Integrating Health Data for Sustainable Development

Data Integration Project Results

Huthayfa Mutan

Experiments. Cleaning:

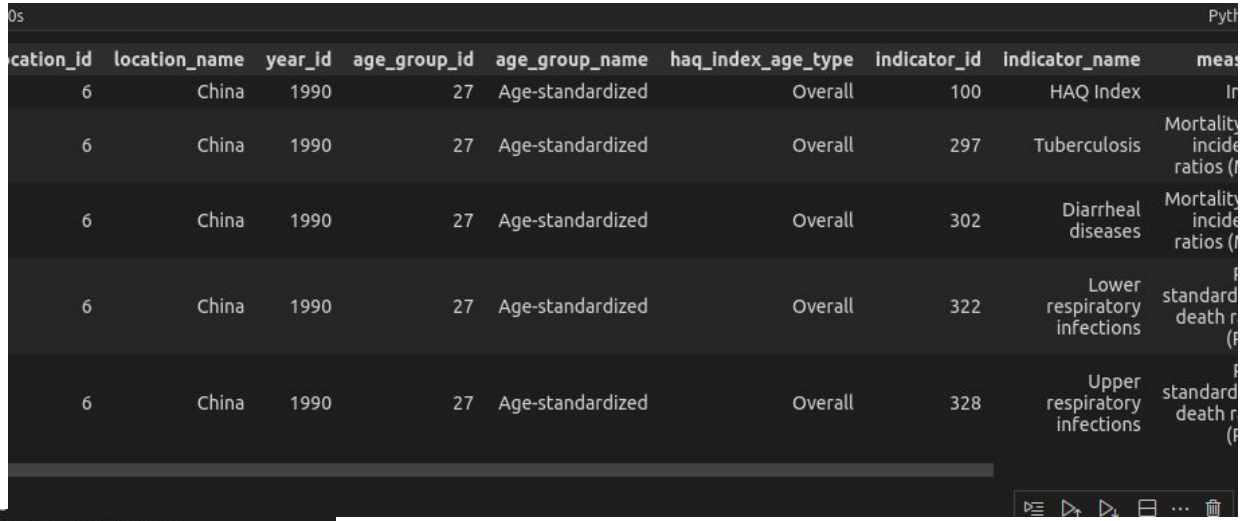
Multiple Vague locations such as unions, continents, summed up results for the globe. Vague Indicator Names such as ppp which was solved manually.

Missing data. Mismatching names because of different spelling.

47038	1570819	20438	34401	763
63171	2045207	21974	36986	888
52883	2459340	2270	3821	999
35846	2741656	-	-	1105
31772	2846612	-	-	1200
56391	2963221	-	-	1302
93015	2996460	-	-	1319
83032	2962077	-	-	1309
30664	2904780	-	-	1306
16480	2785060	-	-	1307
16859	2571004	-	-	1305
85652	2540716	-	-	1375
52006	2487947	-	-	1362
48333	2499033	-	-	1362
90610	2619061	-	-	1414
80301	2781090	-	-	1482
28166	531020	567	856	1120

158	South Asia	S5	GBD Super Regions
158	South Asia	S5	GBD Super Regions
158	South Asia	S5	GBD Super Regions
158	South Asia	S5	GBD Super Regions
158	South Asia	S5	GBD Super Regions
4	Southeast Asia, East Asia, and Oceania	S6	GBD Super Regions
4	Southeast Asia, East Asia, and Oceania	S6	GBD Super Regions
4	Southeast Asia, East Asia, and Oceania	S6	GBD Super Regions
4	Southeast Asia, East Asia, and Oceania	S6	GBD Super Regions
4	Southeast Asia, East Asia, and Oceania	S6	GBD Super Regions
4	Southeast Asia, East Asia, and Oceania	S6	GBD Super Regions
4	Southeast Asia, East Asia, and Oceania	S6	GBD Super Regions
4	Southeast Asia, East Asia, and Oceania	S6	GBD Super Regions

Before:



cation_id	location_name	year_id	age_group_id	age_group_name	haq_index_age_type	indicator_id	indicator_name	meas
6	China	1990	27	Age-standardized	Overall	100	HAQ Index	In
6	China	1990	27	Age-standardized	Overall	297	Tuberculosis	Mortality incide ratios (I
6	China	1990	27	Age-standardized	Overall	302	Diarrheal diseases	Mortality incide ratios (I
6	China	1990	27	Age-standardized	Overall	322	Lower respiratory infections	standard death r (P
6	China	1990	27	Age-standardized	Overall	328	Upper respiratory infections	standard death r (P

```
'ghes_total_upper', 'ghes_total_ppp_mean', 'ghes_total_ppp_lower',
'ghes_total_ppp_upper', 'ppp_total_mean', 'ppp_total_lower',
'ppp_total_upper', 'ppp_total_ppp_mean', 'ppp_total_ppp_lower',
'ppp_total_ppp_upper', 'oop_total_mean', 'oop_total_lower',
'oop_total_upper', 'oop_total_ppp_mean', 'oop_total_ppp_lower',
'oop_total_ppp_upper', 'dah_total_mean', 'dah_total_ppp_mean',
'the_per_cap_mean', 'the_per_cap_lower', 'the_per_cap_upper',
'the_per_cap_ppp_mean', 'the_per_cap_ppp_lower',
'the_per_cap_ppp_upper', 'ghes_per_cap_mean', 'ghes_per_cap_lower',
'ghes_per_cap_upper', 'ghes_per_cap_ppp_mean', 'ghes_per_cap_ppp_lower',
'ghes_per_cap_ppp_upper', 'ppp_per_cap_mean', 'ppp_per_cap_lower',
'ppp_per_cap_upper', 'ppp_per_cap_ppp_mean', 'ppp_per_cap_ppp_lower',
'ppp_per_cap_ppp_upper', 'oop_per_cap_mean', 'oop_per_cap_lower',
'oop_per_cap_upper', 'oop_per_cap_ppp_mean', 'oop_per_cap_ppp_lower',
'oop_per_cap_ppp_upper', 'dah_per_cap_mean', 'dah_per_cap_ppp_mean',
'ghes_per_the_mean', 'ghes_per_the_lower', 'ghes_per_the_upper',
'ppp_per_the_mean', 'ppp_per_the_lower', 'ppp_per_the_upper',
'oop_per_the_mean', 'oop_per_the_lower', 'oop_per_the_upper',
'dah_per_the_mean', 'dah_per_the_lower', 'dah_per_the_upper',
'the_per_gdp_mean', 'the_per_gdp_lower', 'the_per_gdp_upper',
```

After:

```
mysql> select recording_date, value,country.name,indicator.name from records join country on c_id= country.id join indicator on ind_id=indic
ator.id order by rand() limit 10;
+----------------+-------------------------+-----------------------------------+-----------------------------------------------------+
| recording_date | value                   | name                              | name                                                |
+----------------+-------------------------+-----------------------------------+-----------------------------------------------------+
| 2000-01-01     |                  323507 | Poland                            | Prepaid Private Health Spending purchasing power parity |
| 1990-01-01     |       0.5350983738899231 | Puerto Rico                       | Colon and rectum cancer                             |
| 2012-01-01     |                       0 | Norway                            | Development Assistance for Health                   |
| 2019-01-01     | 0.000001930080088641 2617 | Iceland                           | Diarrheal diseases                                  |
| 2016-01-01     |                    5853 | Iceland                           | Total Health Spending per person                    |
| 1990-01-01     |  0.00001330279974354 1982 | Romania                           | Gallbladder and biliary diseases                    |
| 2001-01-01     |                  503826 | Namibia                           | Prepaid Private Health Spending purchasing power parity |
| 1990-01-01     |       0.3856184780597687 | Zimbabwe                          | Testicular cancer                                   |
| 2002-01-01     |                     841 | Republic of Korea                 | Total Health Spending per person                    |
| 2017-01-01     |                 3410167 | Venezuela (Bolivarian Republic of) | Out-of-pocket Health Spending                       |
+----------------+-------------------------+-----------------------------------+-----------------------------------------------------+
10 rows in set (0.11 sec)
```

Results (Show cases).

What countries have Total Health Spending Lower than 500 millions and HAQ Index HIGHER than 60.

```
mysql> select * from indicator where name='Total Health Spending' OR name='HAQ Index';
+----+-----------------------+
| id | name                  |
+----+-----------------------+
| 13 | HAQ Index             |
| 34 | Total Health Spending |
+----+-----------------------+
```

```
mysql> select country.name from records join country on c_id =country.id where ind_id=13 and recording_date >='2019-01-01' AND value>=60.0
intersect  select country.name from records join country on c_id =country.id where ind_id=34 and recording_date >='2019-01-01' AND value<=50
0000;
+--------------+
| name         |
+--------------+
| Maldives     |
| Andorra      |
| Cook Islands |
| Greenland    |
| Monaco       |
| San Marino   |
+--------------+
6 rows in set (0.03 sec)
```

Results (Show cases).

What is the Total Health spending per person compared with Stroke Risk-standardised death rates (RSD) for germany for the year 2019.

```
mysql> select recording_date, value,country.name,indicator.name from records join country on c_id= country.id join indicator on ind_id=indic
ator.id where country.name='Germany' and (indicator.name='Stroke' or indicator.name='Total Health Spending per person') and recording_date>=
'2019_01_01';
+----------------+-----------------------+---------+----------------------------------+
| recording_date | value                 | name    | name                             |
+----------------+-----------------------+---------+----------------------------------+
| 2019-01-01     | 0.00017133599612861872 | Germany | Stroke                           |
| 2019-01-01     |                  5887 | Germany | Total Health Spending per person |
+----------------+-----------------------+---------+----------------------------------+
2 rows in set, 1 warning (0.01 sec)
```