COVID-19 Healthy Diet

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Project Report

Overview

COVID-19 or coronavirus disease has spread worldwide leading to an ongoing pandemic. It is spreading at an exponential rate. It is not only contagious but is also deadly. In order to protect themselves, people are doing multiple things like wearing masks, staying at least 6 feet away from others, and cleaning hands often with soap and water or sanitizer. The other major thing that we must do in order to protect ourselves from this deadly virus is to monitor our health daily.
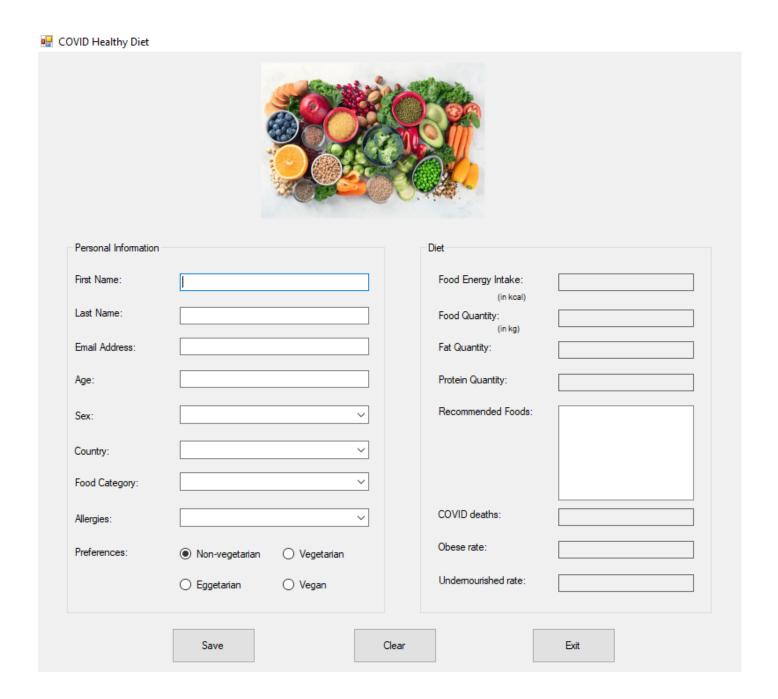
Introduction

"In the past couple of months, we've witnessed doctors, nurses, paramedics and thousands of medical workers putting their lives on the frontline to save patients who are infected" (Ren). We must also be responsible, take a step forward, and protect ourselves and our families by following a healthy diet with proper nutrition and macros. "The USDA Center for Nutrition Policy and Promotion recommends a very simple daily diet intake guideline: 30% grains, 40% vegetables, 10% fruits, and 20% protein" (Ren).

The project I will be choosing is a database project. I will be using a five real-world datasets from www.kaggle.com. These datasets contain information about different categories of foods in different countries, including energy intake (kcal), fat quantity, protein quantity, food supply quantity (kg), and descriptions (types of healthy foods in those categories). The datasets also contain information about obesity, undernourished rates, and the number of COVID-19 cases of the population around the world. These datasets let us compare our country's obesity, undernourished, and COVID rates to a lower rated country's and also let us gain knowledge about the macros and nutrients in their food items.

Graphic User Interface

I made the below form using Visual Studio. The end-user types in his/her personal information, which include first and last name, email address, age, sex, country he/she is living in, food category, allergies he/she has, and other preferences.

The diet group box will give details depending on the food category and country of the user. These details include the average food energy intake, food quantity, fat quantity, and recommended foods in the category. The details also include COVID deaths, obese and undernourished rates of the country to alert the user.

COVID Healthy Diet

Personal Information

First Name:

Last Name:

Email Address:

Age:

Sex:

Country:

Food Category:

Allergies:

Preferences: ◉ Non-vegetarian ○ Vegetarian
○ Eggetarian ○ Vegan

Diet

Food Energy Intake:
(in kcal)

Food Quantity:
(in kg)

Fat Quantity:

Protein Quantity:

Recommended Foods:

COVID deaths:

Obese rate:

Undernourished rate:

[Save] [Clear] [Exit]

Queries

The queries that I will be using for this database will help a user plan his/her diet depending on his/her food preferences, the USDA recommended macros, and the given macros of foods in each country (as macros vary from one country to another). This will let an individual follow a healthy, nutritious diet making our society a better ("COVID-free") place to live in.

