Report for ForestQuery into Global Deforestation, 1990 to 2016

ForestQuery is on a mission to combat deforestation around the world and to raise awareness about this topic and its impact on the environment. The data analysis team at ForestQuery has obtained data from the World Bank that includes forest area and total land area by country and year from 1990 to 2016, as well as a table of countries and the regions to which they belong.

The data analysis team has used SQL to bring these tables together and to query them in an effort to find areas of concern as well as areas that present an opportunity to learn from successes.

1. **GLOBAL SITUATION**

According to the World Bank, the total forest area of the world was 1.1____41282694.9_____ in 1990. As of 2016, the most recent year for which data was available, that number had fallen to **1.2**____39958245.9_____, a loss of 1.3_____1324449_____, or 1.4_____3.2_____%.

Excellent work here, values are all correct.

The forest area lost over this time period is slightly more than the entire land area of 1.5_____1279999.99_____ listed for the year 2016 (which is _____Peru_____).

Correct

2. **REGIONAL OUTLOOK**

In 2016, the percent of the total land area of the world designated as forest was 2.1_____31.38_____. The region with the highest relative forestation was 2.2_____Suriname_____, with _____98.26_____%, and the region with the lowest relative forestation was 2.3_____Greenland_____, with _____0.00_____% forestation.

You are required to give the **regions** and not countries and also the percentages are incorrect.

In 1990, the percent of the total land area of the world designated as forest was 2.4_____32.42_____. The region with the highest relative forestation was 2.5_____Suriname_____, with _____98.91_____%, and the region with the lowest relative forestation was 2.6_____Greenland_____, with _____0.00_____% forestation.

Table 2.1: Percent Forest Area by Region, 1990 & 2016:

Wonderfully done, this table data is correct.

Region	1990 Forest Percentage	2016 Forest Percentage	STATUS
East Asia & Pacific	25.78	26.36	INCREASED
Europe & Central Asia	37.28	38.04	INCREASED
Latin America & Caribbean	51.03	46.16	DECREASED
Middle East & North Africa	1.78	2.07	INCREASED
North America	35.65	36.04	INCREASED
South Asia	16.51	17.51	INCREASED
Sub-Saharan Africa	30.67	28.79	DECREASED
World	32.42	31.38	DECREASED

The only regions of the world that decreased in percent forest area from 1990 to 2016 were 2.8_____Latin America & Caribbean_____ (dropped from 2.8_____43.34_____% to 2.8_____41.64_____%) and 2.8_____Sub-Saharan Africa_____ (2.8_____35.26_____% to 2.8_____31.28_____%). All other regions actually increased in forest area over this time period. However, the drop in forest area in the two aforementioned regions was so large, the percent forest area of the world decreased over this time period from 2.8_____32.42_____% to 2.8_____31.38_____%.

Great job, this proves you know what exactly you are doing.

3. **COUNTRY-LEVEL DETAIL**

A SUCCESS STORIES

There is one particularly bright spot in the data at the country level, 3.1_____China_____. This country actually increased in forest area from 1990 to 2016 by 3.1_____527229.06 sqkm_____. It would be interesting to study what has changed in this country over this time to drive this figure in the data higher. The country with the next largest increase in forest area from 1990 to 2016 was the 3.1____United States_____, but it only saw an increase of _____79200.00 sqkm_____, much lower than the figure for _____China_____.

Excellent

3.1_____China_____ and _____the United States_____ are of course very large countries in total land area, so when we look at the largest *percent* change in forest area

from 1990 to 2016, we aren't surprised to find a much smaller country listed at the top. 3.2_____French Polynesia_____ increased in forest area by _____27.32_____ % from 1990 to 2016.

Required Change: Please check your query again, this country and percentage are not valid.

B LARGEST CONCERNS

Which countries are seeing deforestation to the largest degree? We can answer this question in two ways. First, we can look at the absolute square kilometer decrease in forest area from 1990 to 2016. The following 3 countries had the largest decrease in forest area over the time period under consideration:

Table 3.1: Top 5 Amount Decrease in Forest Area by Country, 1990 & 2016:

Country	Region	Absolute Forest Area Change
Brazil	Latin America & Caribbean	541510.00
Indonesia	East Asia & Pacific	282193.98
Myanmar	East Asia & Pacific	107234.00
Nigeria	Sub-Saharan Africa	106506.00
Tanzania	Sub-Saharan Africa	102320.00

Good job

The second way to consider which countries are of concern is to analyze the data by percent decrease.

