

IE 7374 - On Premises Project: Global Healthcare Financial Review

Group 10 - Stuti Dhebar and Subhasree Vemprala Sathyanarayanan

Problem Definition

A country's healthcare system plays a vital role in its ability to respond effectively during health crises such as pandemics, outbreaks, natural disasters, and other emergencies. The global experience during the recent 2020 pandemic highlighted the challenges faced by countries that were unable to provide adequate care for their citizens, necessitating external support. Investing significantly in the health systems is directly linked to improved care measures for patients, which contributes to overall population health, and ultimately, a stronger economy. Therefore, it is imperative to conduct a comprehensive analysis of the healthcare expenditure, both at the global scale and at country-level. Such analysis is crucial for informed policy decisions, ensuring robust preparedness under any circumstances and the advancement of societal well-being.

Objective

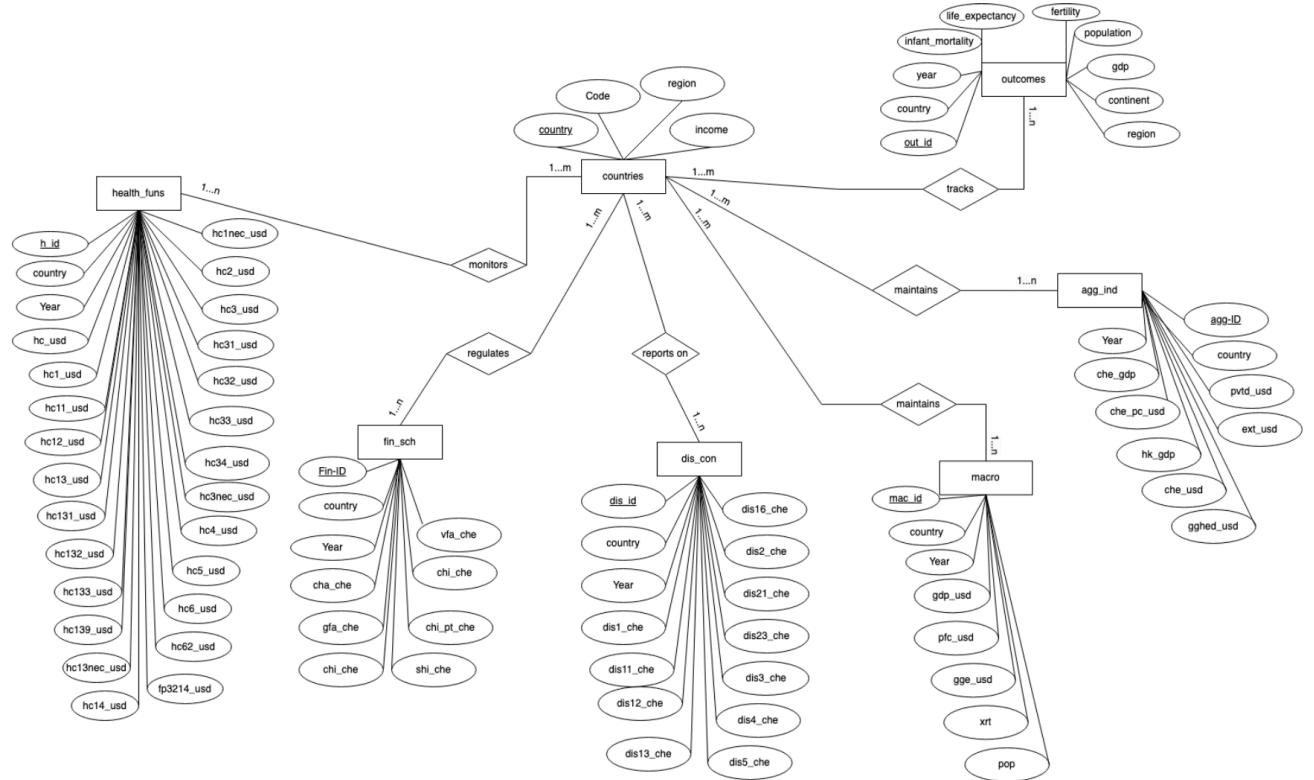
The aim of our analysis is to uncover useful insights from macroeconomic factors and other dimensions of our database. We will start by exploring the changes in healthcare spending over time, including any significant growths or stagnations. Next, we will analyze the expenditure globally as well as across countries to reveal any differences in spending patterns and possible inequities in healthcare access. This database can also shed light on the several insurance systems used in different countries, examining how public and private insurance models affect the overall costs. Additionally, we will investigate the distribution of cost across illnesses, which will help in understanding the areas receiving greatest financial attention and where the resource allocation may need to be adjusted. Finally, we plan to look into the health outcomes and see how these relate to the investments made in healthcare by different countries.

Data Source

For this project, we will be using the [Global Health Expenditure Database](#) from the World Health Organization website. It consists of 313 attributes and ~4200 records of data from different countries. This database has both static and transactional data. It mainly provides information about

expenditures across different areas in the healthcare system like financing schemes (insurance), diseases and conditions, healthcare functions, and more. We plan to divide this database into 7 or more tables. Additionally, we have also taken the [Health & Income Outcomes](#) from Kaggle to correlate our financial analysis with appropriate outcomes.

EER Model



Relational Model

Countries(country, code, region, income, agg_id, mac_id, dis_id, h_id, fin_id, out_id)

- Foreign key agg_id refers to agg_id in Agg_ind
- Foreign key dis_id refers to dis_id in Dis_con
- Foreign key mac_id refers to mac_id in Macro
- Foreign key h_id refers to h_id in Health_funs
- Foreign key fin_id refers to fin_id in Fin_sch
- Foreign key out_id refers to out_id in Outcomes

Agg_ind(agg_id, country, year, che_gdp, che_pc_usd, hk_gdp, che_usd, ggded_usd, pvt_usd,

ext_usd)

- Foreign key *country* refers to country in Countries

Macro(mac_id, *country*, year, gdp_usd, pfc_usd, gge_usd, xrt, pop)

- Foreign key *country* refers to country in Countries

Dis_con(dis_id, *country*, year, dis1_che, dis11_che, dis12_che, dis13_che, dis16_che, dis2_che, dis21_che, dis23_che, dis3_che, dis4_che, dis5_che)

- Foreign key *country* refers to country in Countries

Health_funs(h_id, *country*, year, hc_usd, hc1_usd, hc11_usd, hc12_usd, hc13_usd, hc131_usd, hc132_usd, hc133_usd, hc139_usd, hc13nec_usd, hc14_usd, hc1nec_usd, hc2_usd, hc3_usd, hc31_usd, hc32_usd, hc33_usd, hc34_usd, hc3nec_usd, hc4_usd, hc5_usd, hc6_usd, hc62_usd, fp3214_usd)

- Foreign key *country* refers to country in Countries

Fin_sch(fin_id, *country*, year, cfa_che, gfa_che, chi_che, shi_che, chi_pvt_che, vfa_che, vhi_che, row_che)

- Foreign key *country* refers to country in Countries

Outcomes(out_id, *country*, year, infant_mortality, life_expectancy, fertility, population, gpd, continent, region)

- Foreign key *country* refers to country in Countries

Data Population

Aggregates & Indicators Table: Consists of various aggregates in terms macroeconomic variables like current health expenditure (che) as % of GDP, which is further divided into government, private, expenditure etc.

The screenshot shows a database query interface with a 'Query' tab containing the SQL command: 'SELECT * FROM aggregates;'. Below the query results is a table titled 'Data Output' with columns: agg_id, country, year, che_gdp, che_pc_usd, che_usd, ggded_usd, pvt_usd, ext_usd. The table contains 5 rows of data for Algeria from 2000 to 2004.

| | agg_id | country | year | che_gdp | che_pc_usd | che_usd | ggded_usd | pvt_usd | ext_usd |
|---|--------|---------|------|------------|-------------|-------------|-------------|-------------|-------------|
| 1 | A0 | Algeria | 2000 | 3.48903275 | 62.11769485 | 1911.648551 | 1375.687961 | 534.9629759 | 0.997631971 |
| 2 | A1 | Algeria | 2001 | 3.83787704 | 67.33850098 | 2101.027653 | 1601.550815 | 498.5045502 | 0.972370037 |
| 3 | A2 | Algeria | 2002 | 3.7300415 | 66.94760132 | 2117.197412 | 1593.798099 | 522.4570936 | 0.942266325 |
| 4 | A3 | Algeria | 2003 | 3.60104108 | 76.23547363 | 2443.795446 | 1874.249404 | 568.3185596 | 1.227469891 |
| 5 | A4 | Algeria | 2004 | 3.5440731 | 93.02433014 | 3024.238369 | 2157.899911 | 864.923023 | 1.415474254 |

Countries Table: Contains list of countries, along with their WHO regions and income levels.

| 1 | SELECT * FROM countries; | | | |
|------------------------------------|-----------------------------------|--------------------------------|-----------------------------------|----------------------------------|
| Data Output Messages Notifications | | | | |
| | | | | |
| | country character varying (50) | code character varying (20) | region character varying (100) | income character varying (50) |
| 1 | Algeria | DZA | AFR | Lower-middle |
| 2 | Angola | AGO | AFR | Lower-middle |
| 3 | Botswana | BWA | AFR | Upper-middle |
| 4 | Burkina Faso | BFA | AFR | Low |
| 5 | Burundi | BDI | AFR | Low |

Diseases & Conditions Table: Provides information on total expenditure on diseases and conditions as well as breakdown by various categories.

| 1 | SELECT * FROM diseases; | | | | | | | | |
|------------------------------------|-----------------------------------|-----------------|--------------------|---------------------|----------------------|----------------------|----------------------|----------------------|--------|
| Data Output Messages Notifications | | | | | | | | | |
| | | | | | | | | | |
| dis_id character varying (5) | country character varying (50) | year integer | dis_usd numeric | dis1_usd numeric | dis11_usd numeric | dis12_usd numeric | dis13_usd numeric | dis16_usd numeric | dis_nu |
| 1 D0 | Botswana | 2013 | 927.5395519 | 347.0957529 | 186.2495599 | 8.839088805 | 2.080945225 | 1.022471053 | 1 |
| 2 D1 | Botswana | 2014 | 909.7052669 | 306.5764047 | 242.6320914 | 0.278218625 | 2.3801112 | 1.345099986 | |
| 3 D2 | Botswana | 2015 | 825.7659466 | 274.0513751 | 220.0811885 | 0.375042867 | 0.547657693 | 0.008265504 | 4 |
| 4 D3 | Botswana | 2016 | 870.0221121 | 170.7960357 | 116.3631097 | 0.863220415 | 0.675636731 | 3.291878407 | 7 |
| 5 D4 | Botswana | 2017 | 1067.75244 | 295.9813816 | 247.3654937 | 0.373095799 | 1.297674242 | 2.318489197 | |

