Insights from Data with BigQuery: Challenge Lab (COVID-19 Open Data)

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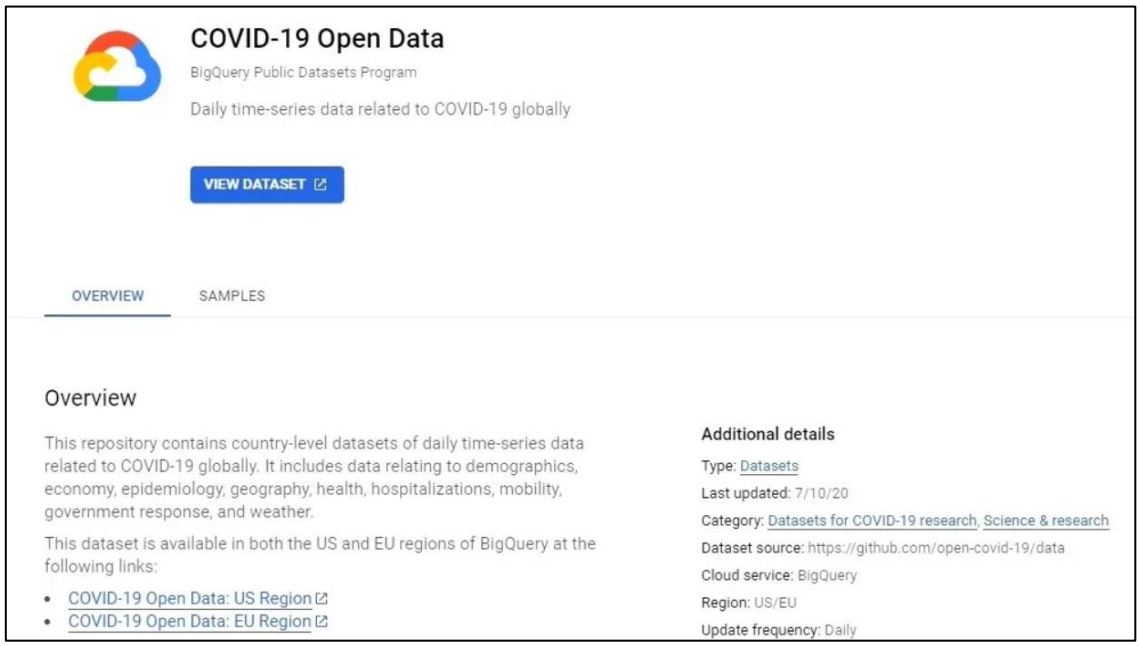
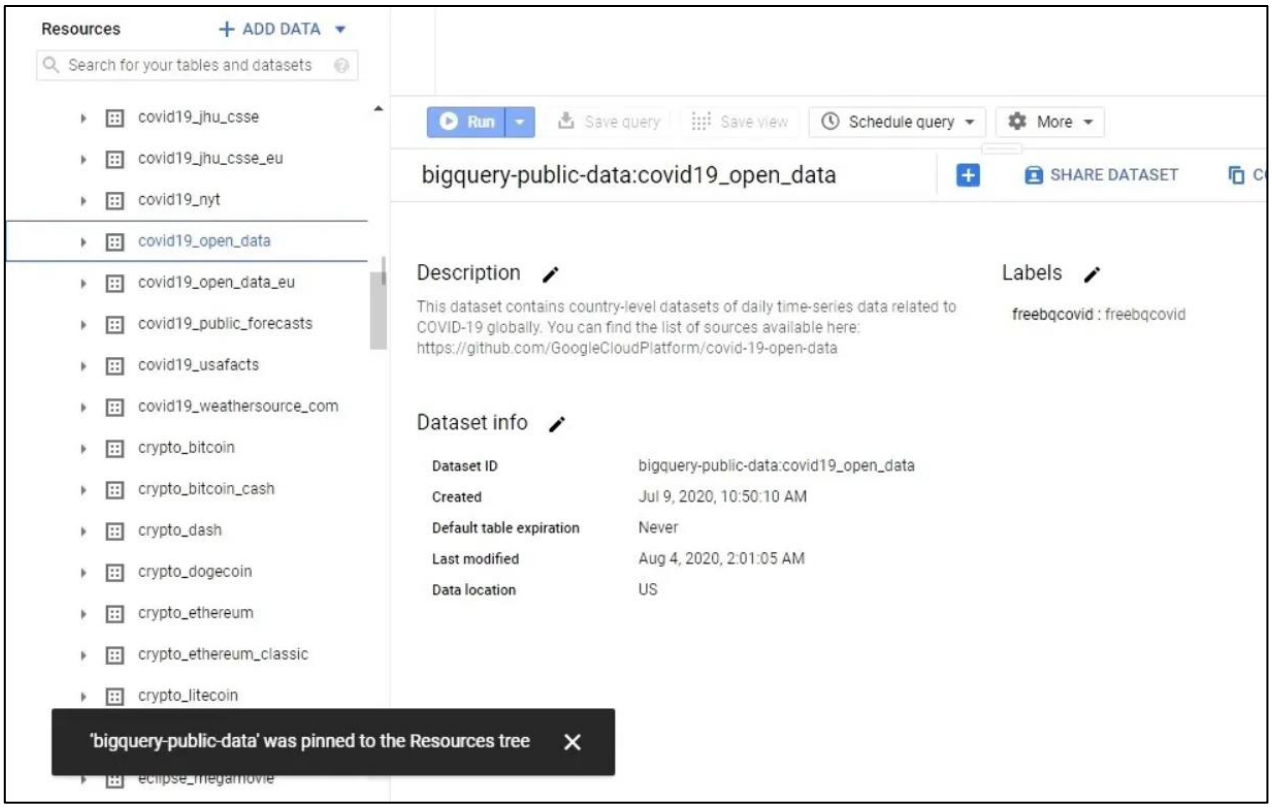
Open Public Dataset