1. Create new table

Since this is an open source data, there are inconsistencies among the tables. One such issue is redundant columns. The tables- FatQuantity, FoodEnergyIntake, FoodQuantity, ProteinQuantity- have repetitive columns- Obesity, Undernourished, Confirmed Deaths, Recovered, Active, and Population. In order to optimize, I created a new table, OU_COVID_rate containing the above mentioned columns. I deleted these particular columns in the rest of the tables.

```
SQLQuery26.sql - D...3II8V5G\nehat (54))        SQLQuery
USE [COVID Healthy Diet];
Create table dbo.OU_COVID_rate
( Country nvarchar(225),
    Obesity float,
    Undernourished float,
    Confirmed float,
    Deaths float,
    Recovered float,
    Active float,
    Population float
);
```

2. Insert column values and delete columns from the other tables

I inserted the above particular columns in the table that I had created and deleted them in the rest of the tables.
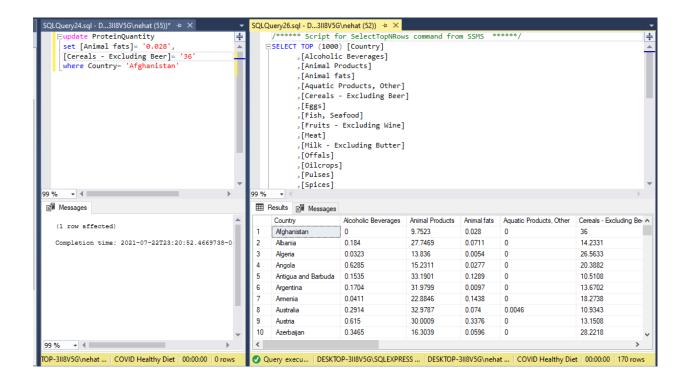
```
Insert into dbo.OU_COVID_rate
Select Country, Obesity, Undernourished, Confirmed, Deaths, Recovered, Active, Population
From FatQuantity
order by Country;

alter table dbo.ProteinQuantity
drop column Obesity, Undernourished, Confirmed, Deaths, Recovered, Active, Population
```

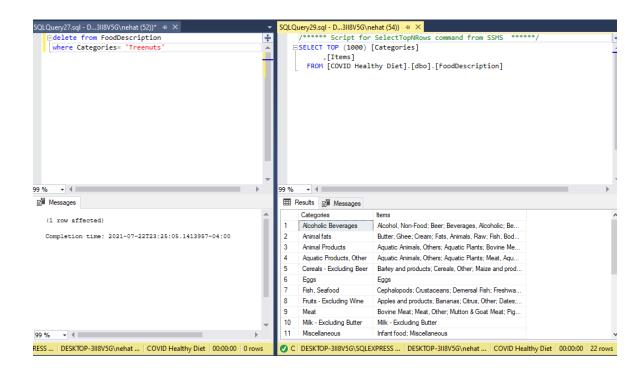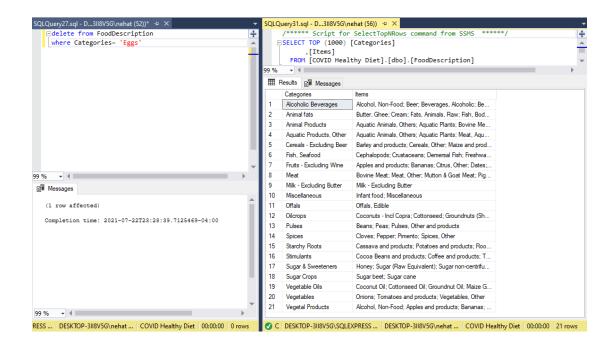## 3. Update Statement

I updated Afghanistan record in ProteinQuantity table by rounding off Animal fats and Cereals columns.
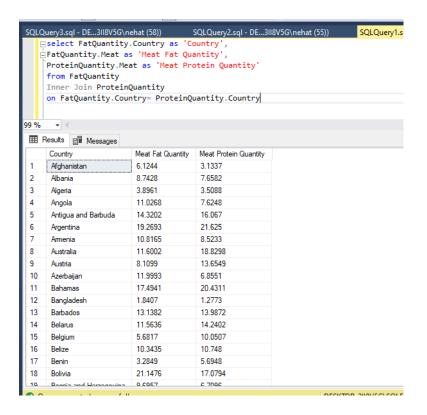
4