Table 3.2: Top 5 Percent Decrease in Forest Area by Country, 1990 & 2016:

Nice use of ORDER BY here

Country	Region	Pct Forest Area Change
Togo	Sub-Saharan Africa	75.46
Nigeria	Sub-Saharan Africa	61.79
Uganda	Sub-Saharan Africa	59.29
Mauritania	Sub-Saharan Africa	47.50
Honduras	Latin America & Caribbean	45.03

When we consider countries that decreased in forest area the most between 1990 and 2016, we find that four of the top 5 countries on the list are in the region of _____Sub-Saharan Africa_____. The countries are _____Togo_____, _____Nigeria_____,

_____Uganda_____, and _____Mauritania_____. The 5th country on the list is _____Honduras_____, which is in the _____Latin America & Caribbean_____ region.

Correct

From the above analysis, we see that _____Nigeria_____ is the only country that ranks in the top 5 both in terms of absolute square kilometer decrease in forest as well as percent decrease in forest area from 1990 to 2016. Therefore, this country has a significant opportunity ahead to stop the decline and hopefully spearhead remedial efforts.

C QUARTILES

Table 3.3: Count of Countries Grouped by Forestation Percent Quartiles, 2016:

Quartile	Number of Countries
quartile_1	85
quartile_2	72
quartile_3	38
quartile_4	9

The largest number of countries in 2016 were found in the 3.5_____quartile_1_____ quartile.

You did well using the CASE statement here which gave you the right values for your quartile.

There were 3.5_____9_____ countries in the top quartile in 2016. These are countries with a very high percentage of their land area designated as forest. The following is a list of countries and their respective forest land, denoted as a percentage.

Table 3.4: Top Quartile Countries, 2016:

Country	Region	Pct Designated as Forest
Suriname	Latin America & Caribbean	98.26
Micronesia, Fed. Sts.	East Asia & Pacific	91.86
Gabon	Sub-Saharan Africa	90.04
Seychelles	Sub-Saharan Africa	88.41

Palau	East Asia & Pacific	87.61
American Samoa	East Asia & Pacific	87.50
Guyana	Latin America & Caribbean	83.90
Lao PDR	East Asia & Pacific	82.11
Solomon Islands	East Asia & Pacific	77.86

e. How many countries had a percent forestation higher than the United States in 2016?

96 countries

5. RECOMMENDATIONS

Write out a set of recommendations as an analyst on the ForestQuery team.

- *What have you learned from the World Bank data?*
- *Which countries should we focus on over others?*

Global Situation

While the majority of regions are on a growth path, a few regions are overlooking these achievements. A closer look at the East Asia & Pacific region shows that the outlook is only positive thanks to the enormous contribution of China.

Situation Africa

The data show that the situation in sub-Saharan Africa needs to be closely monitored. Once desertification due to deforestation takes hold, many more environmental problems will follow.

It is vital to work with local communities and community leaders to create an understanding of sustainable forest management. In addition, the affected communities in this region often practice slash-and-burn logging. This is a common mistake that needs to be corrected.

Situation South America

In this region, the local authorities are for the most part actively involved in deforestation in order to gain agricultural land. This development should be counteracted as soon as possible. The soil quality in this region is poor, and only thanks to the winds that bring sand from sub-Saharan Africa and the minerals and nutrients it contains can this region flourish. However, once the forest is gone, agriculture is only possible through the application of fertilizers over large areas. This is not sustainable at all and aggravates the looming phosphorus crisis.

Awesome understanding and recommendations which can help decrease deforestation.
You should be proud of these insights and this project.

Countries to be monitored

Generally in large countries with an extensive forest reserve, but where more and more wood is felled or burned. These countries have a responsibility towards global forest health. And they must be encouraged to rise to the challenge. I think that the lists in this analysis are self-explanatory, so that a listing of countries with either percentage or absolute decreasing forest area is not necessary (see table Table 3.2 and Table 3.1).