1. In the Cloud Console, navigate to **Menu** > **BigQuery**.
2. Click **+ ADD DATA** > **Explore public datasets** from the left pane.
3. Search `covid19_open_data` and then select **COVID-19 Open Data**
4. Use Filter to locate the table `covid19_open_data` under the `covid19_open_data` dataset.





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Query 1: Total Confirmed Cases

Copy the following code to the Query editor and then click **Run**.

```
SELECT

  SUM(cumulative_confirmed) AS total_cases_worldwide

FROM

  `bigquery-public-data.covid19_open_data.covid19_open_data`

WHERE

  date = "2020-04-15"
```

This query sums up the cumulative confirmed cases of all records on 15 April, 2020.

Query 2: Worst Affected Areas

Copy the following code to the Query editor and then click **Run**.

```
SELECT

    COUNT(*) AS count_of_states

FROM (

SELECT

    subregion1_name AS state,

    SUM(cumulative_deceased) AS death_count

FROM

  `bigquery-public-data.covid19_open_data.covid19_open_data`

WHERE

  country_name="United States of America"

  AND date='2020-04-10'

  AND subregion1_name IS NOT NULL
```

```
GROUP BY

  subregion1_name

)

WHERE death_count > 100
```

Make sure that you use `country_name` to filter the US reconds instead of `country_code`, and use `subregion1_name` to group the states in the US.

Query 3: Identifying Hotspots

Copy the following code to the Query editor and then click **Run**.

```
SELECT

  *

FROM (

SELECT

  subregion1_name as state,

  sum(cumulative_confirmed) as total_confirmed_cases

FROM

  `bigquery-public-data.covid19_open_data.covid19_open_data`

WHERE

  country_code="US"

  AND date='2020-04-10'

  AND subregion1_name is NOT NULL

GROUP BY

  subregion1_name

ORDER BY

  total_confirmed_cases DESC
```

```
)

WHERE

  total_confirmed_cases > 1000
```

Query 4: Fatality Ratio

Copy the following code to the Query editor and then click **Run**.

```
SELECT SUM(cumulative_confirmed) AS total_confirmed_cases, SUM(cumulative_deceased) AS
total_deaths, (SUM(cumulative_deceased)/SUM(cumulative_confirmed))*100 AS case_fatality_ratio

FROM `bigquery-public-data.covid19_open_data.covid19_open_data`

WHERE country_name="Italy" AND date BETWEEN "2020-04-01" AND "2020-04-30"
```

Originally, it should be `date='2020-04-30'`. I don't know why Qwiklabs replaced it with a date range.

Query 5: Identifying specific day

Copy the following code to the Query editor and then click **Run**.

```
SELECT

 date

FROM

  `bigquery-public-data.covid19_open_data.covid19_open_data`

WHERE

 country_name = 'Italy'

 AND cumulative_deceased > 10000

ORDER BY date

LIMIT 1
```

Make sure that you use **ORDER BY** to sort the results by date.