4. Delete statements

I deleted Treenuts and Eggs records from FoodDescription table as Treenuts had only nuts and Eggs had Eggs as their items and providing a description for these categories seemed unnecessary.
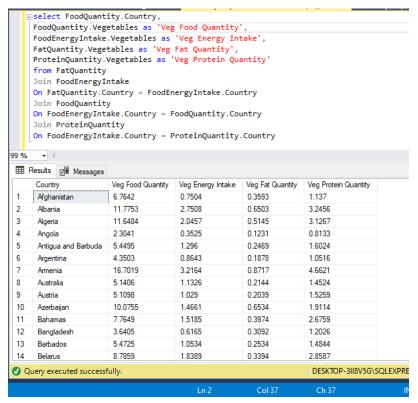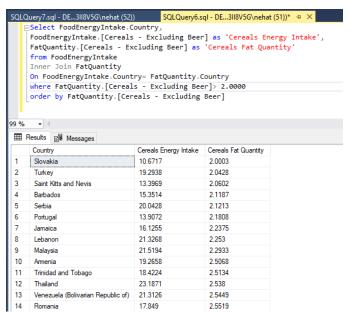
5. Join Statements

- To find out and display meat fat quantity and protein quantity by country, I used inner join to join both the tables (FatQuantity and ProteinQuantity) by country.

- To find out and display food quantity, energy intake, fat quantity, and protein quantity of vegetables, I used join statement to join the four tables (FoodQuantity, FoodEnergyIntake, FatQuantity, and ProteinQuantity) by Country.

- To find out Food Energy Intake and Fat Quantity of Cereals, I used inner join statement to join both the tables by Country. The last two lines can be used if the user needs to have less fat quantity, but at least 2.0000.

- To find out and display Food Quantity, Energy Intake, Fat Quantity, and Protein Quantity of Fish/Seafood and Confirmed COVID rate (%), I used join statement to join all the tables by Country and ordered them by confirmed COVID cases.


```
Select FatQuantity.Country,
OU_COVID_rate.Confirmed,
FoodQuantity.[Fish, Seafood] as 'Fish Food Quantity',
FoodEnergyIntake.[Fish, Seafood] as 'Fish Energy Intake',
FatQuantity.[Fish, Seafood] as 'Fish Fat Quantity',
ProteinQuantity.[Fish, Seafood] as 'Fish Protein Quantity'
From FatQuantity
Join FoodEnergyIntake
On FatQuantity.Country = FoodEnergyIntake.Country
Join FoodQuantity
On FoodEnergyIntake.Country = FoodQuantity.Country
Join OU_COVID_rate
On FoodEnergyIntake.Country = OU_COVID_rate.Country
Join ProteinQuantity
On FoodEnergyIntake.Country = ProteinQuantity.Country
order by OU_COVID_rate.Confirmed
```

	Country	Confirmed	Fish Food Quantity	Fish Energy Intake	Fish Fat Quantity	Fish Protein Quantity
1	French Polynesia	0	3.4809	1.6419	1.5842	7.0448
2	Kiribati	0	6.1065	2.6014	3.0833	16.1052
3	Korea, North	0	1.1568	0.4186	0.5375	2.9561
4	Myanmar	0	4.0424	2.0548	2.5441	8.7797
5	New Caledonia	0	2.0361	0.8544	0.8385	3.9207
6	Turkmenistan	0	0.2137	0.1045	0.1274	0.4685
7	Vanuatu	0.000311526	2.1649	1.2197	1.4343	6.8016
8	Lao People's Democratic Republic	0.000621375	1.4213	0.7877	1.6871	4.531
9	United Republic of Tanzania	0.000852111	0.5828	0.2922	0.4558	1.8567
10	Samoa	0.001	2.7788	1.7479	1.8968	7.3761

- To find out and display all the combinations of eggs in each country and fat quantity, I used cross join statements to join FoodEnergyIntake and FatQuantity tables.


```
Select FoodEnergyIntake.Country,
FatQuantity.Eggs As 'Eggs Fat Quantity'
From FatQuantity
Cross Join FoodEnergyIntake
```