Finances Table: Lists investment in financial schemes like insurance schemes across different countries and years.

| 1 | SELECT * FROM finances; | | | | | | | | |
|------------------------------------|-----------------------------------|-----------------|--------------------|--------------------|--------------------|--------------------|------------------------|--------------------|-------|
| Data Output Messages Notifications | | | | | | | | | |
| | | | | | | | | | |
| f_id character varying (5) | country character varying (50) | year integer | cfa_che numeric | gfa_che numeric | chi_che numeric | shi_che numeric | chi_pvt_che numeric | vfa_che numeric | vh_nu |
| 1 F0 | Algeria | 2000 | 71.96691132 | 45.91372299 | 26.05318642 | 26.05318642 | 0 | 28.03309059 | |
| 2 F1 | Algeria | 2001 | 76.23010254 | 50.46977615 | 25.76032639 | 25.76032639 | 0 | 23.76989937 | |
| 3 F2 | Algeria | 2002 | 75.28163147 | 49.34467697 | 25.93695831 | 25.93695831 | 0 | 24.71836662 | |
| 4 F3 | Algeria | 2003 | 76.70742035 | 50.72018814 | 25.98723221 | 25.98723221 | 0 | 23.29257965 | |
| 5 F4 | Algeria | 2004 | 71.36814117 | 47.133255 | 24.23488808 | 24.23488808 | 0 | 28.63185501 | |

Healthcare Functions Table: Spending by various healthcare functions like primary healthcare, expenditure during Covid-19, etc.

| 1 | SELECT * FROM health_functions; | | | | | | | | | |
|------------------------------------|-----------------------------------|-----------------|-------------------|--------------------|---------------------|---------------------|---------------------|----------------------|----------|--|
| Data Output Messages Notifications | | | | | | | | | | |
| | | | | | | | | | | |
| h_id character varying (5) | country character varying (50) | year integer | hc_usd numeric | hc1_usd numeric | hc11_usd numeric | hc12_usd numeric | hc13_usd numeric | hc131_usd numeric | hc nu | |
| 1 H0 | Botswana | 2016 | 870.0221121 | 380.7926161 | 182.030007 | 67.77403544 | 90.37703577 | 90.37703577 | | |
| 2 H1 | Botswana | 2017 | 1067.75244 | 480.6833027 | 323.9603708 | 47.97254996 | 108.7503819 | 108.7503819 | | |
| 3 H2 | Botswana | 2018 | 1028.744488 | 525.2322721 | 226.3862261 | 57.8732927 | 298.0421871 | 265.2603431 | 7 | |
| 4 H3 | Botswana | 2019 | 1022.117902 | 515.1482884 | 225.7653831 | 57.8732927 | 288.599875 | 259.7186991 | 1 | |
| 5 H4 | Botswana | 2020 | 1025.431195 | 497.9157956 | 226.0758046 | 57.8732927 | 198.6751285 | 184.2345405 | | |

Macro Table: Contains macro data like GDP, population, exchange rate, and so on about different countries

| 1 | SELECT * FROM macro; | | | | | | | | |
|------------------------------------|-----------------------------------|-----------------|--------------------|--------------------|--------------------|----------------|----------------|-------------|--|
| Data Output Messages Notifications | | | | | | | | | |
| | | | | | | | | Scratch Pad | |
| mac_id character varying (5) | country character varying (50) | year integer | gdp_usd numeric | pfc_usd numeric | gge_usd numeric | xrt numeric | pop numeric | | |
| 1 M0 | Algeria | 2000 | 54790.21509 | 22777.1036 | 15654.07003 | 75.25978851 | 30774.621 | | |
| 2 M1 | Algeria | 2001 | 54744.53082 | 23929.28239 | 17108.43322 | 77.21501923 | 31200.9855 | | |
| 3 M2 | Algeria | 2002 | 56760.6947 | 24965.51914 | 19460.45463 | 79.68190002 | 31624.6955 | | |
| 4 M3 | Algeria | 2003 | 67863.58009 | 27473.36031 | 21853.538 | 77.39497375 | 32055.8835 | | |
| 5 M4 | Algeria | 2004 | 85332.2817 | 32902.8378 | 26252.45405 | 72.06065369 | 32510.186 | | |

Outcomes Table: Has information on countries health outcomes like life expectancy, fertility, and so on.

| 1 | SELECT * FROM outcomes; | | | | | | | | |
|------------------------------------|-----------------------------------|-----------------|-----------------------------|----------------------------|----------------------|-----------------------|----------------|-----------------------------|--|
| Data Output Messages Notifications | | | | | | | | | |
| | | | | | | | | | |
| out_id character varying (5) | country character varying (50) | year integer | infant_mortality numeric | life_expectancy numeric | fertility numeric | population numeric | gdp numeric | continent character vary | |
| 1 00 | Albania | 2000 | 23.2 | 74.7 | 2.38 | 3121965 | 3686649387 | Europe | |
| 2 01 | Algeria | 2000 | 33.9 | 73.3 | 2.51 | 31183658 | 54790058957 | Africa | |
| 3 02 | Angola | 2000 | 128.3 | 52.3 | 6.84 | 15058638 | 9129180361 | Africa | |
| 4 03 | Antigua and Barbuda | 2000 | 13.8 | 73.8 | 2.32 | 77648 | 802526700.6 | Americas | |
| 5 04 | Argentina | 2000 | 18 | 74.2 | 2.48 | 37057453 | 284204000000 | Americas | |

Data Warehouse Proposal

Our project's objective is to establish a centralized data warehouse to store a wide range of data, including aggregates, indicators, healthcare expenditure, and macroeconomic variables. The primary goal is to conduct a comprehensive analysis of healthcare expenditure over the past two decades and assess its impact on health outcomes across various regions worldwide. To achieve this, we have designed an initial proposal for the data solution.

Our data warehouse will have two types of tables - fact tables and a dimension table.

1) Dimensions Table:

These tables are dedicated to storing reference information for supporting data stored in fact tables. First, we have the 'countries' dimension which includes the following dimensions - country name, country code, region, and income level. Within this table, we have also established a geographical dimension hierarchy of countries → regions they belong to. Next we have dimensions giving expenditure information of health functions, diseases/conditions, and insurance schemes. Finally, we have other dimensions like health outcomes, macro data, and aggregates/indicators. These tables do not have any hierarchy established as all records contain numerical information.

2) Facts Table:

To perform our analysis, we will have three fact tables:

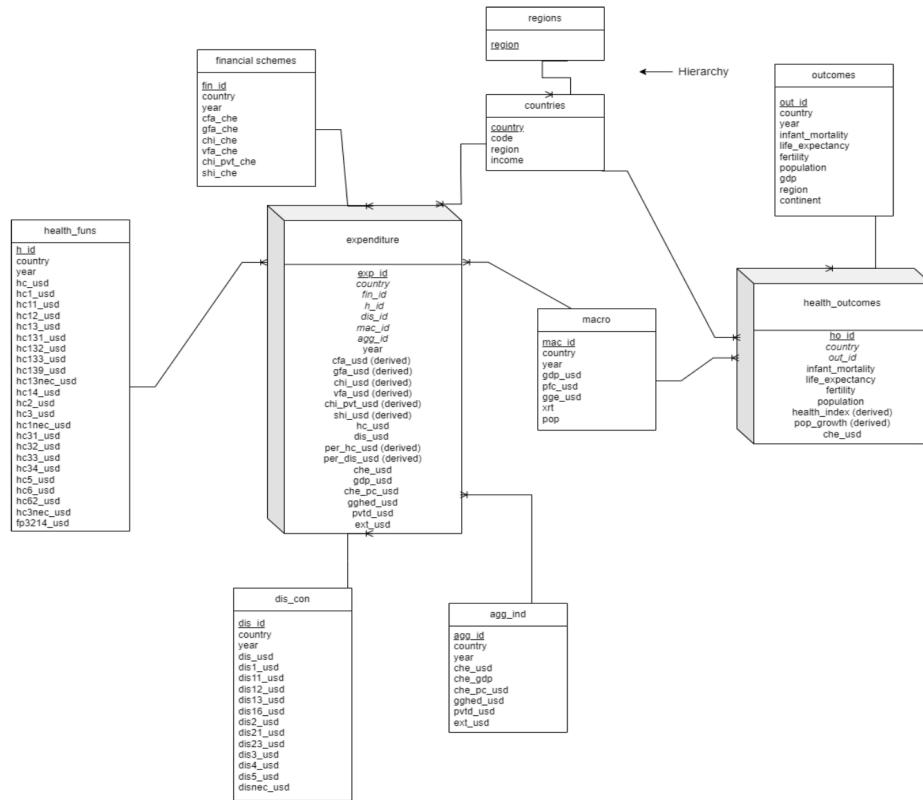
- Expenditure Fact Table, which will have several dimensions that will capture financial spending across different categories - healthcare functions, diseases, and financial schemes as well as data about macro indicators and aggregates. These dimensions include numerical measures that will support our analysis by providing information on the spending by category across years and regions.
- Health Outcomes Fact Table, which has several dimensions like infant mortality rate, life expectancy, fertility rate, and so on. Using these measures, we plan to correlate investments in healthcare to outcomes to see how effective current policies/investment strategies are.

This proposal is based on our current datasets - Global Health Expenditure & Health Outcomes. Based on the requirements of the project, we plan to add more information to support our analysis.