Query 6: Finding days with zero net new cases

Copy the following code to the Query editor and then click **Run**.

```
WITH india_cases_by_date AS (

  SELECT

    date,

    SUM(cumulative_confirmed) AS cases

  FROM

    `bigquery-public-data.covid19_open_data.covid19_open_data`

  WHERE

    country_name="India"

    AND date between '2020-02-21' and '2020-03-15'

  GROUP BY

    date

  ORDER BY

    date ASC

 )



, india_previous_day_comparison AS

(SELECT

  date,

  cases,

  LAG(cases) OVER(ORDER BY date) AS previous_day,

  cases - LAG(cases) OVER(ORDER BY date) AS net_new_cases
```

```
FROM india_cases_by_date

)

SELECT

  COUNT(date)

FROM

  india_previous_day_comparison

WHERE

  net_new_cases = 0
```

Query 7: Doubling rate

Copy the following code to the Query editor and then click **Run**.

```
WITH us_cases_by_date AS (

  SELECT

    date,

    SUM( cumulative_confirmed ) AS cases

  FROM

    `bigquery-public-data.covid19_open_data.covid19_open_data`

  WHERE

    country_name="United States of America"

    AND date between '2020-03-22' and '2020-04-20'

  GROUP BY

    date

  ORDER BY

    date ASC
```

```
 )



, us_previous_day_comparison AS

(SELECT

  date,

  cases,

  LAG(cases) OVER(ORDER BY date) AS previous_day,

  cases - LAG(cases) OVER(ORDER BY date) AS net_new_cases,

  (cases - LAG(cases) OVER(ORDER BY date))*100/LAG(cases) OVER(ORDER BY date) AS
percentage_increase

FROM us_cases_by_date

)

SELECT

  Date,

  cases AS Confirmed_Cases_On_Day,

  previous_day AS Confirmed_Cases_Previous_Day,

  percentage_increase AS Percentage_Increase_In_Cases

FROM

  us_previous_day_comparison

WHERE

  percentage_increase > 10
```

Query 8: Recovery rate

Copy the following code to the Query editor and then click **Run**.

```
WITH cases_by_country AS (
```

```
  SELECT
    country_name AS country,
    SUM(cumulative_confirmed) AS cases,
    SUM(cumulative_recovered) AS recovered_cases
  FROM
    `bigquery-public-data.covid19_open_data.covid19_open_data`
  WHERE
    date="2020-05-10"
  GROUP BY
    country_name
)

, recovered_rate AS (
  SELECT
    country, cases, recovered_cases,
    (recovered_cases * 100)/cases AS recovery_rate
  FROM
    cases_by_country
)

SELECT country, cases AS confirmed_cases, recovered_cases, recovery_rate
FROM
   recovered_rate
WHERE
```

```
   cases > 50000

ORDER BY recovery_rate DESC

LIMIT 10
```

Query 9: CDGR - Cumulative Daily Growth Rate

Copy the following code to the Query editor and then click **Run**.

```
WITH

  france_cases AS (

  SELECT

    date,

    SUM(cumulative_confirmed) AS total_cases

  FROM

    `bigquery-public-data.covid19_open_data.covid19_open_data`

  WHERE

    country_name="France"

    AND date IN ('2020-01-24',

      '2020-05-10')

  GROUP BY

    date

  ORDER BY

    date)

, summary as (

SELECT

  total_cases AS first_day_cases,
```

```
  LEAD(total_cases) OVER(ORDER BY date) AS last_day_cases,

  DATE_DIFF(LEAD(date) OVER(ORDER BY date),date, day) AS days_diff

FROM

  france_cases

LIMIT 1

)



select first_day_cases, last_day_cases, days_diff,
POWER(last_day_cases/first_day_cases,1/days_diff)-1 as cdgr

from summary
```

Create a Datastudio report

1. Copy the following code to the Query editor and then click **Run**.

```
SELECT

  date, SUM(cumulative_confirmed) AS country_cases,

  SUM(cumulative_deceased) AS country_deaths

FROM

  `bigquery-public-data.covid19_open_data.covid19_open_data`

WHERE

  date BETWEEN '2020-03-15'

  AND '2020-04-30'

  AND country_name='United States of America'

GROUP BY date
```

2. Click on **EXPLORE DATA** > **Explore with Data Studio**.
3. Authorize Data Studio to access BigQuery.

4. You may fail to create a report for the first-time login of Data Studio. Click **+ Blank Report** and accept the Terms of Service. Go back to the BigQuery page and click **Explore with Data Studio** again.
5. In the new Data Studio report, select **Add a chart** > **Time series Chart**.
6. Add `country_cases` and `country_deaths` to the Metric field.
7. Click **Save** to commit the change.

If you fail to get the score of this task, remove all data and reports from the Datastudio console before retry.

Congratulations! You completed this challenge lab.