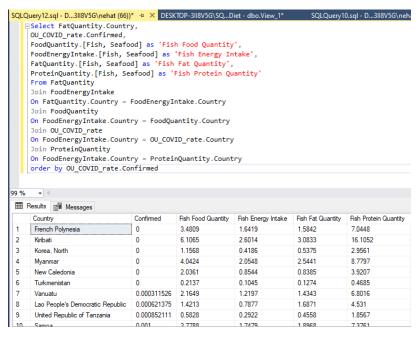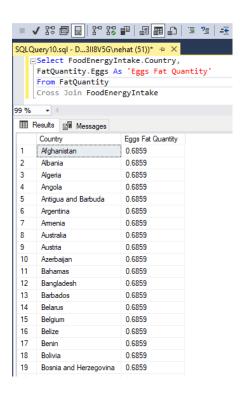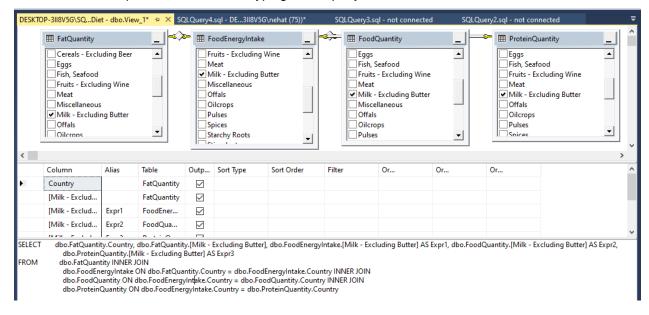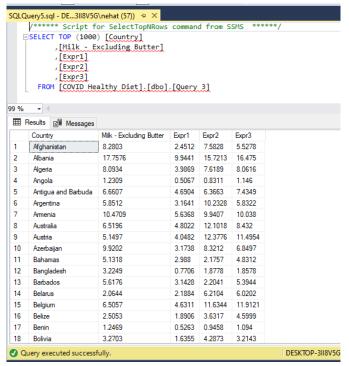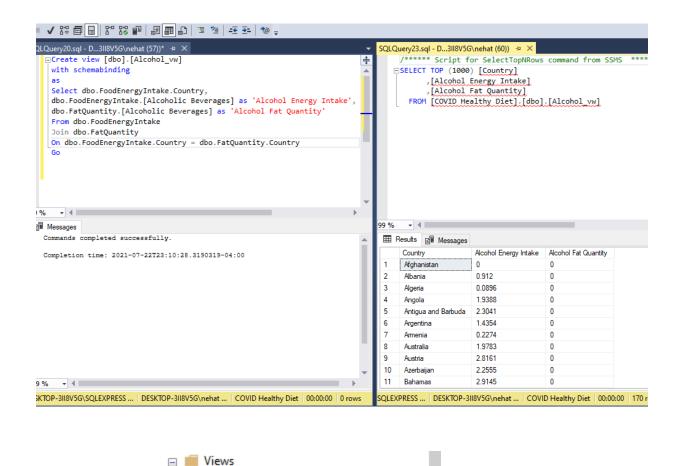|	Country	Eggs Fat Quantity
1	Afghanistan	0.6859
2	Albania	0.6859
3	Algeria	0.6859
4	Angola	0.6859
5	Antigua and Barbuda	0.6859
6	Argentina	0.6859
7	Armenia	0.6859
8	Australia	0.6859
9	Austria	0.6859
10	Azerbaijan	0.6859
11	Bahamas	0.6859
12	Bangladesh	0.6859
13	Barbados	0.6859
14	Belarus	0.6859
15	Belgium	0.6859
16	Belize	0.6859
17	Benin	0.6859
18	Bolivia	0.6859
19	Bosnia and Herzegovina	0.6859

6. View Statements

- To find out and display Food quantity, Energy Intake, Fat quantity, and Protein quantity of Milk, I used a view statement to join the four tables by country. This is an easier and a less time consuming way to display columns from multiple tables, instead of typing in the query code.