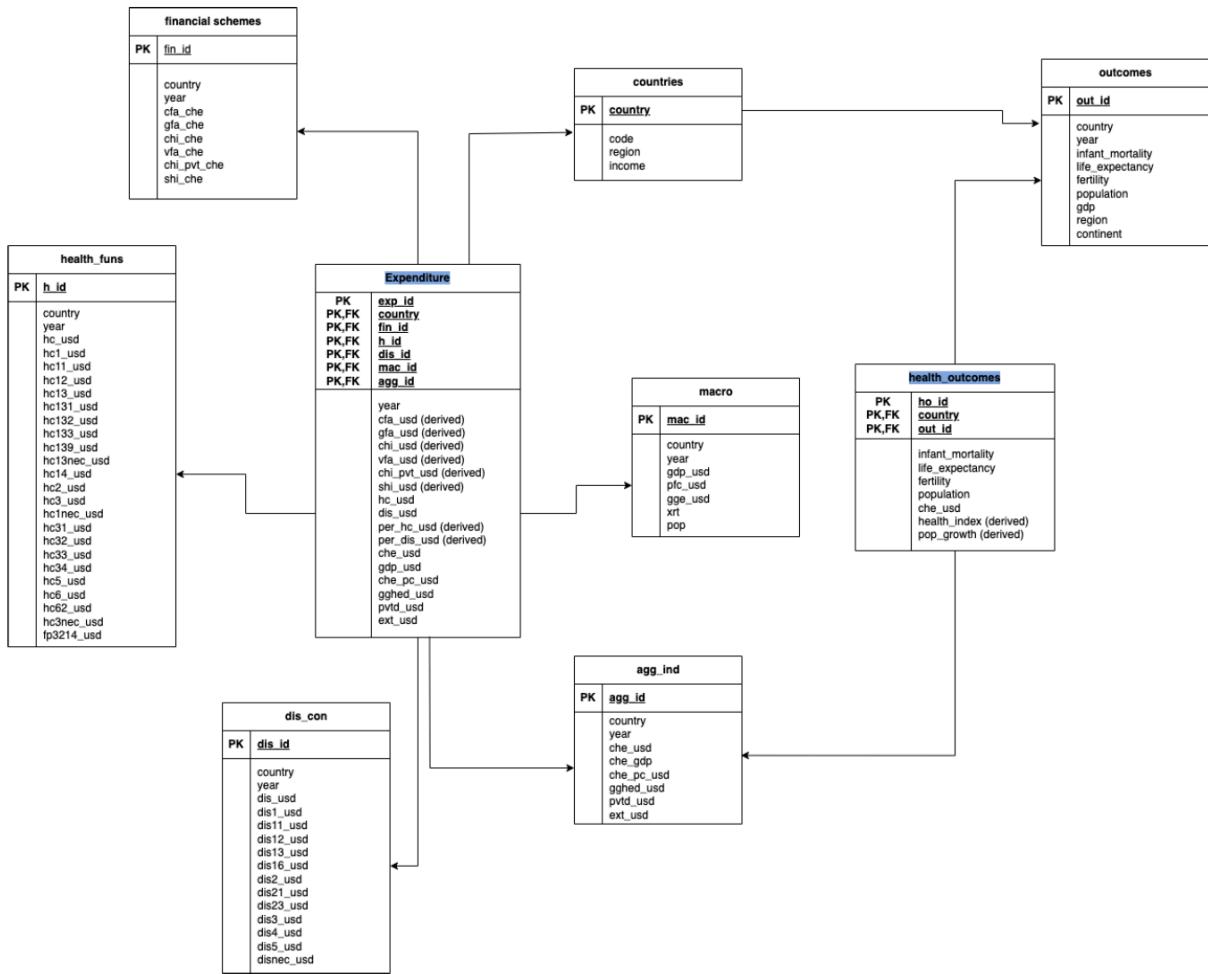
Slowly Changing Dimensions

According to the definition, slowly changing dimensions are dimensions that are changed at the structure-level or instance-level either frequently or infrequently over time. In our data warehouse, we have some slowly changing dimensions that get updated every year namely - financial schemes, macro data, health outcomes, and aggregates/indicators. These dimensions are updated by the World Health Organization (data source) as financial details are recorded on a yearly basis. The same goes with health outcomes, every year institutions globally monitor health outcomes based on various factors so these get updated yearly too. Since new records are inserted in the database, we can classify the slowly changing dimensions as Type 1.

Conceptual Model of Data Warehouse



Logical Model of Data Warehouse



Data Warehouse Schema

For schema creation, we implemented our dimension and fact tables along with their primary keys and foreign keys in PostgreSQL. In the image shown below, we can see 9 tables on the left side in Tables drop down. On the right, we have our queries as well as an empty ‘aggregates’ table in the output.

```

7  DROP TABLE IF EXISTS public.health_functions;
8  DROP TABLE IF EXISTS public.health_outcomes;
9  DROP TABLE IF EXISTS public.expenditure;
10
11 CREATE TABLE IF NOT EXISTS public.countries
12 (
13     country character varying(50) PRIMARY KEY,
14     code character varying(20),
15     region character varying(100),
16     income character varying(50)
17 );
18
19 CREATE TABLE IF NOT EXISTS public.aggregates
20 (
21     agg_id integer PRIMARY KEY,
22     country character varying(50) REFERENCES public.countries(country),
23     year integer,
24     che_gdp numeric,
25     che_pc_usd numeric,
26     che_usd numeric,
27     gghed_usd numeric,
28     pvtid_usd numeric,

```

Total rows: 0 of 0 Query complete 00:00:00.079 Ln 17, Col 3

Primary Events

Our database contains financial data pertaining to healthcare expenditures. These financial values are documented across various countries for the years spanning from 2000 to 2022. The recorded dimensions categorize these expenses based on various parameters, including types of financial schemes, diseases and medical conditions, and healthcare functions, which encompass both general and specialty care. Additionally, we record macroeconomic indicators such as GDP and population figures. In order to assess the efficiency of healthcare spending, we also monitor key health outcome measures, including fertility rates, life expectancy, and infant mortality rates. We have several primary events in our database.

For instance, for the United States in the year 2015, the healthcare expenditure amounted to 3,000,551 million USD which was 16.5% of the GDP, alongside an infant mortality rate of 5.6, a life expectancy of 79.1 years, and a fertility rate of 1.97. From statistics, we know that the global average for infant mortality is 26.052, life expectancy is 72.27 and fertility is 2.27. This shows us that the USA was ahead of the average in terms of the outcomes. Similarly, we have recorded primary events in other tables such as finances, diseases, health functions, etc.

Relational OLAP Operations

- 1) Comparison of total financial schemes investment made over a span of a decade i.e. for the years 2012 and 2022.

```
total ← ADDMEASURE (expenditure, total_inv = cfa_usd + gfa_usd + chi_usd + vfa_usd + chi_pvt_usd + shi_usd)
```

```
fin_inv_2012 ← SLICE (expenditure, year = 2012)
```

```
fin_inv_2022 ← SLICE (expenditure, year = 2022)
```

```
result ← DRILLACROSS (fin_inv_2012, fin_inv_2022)
```

Analysis: Financial schemes are government sponsored schemes as well as public/private insurance services that are offered by countries to support healthcare costs borne by payers. So, this analysis would be useful when we want to see whether changes in these schemes impacted health outcomes in any way.

- 2) Average of current health expenditure by countries for years 2020-2022, sorting in descending to get top countries investing the most in their healthcare ecosystem.

```
che_rp ← ROLLUP* (expenditure, country → country, AVG(che_usd) AS che_total)
```

```
result ← MAX (che_rp, che_total, 10)
```

Analysis: Current health expenditure is the total amount a country is spending on its healthcare relating to the size of its economy. Through this query, we aim to understand which countries are investing most in their healthcare ecosystem.

- 3) Government health expenditure vs external vs private health expenditure from 2000 to 2022
(fact: expenditure)

```
healthexp_rp ← ROLLUP* (expenditure, country → country, AVG(gghed_usd) AS govt_exp, AVG(pvtd_usd) AS pvt_exp, AVG(ext_usd) AS ext_exp)
```

Analysis: This query digs deeper to give average spending insights for the subtypes of current health expenditure.

- 4) How many low vs. mid vs. high income level countries?

```
inc_con ← ROLLUP* (countries, income → income, COUNT(countries))
```

Analysis: The aim of this simple operation is to get an idea about income level distribution of countries. This will be a part of future demographic analysis.

5) How is health coverage offered by compulsory financing arrangements over the years for all countries?

```
cfa_rp ← ROLLUP* (expenditure, country → country, AVG(cfa_usd) AS cfa_exp)
```

```
result ← MAX (cfa_rp, cfa_exp, 10)
```

Analysis: Compulsory financing arrangements consists of taxpayer money contributed towards health coverage. This analysis could prove to be useful when informing a country's policy changes.

6) Countries with below average life expectancy

```
life_rp ← ROLLUP* (health_outcomes, country → country, AVG(life_expectancy) AS  
avg_lifeexp))
```

```
result ← SLICE (life_rp, avg_lifeexp < 72.27)
```

Analysis: The average global life expectancy is considered to be 72.27 years. Finding countries that fall below this global average could provide more context while analyzing their health care spending.

7) Comparison of infant mortality rate to current health expenditure

```
inf_che_rp ← ROLLUP* (health_outcomes, country → country, AVG(infant_mortality) AS  
avg_infm, AVG(che_usd) as che_avg)
```

```
result ← MAX (inf_che_rp, avg_infm, 10)
```

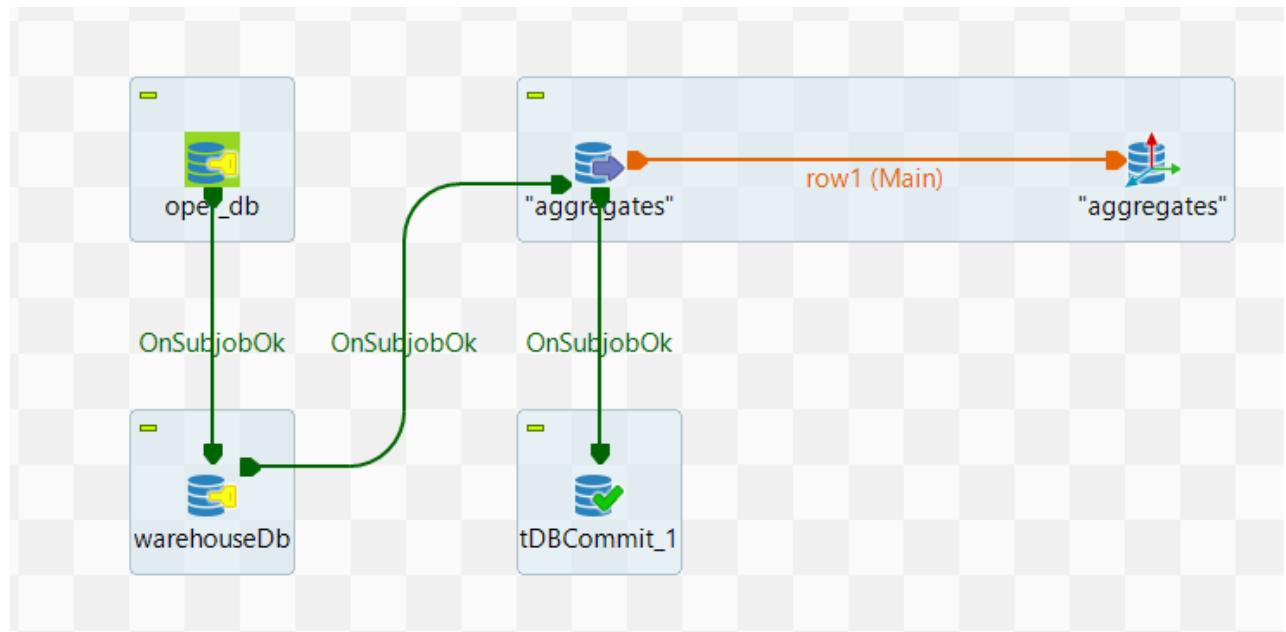
Analysis: This allows us to understand if lower infant mortality implies higher health expenditure.

