.3349
American Samoa	1.4833	0.6583	16.3600	11.9534
Andorra	0.6863	0.8634	12.3316	6.9802

Regression:

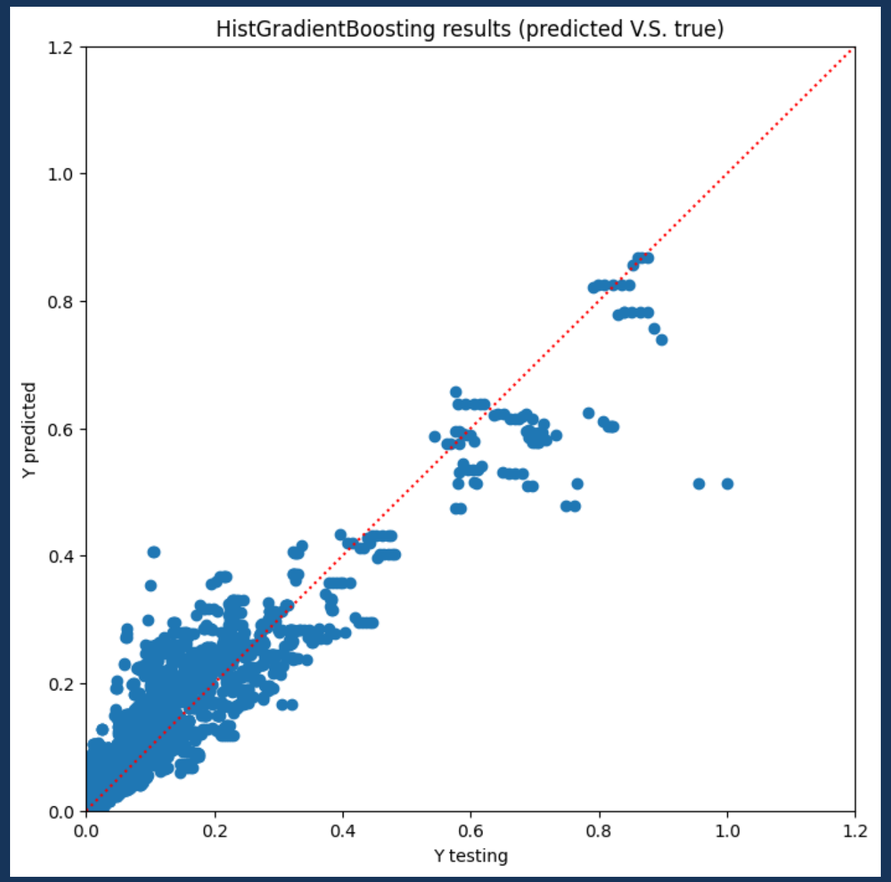
cluster_sid	country	year	risk	ASR	SDI
Low-middle	Armenia	2019	Tobacco	0.5590176	0.689
Low-middle	Armenia	2019	Alcohol use	0.72227	0.689
Low-middle	Armenia	2019	Metabolic risks	1.8844075	0.689
Low-middle	Armenia	2019	Dietary risks	0.4724851	0.689
Low-middle	Armenia	2019	Low physical activity	0.1160354	0.689

Machine Learning - Clustering





Machine Learning - Regression



mae: 0.027564461953412 2

mse: 0.0017321318536863658

r2: 0.8306138837447581

Thank you for your attention