- To find out and display Alcohol Energy Intake and Fat Quantity, I created a view with schemabinding and joined FoodEnergyIntake and FatQuantity tables.
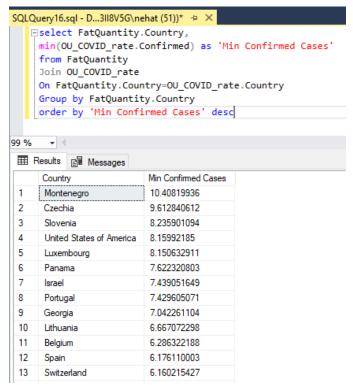
```
Create view [dbo].[Alcohol_vw]
with schemabinding
as
Select dbo.FoodEnergyIntake.Country,
dbo.FoodEnergyIntake.[Alcoholic Beverages] as 'Alcohol Energy Intake',
dbo.FatQuantity.[Alcoholic Beverages] as 'Alcohol Fat Quantity'
From dbo.FoodEnergyIntake
Join dbo.FatQuantity
On dbo.FoodEnergyIntake.Country = dbo.FatQuantity.Country
Go
```

Messages
Commands completed successfully.

Completion time: 2021-07-22T23:10:28.3190319-04:00

```
/****** Script for SelectTopNRows command from SSMS  ******/
SELECT TOP (1000) [Country]
      ,[Alcohol Energy Intake]
      ,[Alcohol Fat Quantity]
  FROM [COVID Healthy Diet].[dbo].[Alcohol_vw]
```

	Country	Alcohol Energy Intake	Alcohol Fat Quantity
1	Afghanistan	0	0
2	Albania	0.912	0
3	Algeria	0.0896	0
4	Angola	1.9388	0
5	Antigua and Barbuda	2.3041	0
6	Argentina	1.4354	0
7	Armenia	0.2274	0
8	Australia	1.9783	0
9	Austria	2.8161	0
10	Azerbaijan	2.2555	0
11	Bahamas	2.9145	0

Views
  System Views
  dbo.Alcohol_vw
    Columns
    Triggers
    Indexes
      IX_Country_Alcohol (Clustered)
    Statistics

7. Aggregators

- To find out and display obesity rate by country in descending order, I used max aggregator and join statement to join FatQuantity and OU_COVID_rate tables.

- To find out and display confirmed COVID cases % by country in descending order, I used min aggregator and join statement to join FatQuantity and OU_COVID_rate tables.
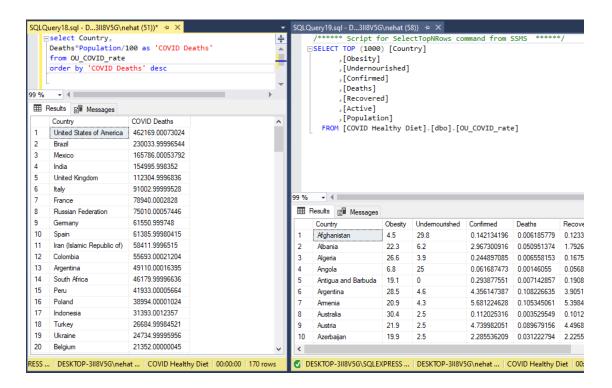

- To find out the total population of the world, I used sum aggregator to add the populations of all the countries.

- To find out and display the number of confirmed COVID cases, I used multiplication to multiply confirmed % column to population column in OU_COVID_rate table and divided the values by 100.
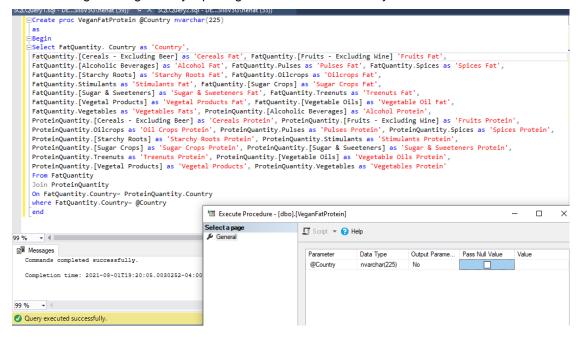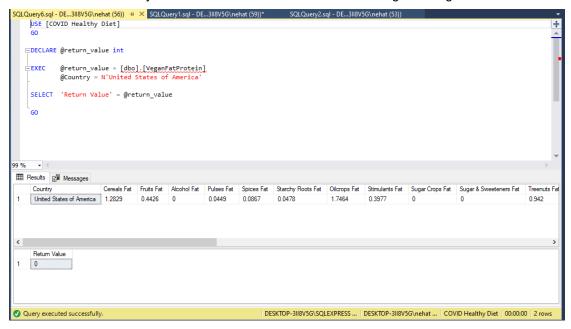

- To find out and display the number of death due to COVID, I used multiplication to multiply death % column to population column in OU_COVID_rate table and divided the values by 100.