Control and Data Flows

Our ETL implementation of control and data flows follows a pattern of - first, checking the database connection of both the operational database and the data warehouse. If there are no issues in

connection, the next part of the flow which loads the data from source table to target table is implemented. Here, in the target table, we are implementing SCD Type 1. This type of slowly changing dimension updates records on the original record itself without retaining historical record of changes ie. no new rows or columns are added for updation. If the key for the record is not already present in the tables, insertion of a new record takes place. This type of SCD is more appropriate for our tables as the columns consist of financial data across different categories, which usually gets updated to correct the incorrect values that were inserted previously or insert new records for different countries and years.

Dimension - Aggregates



SCD component editor

| Unused | | Type 0 fields | | | |
|-----------------------------------|---------------|--------------------|-------------|--|--|
| agg_key | | country year | | | |
| Source keys | | Type 1 fields | | | |
| agg_id | | che_gdp che_usd | | | |
| Surrogate keys | | Type 2 fields | | | |
| name | agg_key | | | | |
| creation | Table max + 1 | | | | |
| complement | | | | | |
| Versioning | | | | | |
| type | name | creation | compleme... | | |
| start | scd_start | Job start time | | | |
| end | scd_end | NULL | | | |
| <input type="checkbox"/> versi... | scd_version | | | | |
| <input type="checkbox"/> active | scd_active | | | | |
| Type 3 fields | | | | | |
| current value | | previous value | | | |

pgAdmin 4

File Object Tools Help

Object Explorer Exp_Warehouse

Dashboard Properties SQL Statistics Dependencies Dependents Processes FinancialReview... FinancialReview... FinancialReview... Exp_Warehouse

Query Query History

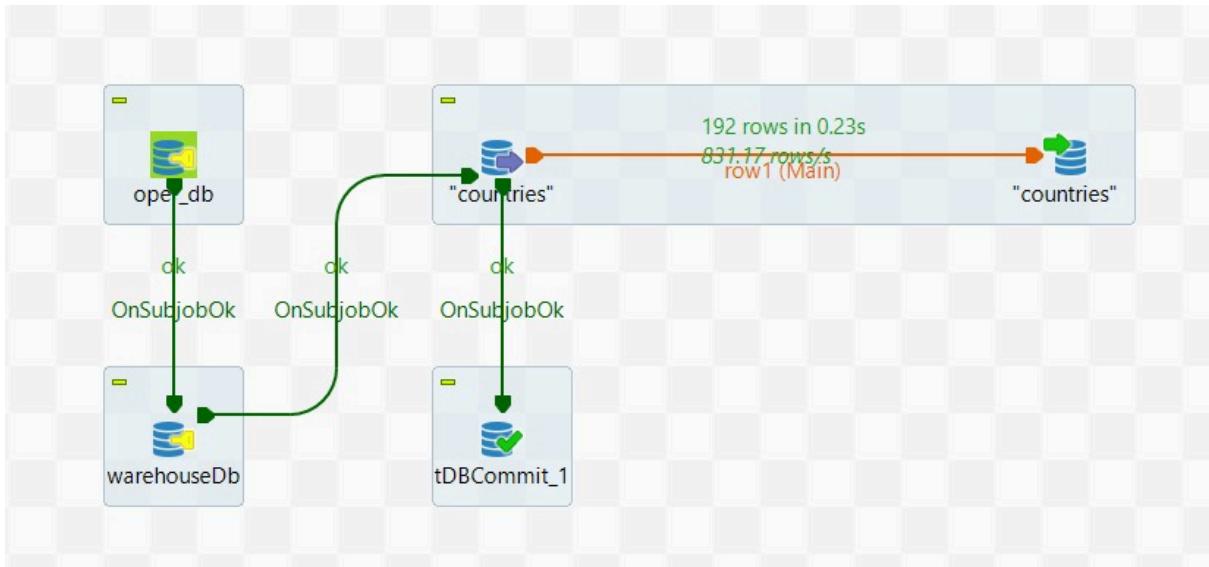
```
1 SELECT * FROM aggregates;
2
```

Data Output Messages Notifications

| agg_id [PK] integer | country character varying(50) | year integer | che_gdp numeric(10,2) | che_pc_usd numeric(10,2) | che_usd numeric(10,2) | gghed_usd numeric(10,2) | pvt_usd numeric(10,2) | ext_usd numeric(10,2) | agg_key integer |
|---------------------|-------------------------------|--------------|-----------------------|--------------------------|-----------------------|-------------------------|-----------------------|-----------------------|-----------------|
| 1 | Algeria | 2000 | 3.49 | 62.12 | 1911.65 | 1375.69 | 534.96 | 1.00 | 1 |
| 2 | Algeria | 2001 | 3.84 | 67.34 | 2101.03 | 1601.55 | 498.50 | 0.97 | 2 |
| 3 | Algeria | 2002 | 3.73 | 66.95 | 2117.20 | 1593.80 | 522.46 | 0.94 | 3 |
| 4 | Algeria | 2003 | 3.60 | 76.24 | 2443.80 | 1874.25 | 568.32 | 1.23 | 4 |
| 5 | Algeria | 2004 | 3.54 | 93.02 | 3024.24 | 2157.90 | 864.92 | 1.42 | 5 |
| 6 | Algeria | 2005 | 3.24 | 101.30 | 3338.64 | 2313.37 | 1022.62 | 2.65 | 6 |
| 7 | Algeria | 2006 | 3.36 | 117.43 | 3926.39 | 2688.11 | 1236.22 | 2.05 | 7 |
| 8 | Algeria | 2007 | 3.82 | 151.78 | 5158.04 | 3599.67 | 1554.95 | 3.42 | 8 |
| 9 | Algeria | 2008 | 4.20 | 207.85 | 7185.25 | 5173.05 | 2009.56 | 2.63 | 9 |
| 10 | Algeria | 2009 | 5.36 | 208.94 | 7353.68 | 5212.59 | 2137.31 | 3.79 | 10 |
| 11 | Algeria | 2010 | 5.12 | 230.06 | 8249.25 | 5731.76 | 2515.17 | 2.32 | 11 |
| 12 | Algeria | 2011 | 5.27 | 288.31 | 10535.99 | 7440.24 | 3093.67 | 2.08 | 12 |

Total rows: 1000 of 4224 Query complete 00:00:00.223 Ln 2, Col 1

Dimension - Countries



pgAdmin 4

File Object Tools Help

Object Explorer Exp_Warehouse

Dashboard Properties SQL Statistics Dependencies Dependents Processes FinancialReview... FinancialReview... Exp_Ware...

Query Query History

```

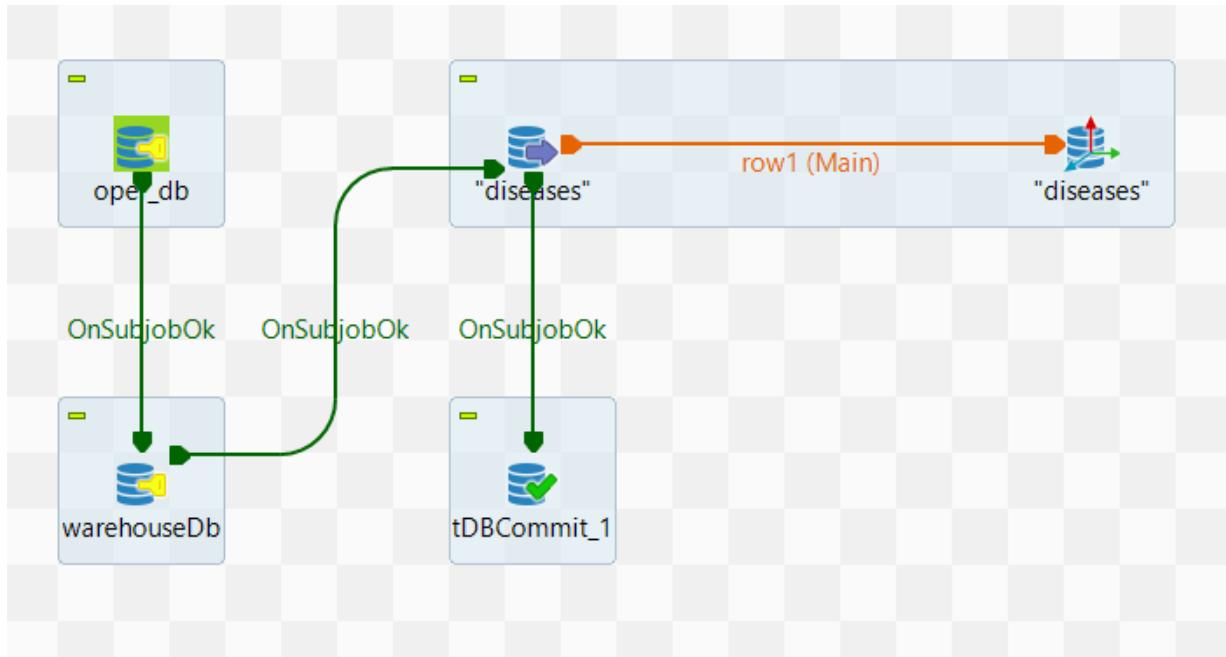
1 SELECT * FROM countries;
2
  
```

Data Output Messages Notifications

| | country [PK] character varying (50) | code character varying (20) | region character varying (100) | income character varying (50) |
|----|-------------------------------------|-----------------------------|--------------------------------|-------------------------------|
| 1 | Algeria | DZA | AFR | Lower-middle |
| 2 | Angola | AGO | AFR | Lower-middle |
| 3 | Botswana | BWA | AFR | Upper-middle |
| 4 | Burkina Faso | BFA | AFR | Low |
| 5 | Burundi | BDI | AFR | Low |
| 6 | Benin | BEN | AFR | Lower-middle |
| 7 | Cabo Verde Republic of | CPV | AFR | Lower-middle |
| 8 | Cameroon | CMR | AFR | Lower-middle |
| 9 | Central African Republic | CAF | AFR | Low |
| 10 | Chad | TCD | AFR | Low |
| 11 | Comoros | COM | AFR | Lower-middle |
| 12 | Congo | COG | AFR | Lower-middle |

Total rows: 192 of 192 Query complete 00:00:00.087 ✓ Successfully run. Total query runtime: 87 msec. 192 rows affected. Ln 1, Col 24

Dimension - Diseases & Conditions



pgAdmin 4

File Object Tools Help

Object Explorer

- Exp_Warehouse
 - Casts
 - Catalogs
 - Event Triggers
 - Extensions
 - Foreign Data Wrappers
 - Languages
 - Publications
 - Schemas (1)
 - public
 - Aggregates
 - Collations
 - Domains
 - FTS Configurations
 - FTS Dictionaries
 - FTS Parsers
 - FTS Templates
 - Foreign Tables
 - Functions
 - Materialized Views
 - Operators
 - Procedures
 - Sequences
 - Tables (9)
 - aggregates
 - countries
 - diseases
 - expenditure
 - finances
 - health_functions

Dashboard Properties SQL Statistics Dependencies Dependents Processes FinancialReview... > FinancialReview... FinancialReview... Exp_Wareh...

Exp_Warehouse/postgres@PostgreSQL 16

No limit

Query History

```
1 SELECT * FROM diseases;
2
```

Data Output Messages Notifications

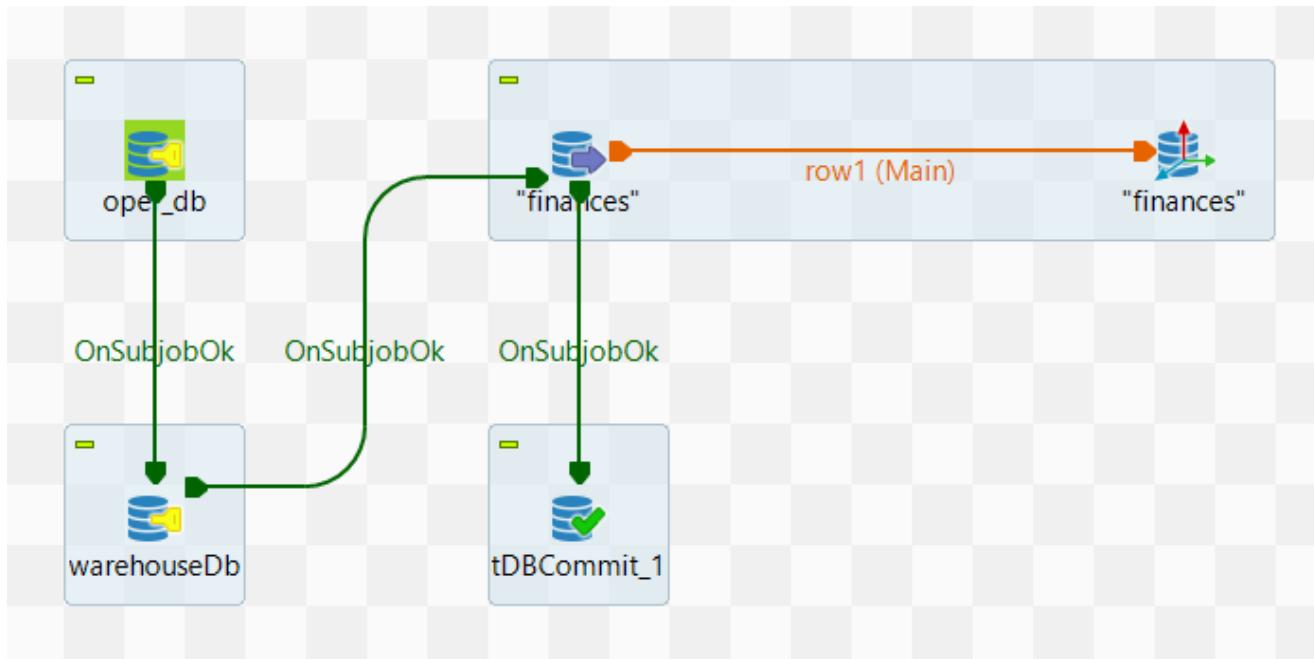
| dis_id [PK] integer | country character varying (50) | year integer | dis_usd numeric | dis1_usd numeric | dis11_usd numeric | dis12_usd numeric | dis13_usd numeric | dis16_usd numeric | dis2_usd numeric | dis21_usd numeric |
|---------------------|--------------------------------|--------------|-----------------|------------------|-------------------|-------------------|-------------------|-------------------|------------------|-------------------|
| 1 | Botswana | 2013 | 927.5395519 | 347.0957529 | 186.2495599 | 8.839088805 | 2.080945225 | 1.022471053 | 116.1681931 | 90.19044073 |
| 2 | Botswana | 2014 | 909.7052669 | 306.5764047 | 242.6320914 | 0.278218625 | 2.3801112 | 1.345099986 | 59.8428635 | 54.03439133 |
| 3 | Botswana | 2015 | 825.7659466 | 274.0513751 | 220.0811885 | 0.375042867 | 0.547657693 | 0.008265504 | 48.14676983 | 46.24849407 |
| 4 | Botswana | 2016 | 870.0221121 | 170.7960357 | 116.3631097 | 0.863220415 | 0.675636731 | 3.291878407 | 78.03935635 | 69.095534 |
| 5 | Botswana | 2017 | 1067.75244 | 295.9813816 | 247.5634937 | 0.373095799 | 1.297674242 | 2.318489197 | 101.752969 | 99.19890154 |
| 6 | Botswana | 2018 | 1028.744488 | 529.243899 | 183.1673655 | 16.60612748 | 43.29683646 | 11.60444156 | 90.5310995 | 19.45252627 |
| 7 | Botswana | 2019 | 1022.117902 | 557.1416904 | 210.5295367 | 34.60913947 | 59.13232004 | 12.6703149 | 102.4719573 | 30.23245139 |
| 8 | Botswana | 2020 | 927.5395519 | 306.5764047 | 210.5295367 | 0.863220415 | 2.080945225 | 2.318489197 | 90.5310995 | 54.03439133 |
| 9 | Botswana | 2021 | 927.5395519 | 306.5764047 | 210.5295367 | 0.863220415 | 2.080945225 | 2.318489197 | 90.5310995 | 54.03439133 |
| 10 | Burkina Faso | 2013 | 747.9489125 | 357.2200473 | 51.24098456 | 1.776043672 | 152.5055043 | 62.16648554 | 64.01623507 | 38.58971164 |
| 11 | Burkina Faso | 2014 | 697.1887559 | 321.3069917 | 49.47639962 | 1.649799872 | 106.4041673 | 73.62579104 | 67.52478415 | 43.79419336 |
| 12 | Burkina Faso | 2015 | 607.217445 | 267.5626346 | 47.3515085 | 0.000000000 | 0.000000000 | 0.000000000 | 0.000000000 | 0.000000000 |

Total rows: 567 of 567 Query complete 00:00:00.160

Successfully run. Total query runtime: 160 msec. 567 rows affected.

Ln 1 Col 23

Dimension - Finances



pgAdmin 4

File Object Tools Help

Object Explorer Exp_Warehouse

Dashboard Properties SQL Statistics Dependencies Dependents Processes FinancialReview... FinancialReview... Exp_Warehouse

Query Query History

```
1 SELECT * FROM finances;
2
```

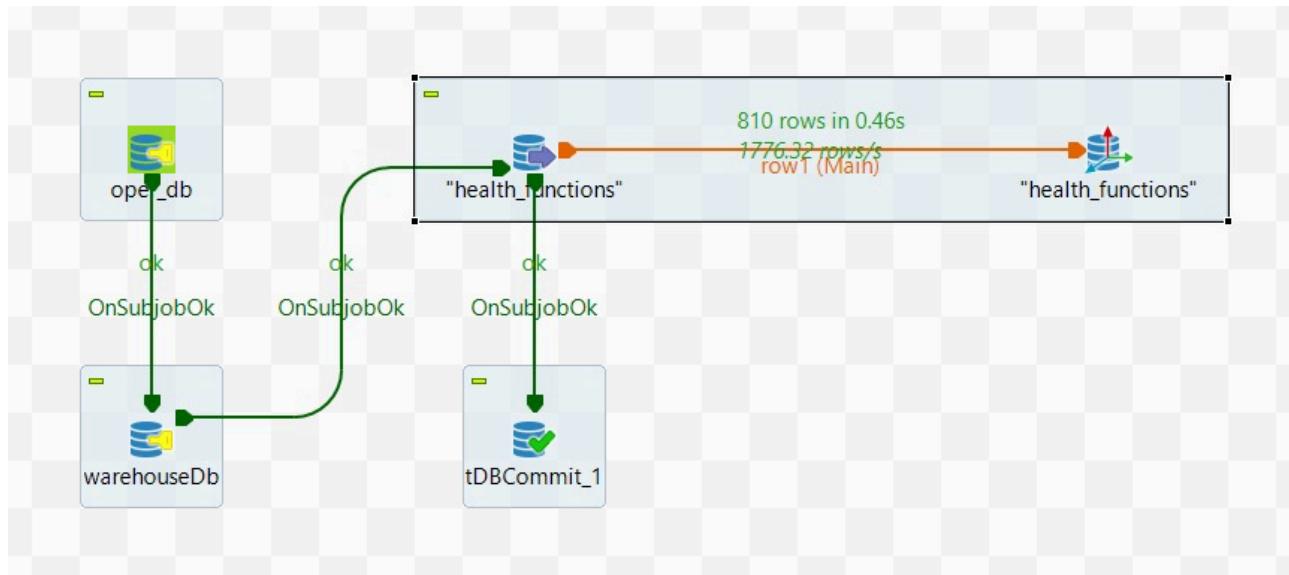
Data Output Messages Notifications

| f_id [PK] Integer | country character varying (50) | year integer | cfs_che numeric | gfa_che numeric | chi_che numeric | shi_che numeric | chi_pvt_che numeric | vfa_che numeric | vhi_che numeric | fin_key integer |
|-------------------|--------------------------------|--------------|-----------------|-----------------|-----------------|-----------------|---------------------|-----------------|-----------------|-----------------|
| 1 | 1 Algeria | 2000 | 71.96691132 | 45.91372299 | 26.05318642 | 26.05318642 | 0 | 28.03309059 | 0.81809813 | 1 |
| 2 | 2 Algeria | 2001 | 76.23010254 | 50.46977615 | 25.76032639 | 25.76032639 | 0 | 23.76989937 | 0.84755749 | 2 |
| 3 | 3 Algeria | 2002 | 75.28163147 | 49.34467697 | 25.93695831 | 25.93695831 | 0 | 24.71836662 | 0.95434374 | 3 |
| 4 | 4 Algeria | 2003 | 76.70742035 | 50.72018814 | 25.98723221 | 25.98723221 | 0 | 23.29257965 | 0.98076808 | 4 |
| 5 | 5 Algeria | 2004 | 71.36814117 | 47.13255 | 24.23488808 | 24.23488808 | 0 | 28.63185501 | 1.44542754 | 5 |
| 6 | 6 Algeria | 2005 | 69.34159851 | 44.90696716 | 24.43463135 | 24.43463135 | 0 | 30.65840149 | 1.37465668 | 6 |
| 7 | 7 Algeria | 2006 | 68.49044037 | 43.16996002 | 25.32047653 | 25.32047653 | 0 | 31.50956154 | 1.24352002 | 7 |
| 8 | 8 Algeria | 2007 | 69.83426666 | 45.13714218 | 24.69712448 | 24.69712448 | 0 | 30.16573334 | 1.07214952 | 8 |
| 9 | 9 Algeria | 2008 | 72.01260376 | 46.3663063 | 25.64629555 | 25.64629555 | 0 | 27.98739624 | 0.92872608 | 9 |
| 10 | 10 Algeria | 2009 | 70.92264557 | 44.9341507 | 25.98849678 | 25.98849678 | 0 | 29.07735252 | 0.90609753 | 10 |
| 11 | 11 Algeria | 2010 | 69.49746704 | 43.10234451 | 26.39511871 | 26.39511871 | 0 | 30.50253677 | 0.86715698 | 11 |
| 12 | 12 Algeria | 2011 | 70.63270569 | 46.0446701 | 24.58803 | 24.58803 | 0 | | | |

Total rows: 1000 of 4224 Query complete 00:00:00.182 Successfully run. Total query runtime: 182 msec. 4224 rows affected. X

Ln 1, Col 23

Dimension - Healthcare Functions



pgAdmin 4

File Object Tools Help

Object Explorer Dashboard Properties SQL Statistics Dependencies Dependents Processes FinancialReview... FinancialReview... Exp_Wareh...