8. Stored Procedures (SPROCs)

- I also used stored procedure statements in order to save and reuse the code. I use them to get other values from different tables by inputting the values that I want from the records. In order to get only vegan meals in one particular country, I used stored procedure to filter out only the details of vegan categories by inputting the name of the Country.
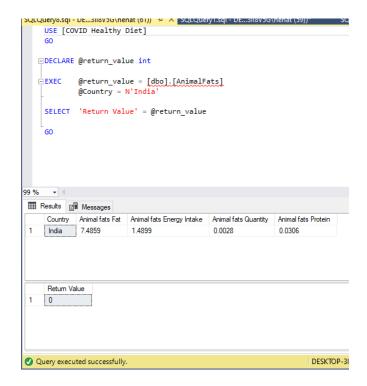
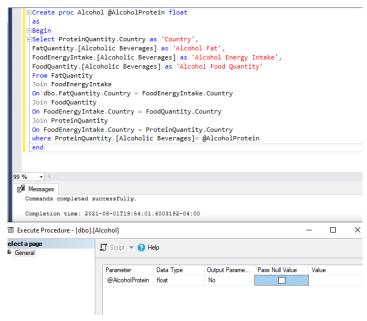Ex- I filtered out Country to 'United States of America' in order to get its vegan diet details.

- To find out and display Animal Fats details, I used SPROC and joined the four tables by Country.
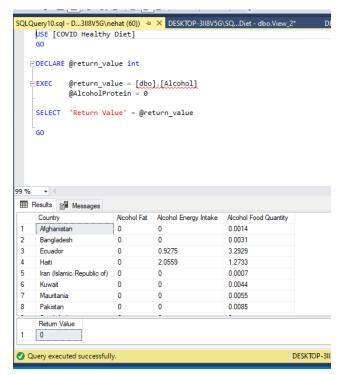

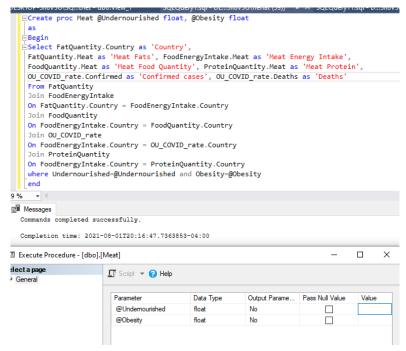Ex- I filtered out Country to 'India' to find out its Animal Fats details.

- To find out and display Alcoholic Beverages details, I used SPROC and joined the four tables by Country.
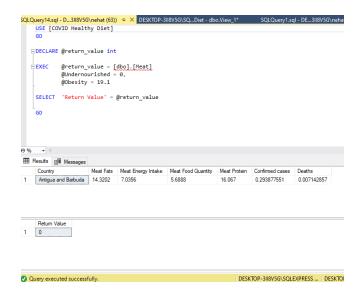
Ex- To find out the details of countries and alcohol, I filtered out Alcohol Protein with the value of '0' only.

- To find out and display country and meat details with COVID confirmed and death cases, I used SPROC and joined the five tables by Obesity and Undernourished rates of the countries.

Ex- In order to find out meat details and COVID cases of a country, I filtered out obesity rate with '19.1' and undernourished rate with '0'.

Conclusion

Humanity has faced deadly pandemics in the past such as Spanish flu, Bubonic plague, etc., where the death toll has reached 100s of millions. The world has gone through these and yet is still standing. My project serves more as an alert for people to be more careful of their health and take necessary actions when the time is dire and not as a mere indication of the end of the world.

Work Cited

Ren, Maria. Covid-19 Healthy Diet Dataset. Kaggle. Feb 07, 2021.