Query Query History

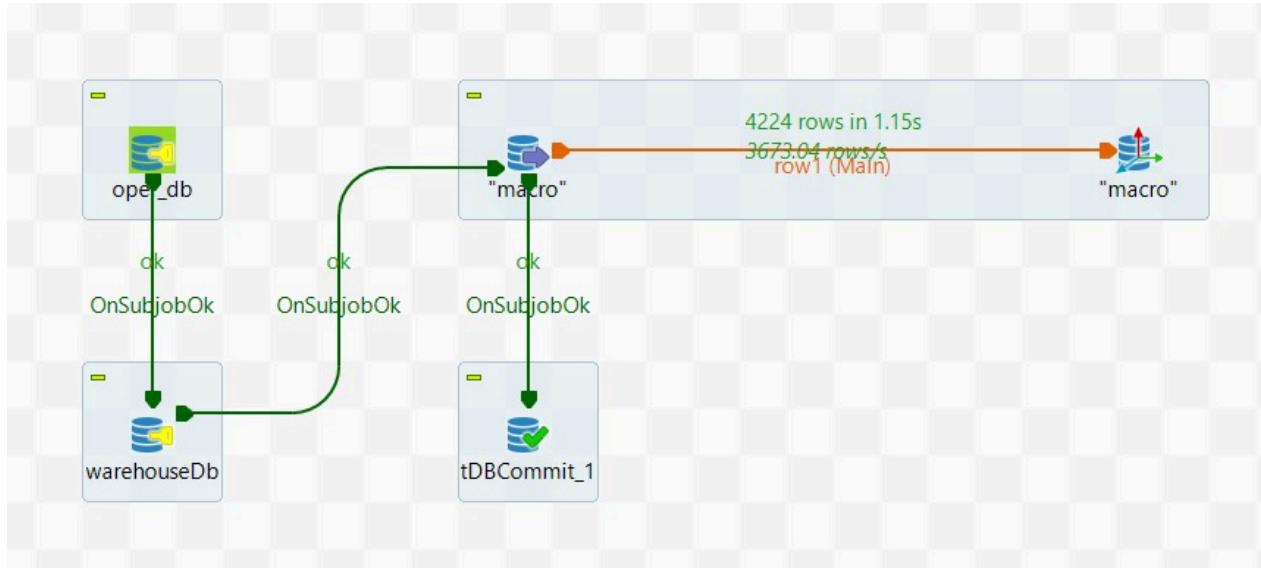
```
1 SELECT * FROM health_functions;
2
```

Data Output Messages Notifications

| | h_id [PK] integer | country character varying (50) | year integer | hc_usd numeric | hc1_usd numeric | hc11_usd numeric | hc12_usd numeric | hc13_usd numeric | hc131_usd numeric | hc132_usd numeric | hc133_usd numeric |
|----|-------------------|--------------------------------|--------------|----------------|-----------------|------------------|------------------|------------------|-------------------|-------------------|-------------------|
| 1 | 1 | Botswana | 2016 | 870.0221121 | 380.7926161 | 182.030007 | 67.77403544 | 90.37703577 | 90.37703577 | 9.13841517 | 21.6930948 |
| 2 | 2 | Botswana | 2017 | 1067.75244 | 480.6833027 | 323.9603707 | 47.97254976 | 108.7503819 | 108.7503819 | 9.13841517 | 21.6930948 |
| 3 | 3 | Botswana | 2018 | 1028.744488 | 525.2322721 | 226.3862261 | 57.8732927 | 298.0421871 | 265.2603431 | 7.951823274 | 24.83002076 |
| 4 | 4 | Botswana | 2019 | 1022.117902 | 515.1462884 | 225.7653831 | 57.8732927 | 288.599875 | 259.7186991 | 10.32500707 | 18.55616884 |
| 5 | 5 | Botswana | 2020 | 1025.431195 | 497.9157956 | 226.0758046 | 57.8732927 | 198.6751285 | 184.2345405 | 9.13841517 | 21.6930948 |
| 6 | 6 | Botswana | 2021 | 1025.431195 | 497.9157956 | 226.0758046 | 57.8732927 | 198.6751285 | 184.2345405 | 9.13841517 | 21.6930948 |
| 7 | 7 | Burkina Faso | 2016 | 764.1771689 | 293.3847869 | 55.38884062 | 0 | 237.9959463 | 237.9959463 | 1.006105933 | 0.121086847 |
| 8 | 8 | Burkina Faso | 2017 | 854.361304 | 382.6708858 | 76.8860514 | 0 | 305.784834 | 305.7335076 | 0.051326699 | 0.121086847 |
| 9 | 9 | Burkina Faso | 2018 | 795.3740477 | 389.9991162 | 115.6071334 | 0 | 274.3919828 | 274.3919828 | 1.006105933 | 0.121086847 |
| 10 | 10 | Burkina Faso | 2019 | 860.4991367 | 421.1816348 | 143.7532231 | 0 | 277.4284116 | 273.6724444 | 3.634880368 | 0.121086847 |
| 11 | 11 | Burkina Faso | 2020 | 1166.029773 | 514.5730707 | 163.9646247 | 0 | 350.608446 | 168.8909251 | 1.006105933 | 0.121086847 |
| 12 | 12 | Burkina Faso | 2021 | 854.361304 | 389.9991162 | 115.6071334 | 0 | | | | |

Total rows: 810 of 810 Query complete 00:00:00.287 Successfully run. Total query runtime: 287 msec. 810 rows affected.

Dimension - Macro



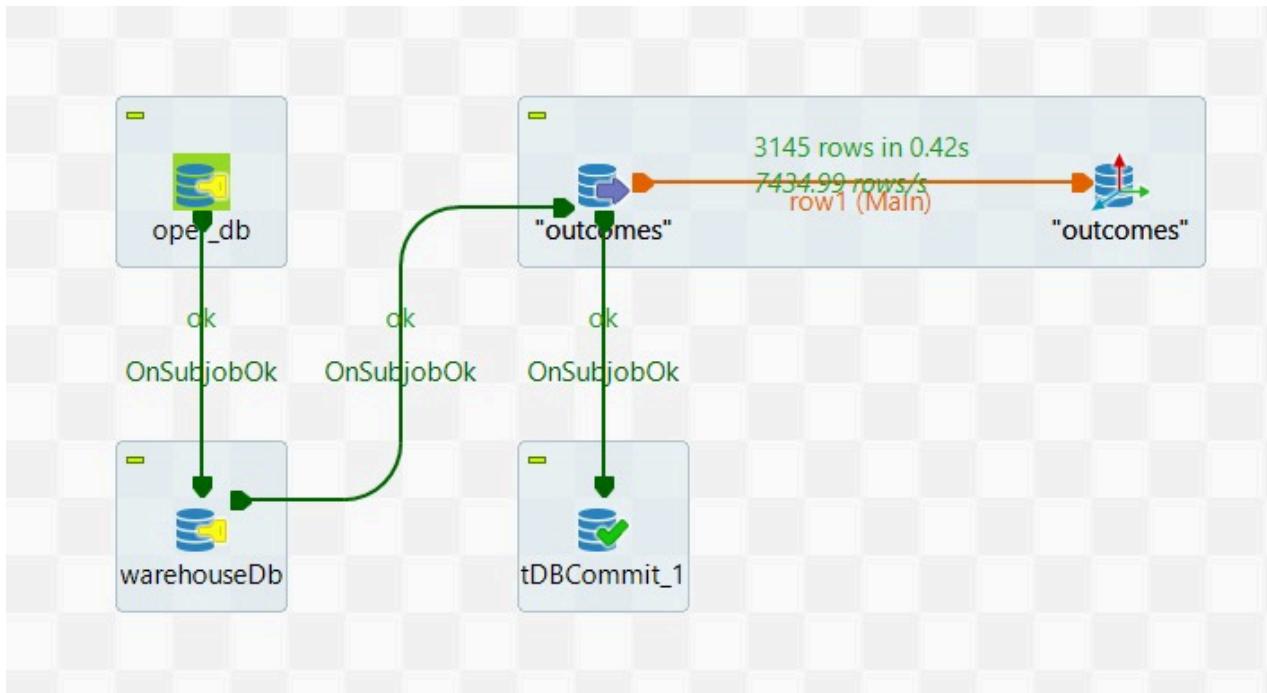
The screenshot shows the pgAdmin 4 interface with the following details:

- File Object Tools Help**
- Object Explorer** pane showing the database schema structure, including Schemas, public, Tables (9), and various system objects.
- Dashboard Properties SQL Statistics Dependencies Dependents Processes FinancialReview... FinancialReview... Exp_Warehouse...**
- Query History** tab active, displaying the query: `1 SELECT * FROM macro;`
- Data Output** tab showing the results of the query:

| mac_id | country | year | gdp_usd | pfc_usd | gpe_usd | xrt | pop | mac_key |
|--------|---------|------|-------------|-------------|-------------|-------------|------------|---------|
| 1 | Algeria | 2000 | 54790.21509 | 22777.1036 | 15654.07003 | 75.25978851 | 30774.621 | 1 |
| 2 | Algeria | 2001 | 54744.53082 | 23929.28239 | 17108.43322 | 77.21501923 | 31200.9855 | 2 |
| 3 | Algeria | 2002 | 56760.6947 | 24965.51914 | 19460.45463 | 79.68190002 | 31624.6955 | 3 |
| 4 | Algeria | 2003 | 67863.58009 | 27473.36031 | 21853.538 | 77.39497375 | 32055.8835 | 4 |
| 5 | Algeria | 2004 | 85332.2817 | 32902.8378 | 26252.45405 | 72.06065369 | 32510.186 | 5 |
| 6 | Algeria | 2005 | 103198.4334 | 34840.73003 | 27974.99093 | 73.27630615 | 32956.6905 | 6 |
| 7 | Algeria | 2006 | 117027.2849 | 37105.37209 | 33766.39134 | 72.64661407 | 33435.0805 | 7 |
| 8 | Algeria | 2007 | 134977.0893 | 42772.65214 | 44861.61765 | 69.29239655 | 33983.8275 | 8 |
| 9 | Algeria | 2008 | 171000.6796 | 51612.59168 | 64894.22698 | 64.58280182 | 34569.5915 | 9 |
| 10 | Algeria | 2009 | 137211.0071 | 51535.46914 | 58451.27443 | 72.64741516 | 35196.0365 | 10 |
| 11 | Algeria | 2010 | 161207.2998 | 55327.17823 | 60050.82705 | 74.38598633 | 35856.3435 | 11 |
| 12 | Algeria | 2011 | 200019.5194 | 62357.17172 | 80254.11 | 74.38598633 | 35856.3435 | 11 |

Total rows: 1000 of 4224 | Query complete 00:00:00.155 | Successfully run. Total query runtime: 155 msec. 4224 rows affected. | Ln 1, Col 20

Dimension - Outcomes

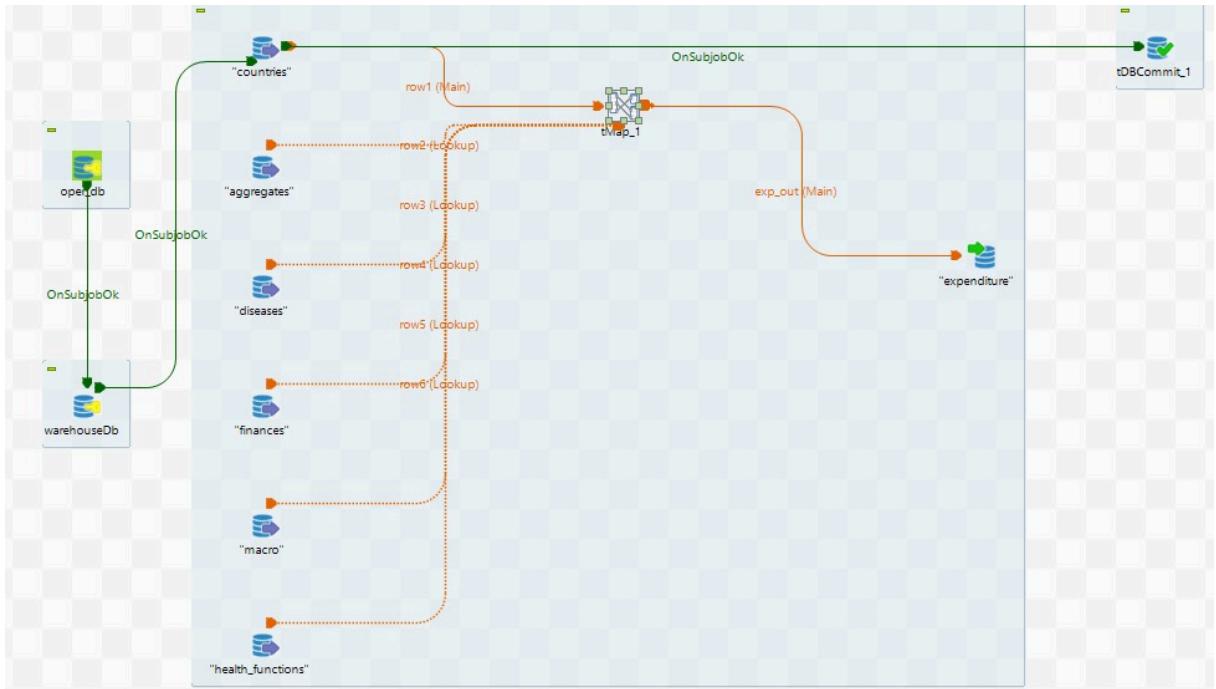


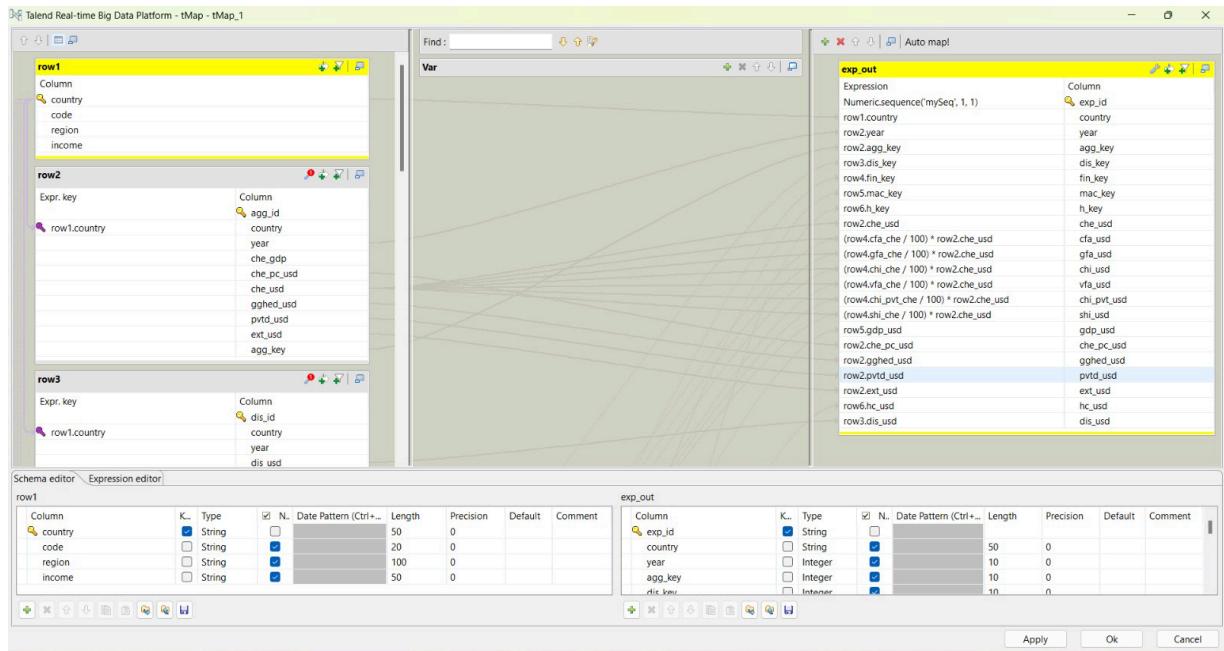
The screenshot shows the pgAdmin 4 interface with the following details:

- Object Explorer:** Shows the database schema structure, including Schemas (1), Tables (9), and specific tables like **aggregates**, **countries**, **diseases**, etc.
- Query Editor:** Contains the SQL query: `SELECT * FROM outcomes;`
- Data Output:** Displays the results of the query in a table format. The table has 12 columns and 12 rows of data. The columns are:

| out_id [PK] integer | country character varying (50) | year integer | infant_mortality numeric | life_expectancy numeric | fertility numeric | population numeric | gdp numeric | continent character varying (50) | region character varying |
|---------------------|--------------------------------|--------------|--------------------------|-------------------------|-------------------|--------------------|--------------|----------------------------------|--------------------------|
| 1 | Albania | 2000 | 23.2 | 74.7 | 2.38 | 3121965 | 3686649387 | Europe | Southern Europe |
| 2 | Algeria | 2000 | 33.9 | 73.3 | 2.51 | 31183658 | 54790058957 | Africa | Northern Africa |
| 3 | Angola | 2000 | 128.3 | 52.3 | 6.84 | 15058638 | 9129180361 | Africa | Middle Africa |
| 4 | Antigua and Barbuda | 2000 | 13.8 | 73.8 | 2.32 | 77648 | 802526700.6 | Americas | Caribbean |
| 5 | Argentina | 2000 | 18 | 74.2 | 2.48 | 3705453 | 284204000000 | Americas | South America |
| 6 | Armenia | 2000 | 26.6 | 71.3 | 1.3 | 3076098 | 1911563665 | Asia | Western Asia |
| 7 | Aruba | 2000 | 0 | 73.78 | 1.87 | 90858 | 1858659293 | Americas | Caribbean |
| 8 | Australia | 2000 | 5.1 | 79.8 | 1.76 | 19107251 | 41688000000 | Oceania | Australia and Ne |
| 9 | Austria | 2000 | 4.6 | 78.2 | 1.37 | 8050884 | 192071000000 | Europe | Western Europe |
| 10 | Azerbaijan | 2000 | 60.6 | 66.5 | 2.05 | 8117742 | 5272617196 | Asia | Western Asia |
| 11 | Bahamas | 2000 | 13 | 70.2 | 2.07 | 297891 | 6327552000 | Americas | Caribbean |
| 12 | Bahrain | 2000 | 10.9 | 73.7 | | | | | |
- Messages:** Shows the message "Successfully run. Total query runtime: 175 msec. 3145 rows affected."
- Notifications:** Shows the message "Total rows: 1000 of 3145 Query complete 00:00:00.175 Ln 1, Col 23".

Fact - Expenditure: The Expenditure fact table stores aggregated measures for financial schemes, as well as macro economic data and other health expenses for each country. This provides a comprehensive view of spending patterns across different countries, shedding light on the distribution of expenses and facilitating a nuanced understanding of financial dynamics.





Dashboard Properties SQL Statistics Dependencies Dependents Processes Exp_Warehouse/postgres@PostgreSQL 16*

Exp_Warehouse/postgres@PostgreSQL 16

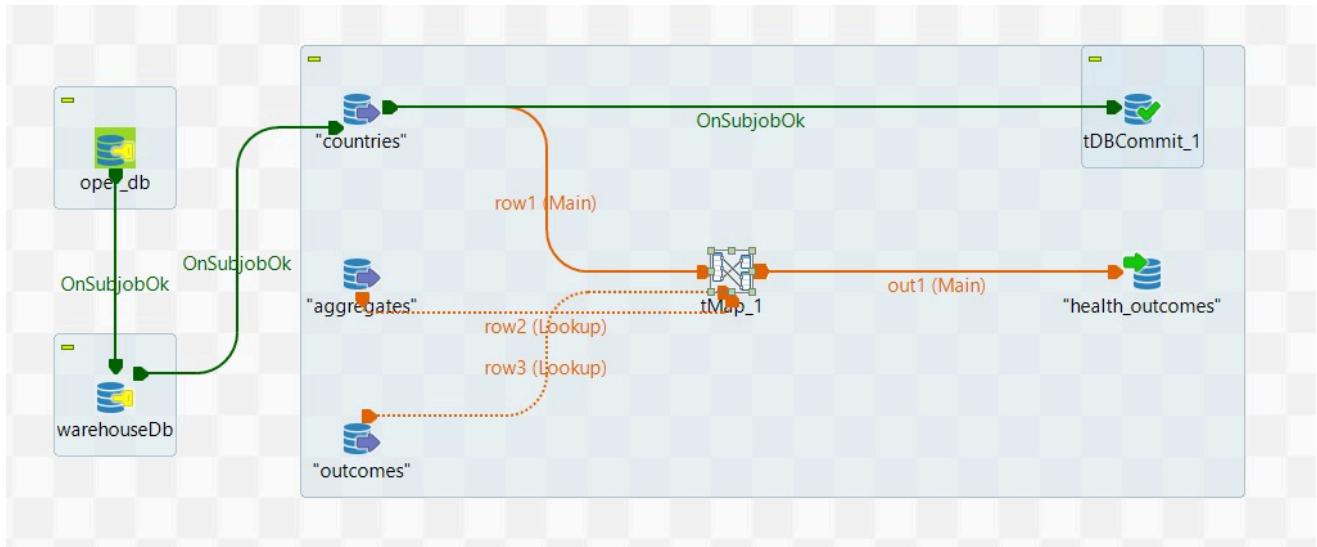
Query History

```
1 SELECT *
2 FROM expenditure;
```

Data Output Messages Notifications

| | exp_id [PK] integer | country character varying (50) | fin_key integer | h_key integer | dis_key integer | mac_key integer | agg_key integer | year integer | cfa_usd numeric (10,2) | gfa_usd numeric (10,2) | chi_usd numeric (10,2) | vfa_nur |
|----|---------------------|--------------------------------|-----------------|---------------|-----------------|-----------------|-----------------|--------------|------------------------|------------------------|------------------------|---------|
| 1 | 1 | Algeria | 1 | [null] | [null] | 1 | 1 | 2000 | 1375.81 | 877.64 | 497.98 | |
| 2 | 2 | Algeria | 2 | [null] | [null] | 2 | 2 | 2001 | 1601.62 | 1060.39 | 541.23 | |
| 3 | 3 | Algeria | 3 | [null] | [null] | 3 | 3 | 2002 | 1593.83 | 1044.63 | 549.20 | |
| 4 | 4 | Algeria | 4 | [null] | [null] | 4 | 4 | 2003 | 1874.64 | 1239.50 | 635.14 | |
| 5 | 5 | Algeria | 5 | [null] | [null] | 5 | 5 | 2004 | 2158.40 | 1425.32 | 732.77 | |
| 6 | 6 | Algeria | 6 | [null] | [null] | 6 | 6 | 2005 | 2315.01 | 1499.38 | 815.63 | |
| 7 | 7 | Algeria | 7 | [null] | [null] | 7 | 7 | 2006 | 2689.18 | 1695.02 | 994.16 | |
| 8 | 8 | Algeria | 8 | [null] | [null] | 8 | 8 | 2007 | 3601.86 | 2328.34 | 1274.04 | |
| 9 | 9 | Algeria | 9 | [null] | [null] | 9 | 9 | 2008 | 5174.10 | 3331.80 | 1843.02 | |
| 10 | 10 | Algeria | 10 | [null] | [null] | 10 | 10 | 2009 | 5215.23 | 3304.01 | 1911.22 | |
| 11 | 11 | Algeria | 11 | [null] | [null] | 11 | 11 | 2010 | 5733.23 | 3555.43 | 2177.80 | |
| 12 | 12 | Algeria | 12 | [null] | [null] | 12 | 12 | 2011 | 7441.57 | 4850.77 | 2590.80 | |
| 13 | 13 | Algeria | 13 | [null] | [null] | 13 | 13 | 2012 | 9151.29 | 6308.68 | 2842.61 | |
| 14 | 14 | Algeria | 14 | [null] | [null] | 14 | 14 | 2013 | 8996.41 | 5755.37 | 3239.77 | |

Fact - Health Outcomes: The Health Outcomes fact table stores data concerning health outcomes, including a derived health index, life expectancy, fertility, infant mortality, population, and current health expenditure. This arrangement allows for a comparative analysis of expenses, assessing whether they contribute positively to the health situation in a given country.



Talend Real-time Big Data Platform - tMap - tMap_1

Find: Var

Row1 (Main) Row2 (Lookup) Row3 (Lookup)

| Column | Expression | Column | Expression | Column | Expression |
|---------|--------------|---------|--------------|---------|--------------|
| country | row1.country | out_id | row3.out_id | ho_id | out1.out_id |
| code | | year | row2.year | year | row1.year |
| region | | country | row1.country | country | row1.country |
| income | | out_key | row3.out_key | out_key | row1.out_key |

Schema editor Expression editor

Row1

| Column | K.. | Type | N.. | Date Pattern (Ctrl+...) | Length | Precision | Default | Comment |
|---------|---------|--------|-----|-------------------------|--------|-----------|---------|---------|
| country | country | String | | | 50 | 0 | | |
| code | code | String | | | 20 | 0 | | |
| region | region | String | | | 100 | 0 | | |
| income | income | String | | | 50 | 0 | | |

Row3

| Expr. key | Column | Expr. key | Column | Expr. key | Column |
|------------------|------------------|-----------------------|------------------|-----------------------|------------------|
| row1.country | country | row3.out_id | out_id | row1.out_key | out_key |
| year | year | row2.year | year | row1.year | year |
| infant_mortality | infant_mortality | row3.infant_mortality | infant_mortality | row1.infant_mortality | infant_mortality |
| life_expectancy | life_expectancy | row3.life_expectancy | life_expectancy | row1.life_expectancy | life_expectancy |
| fertility | fertility | row3.fertility | fertility | row1.fertility | fertility |
| population | population | row3.population | population | row1.population | population |
| gdp | gdp | row2.gdp | gdp | row1.gdp | gdp |
| continent | continent | row3.gdp | gdp | row1.gdp | gdp |

Row1

| Column | K.. | Type | N.. | Date Pattern (Ctrl+...) | Length | Precision | Default | Comment |
|------------------|------------------|------------|-----|-------------------------|--------|-----------|---------|---------|
| ho_id | ho_id | String | | | 50 | 0 | | |
| year | year | Integer | | | 10 | 0 | | |
| country | country | String | | | 131089 | 0 | | |
| out_key | out_key | Integer | | | 131089 | 0 | | |
| infant_mortality | infant_mortality | BigDecimal | | | 131089 | 0 | | |
| life_expectancy | life_expectancy | BigDecimal | | | 131089 | 0 | | |
| fertility | fertility | BigDecimal | | | 10 | 0 | | |
| population | population | Integer | | | 131089 | 0 | | |
| agg_key | agg_key | Integer | | | 10 | 2 | | |
| che_usd | che_usd | BigDecimal | | | 131089 | 0 | | |
| gdp | gdp | BigDecimal | | | 50 | 0 | | |
| region | region | String | | | | | | |

Row3

| Column | Expression | Column | Expression |
|----------------------|--------------------------------------|--------------|------------|
| row3.life_expectancy | + (1 - (row3.fertility / numeri...)) | health_index | |

Dashboard Properties SQL Statistics Dependencies Dependents Processes [Exp_Warehouse/postgres@PostgreSQL 16*](#) [x](#)

[Exp_Warehouse/postgres@PostgreSQL 16](#) [▼](#) [↻](#)

No limit [▼](#) [◀](#) [▶](#) [E](#) [U](#) [V](#) [S](#) [M](#) [? \[Help\]](#)

Query Query History [↗](#)

```
1 SELECT *
2 FROM health_outcomes;
```

Data Output Messages Notifications [↗](#)

| | ho_id [PK] integer | country character varying (50) | infant_mortality numeric (10,2) | life_expectancy numeric (10,2) | fertility numeric (10,2) | population integer | che_usd numeric (10,2) | out_key integer | agg_key integer | outcomes_ratio numeric (10,2) | year integer |
|----|-----------------------|-----------------------------------|------------------------------------|-----------------------------------|-----------------------------|-----------------------|---------------------------|--------------------|--------------------|----------------------------------|-----------------|
| 1 | 1 | Algeria | 33.90 | 73.30 | 2.51 | 31183658 | 1911.65 | 2 | 1 | 2.16 | 2000 |
| 2 | 2 | Algeria | 33.30 | 73.50 | 2.44 | 31590320 | 2101.03 | 187 | 2 | 2.21 | 2001 |
| 3 | 3 | Algeria | 32.40 | 73.80 | 2.41 | 31990387 | 2117.20 | 372 | 3 | 2.28 | 2002 |
| 4 | 4 | Algeria | 31.30 | 73.90 | 2.41 | 32394886 | 2443.80 | 557 | 4 | 2.36 | 2003 |
| 5 | 5 | Algeria | 30.10 | 74.40 | 2.45 | 32817225 | 3024.24 | 742 | 5 | 2.47 | 2004 |
| 6 | 6 | Algeria | 28.80 | 74.80 | 2.51 | 33267887 | 3338.64 | 927 | 6 | 2.60 | 2005 |
| 7 | 7 | Algeria | 27.60 | 75.00 | 2.58 | 33749328 | 3926.39 | 1112 | 7 | 2.72 | 2006 |
| 8 | 8 | Algeria | 26.40 | 75.30 | 2.66 | 34261971 | 5158.04 | 1297 | 8 | 2.85 | 2007 |
| 9 | 9 | Algeria | 25.30 | 75.50 | 2.73 | 34811059 | 7185.25 | 1482 | 9 | 2.98 | 2008 |
| 10 | 10 | Algeria | 24.30 | 75.70 | 2.78 | 35401790 | 7353.68 | 1667 | 10 | 3.12 | 2009 |
| 11 | 11 | Algeria | 23.50 | 76.00 | 2.82 | 36036159 | 8249.25 | 1852 | 11 | 3.23 | 2010 |
| 12 | 12 | Algeria | 22.80 | 76.10 | 2.83 | 36717132 | 10535.99 | 2037 | 12 | 3.34 | 2011 |
| 13 | 13 | Algeria | 22.40 | 76.20 | 2.82 | 37439427 | 12544.61 | 2222 | 13 | 3.40 | 2012 |