Appendix

6. CODE for project

general view

If no view is specifically mentioned it means that this view here has been used:

```
CREATE VIEW forestation
AS
 SELECT f.country_code,
 f.country_name,
 f.year,
 f.forest_area_sqkm,
 land.total_area_sq_mi,
 land.total_area_sq_mi * 2.59 AS total_area_sqkm,
 r.region,
 r.income_group,
 ( Sum(f.forest_area_sqkm) / Sum(land.total_area_sq_mi * 2.59) ) * 100
 forest_percent
 FROM forest_area f
 INNER JOIN land_area land
 ON land.country_code = f.country_code
 AND land.year = f.year
 INNER JOIN regions r
 ON r.country_code = land.country_code
 GROUP BY f.country_code,
 f.country_name,
 f.year,
 f.forest_area_sqkm,
 land.total_area_sq_mi,
 r.region,
 r.income_group;
```

VIEW created successfully

1. global situation:

1.1 1990 forest query:

```
SELECT forest_area_sqkm
FROM forestation
WHERE country_name = 'World' AND year = '1990';
```

1.2 2016 forest query:

```
SELECT forest_area_sqkm
FROM forestation
WHERE country_name = 'World' AND year = '2016';
```

1.3 forest_loss query:

```
WITH t1
AS
(
    SELECT *
    FROM forestation
), t2
AS
(
    SELECT t1.forest_area_sqkm AS new_f, t1.country_code
    FROM t1
    WHERE t1.country_name = 'World' AND t1.year = '2016'
), t3
AS
(
    SELECT t1.forest_area_sqkm AS old_f, t1.country_code
    FROM t1
    WHERE t1.country_name = 'World' AND t1.year = '1990'
)
SELECT (old_f - new_f) AS forest_loss
FROM t2
JOIN t3
ON t2.country_code = t3.country_code;
```

1.4 forest_loss percent query:

```
WITH t1
AS
(
    SELECT *
    FROM forestation
), t2
AS
(
    SELECT t1.forest_area_sqkm AS new_f, t1.country_code
    FROM t1
    WHERE t1.country_name = 'World' AND t1.year = '2016'
), t3
AS
(
    SELECT t1.forest_area_sqkm AS old_f, t1.country_code
    FROM t1
    WHERE t1.country_name = 'World' AND t1.year = '1990'
)
SELECT ((old_f - new_f)/old_f)*100 AS loss
```

```
FROM t2
JOIN t3
ON t2.country_code = t3.country_code;
```

1.5 lost forest size country 2016 hardcoded: (works)

```
SELECT country_name, ROUND(CAST(total_area_sqkm AS numeric), 2) AS total_area_sqkm
FROM forestation
WHERE total_area_sqkm < 1324449 AND year = '2016'
ORDER BY total_area_sqkm DESC
LIMIT 1;
```

direct: (not working because the filter takes out all countries, how to do?)

```
WITH t1
AS
(
    SELECT forest_area_sqkm AS new_f, country_code
    FROM forestation
    WHERE country_name = 'World' AND year = '2016'
), t2
AS
(
    SELECT forest_area_sqkm AS old_f, country_code
    FROM forestation
    WHERE country_name = 'World' AND year = '1990'
)
SELECT *
FROM forestation
JOIN t1
ON forestation.country_code = t1.country_code
JOIN t2
ON forestation.country_code = t2.country_code
WHERE total_area_sqkm < (old_f - new_f) AND year = '2016'
ORDER BY total_area_sqkm DESC;
```

2. Regional Outlook

2.1 forest area percent of world relative to land area in 2016 query:

```
SELECT country_name, ROUND(CAST(forest_percent AS numeric), 2) AS forest_percent, year
FROM forestation
WHERE country_name = 'World' AND year = '2016';
```

2.2 highest forest percentage relative to land in 2016 query:

```
SELECT country_name, ROUND(CAST(forest_percent AS numeric), 2) AS forest_percent, year
FROM forestation
```

```
WHERE year = '2016' AND forest_percent IS NOT NULL
ORDER BY forest_percent DESC
LIMIT 1;
```

2.3 lowest forest percentage relative to land in 2016 query:

```
SELECT country_name, ROUND(CAST(forest_percent AS numeric), 2) AS forest_percent, year
FROM forestation
WHERE year = '2016' AND forest_percent IS NOT NULL
ORDER BY forest_percent
LIMIT 1;
```

2.4 forest area percent of world relative to land area in 1990 query:

```
SELECT country_name, ROUND(CAST(forest_percent AS numeric), 2) AS forest_percent, year
FROM forestation
WHERE country_name = 'World' AND year = '1990';
```

2.5 highest forest percentage relative to land in 1990 query:

```
SELECT country_name, ROUND(CAST(forest_percent AS NUMERIC), 2), year
FROM forestation
WHERE year = '1990' AND forest_percent IS NOT NULL
ORDER BY forest_percent DESC
LIMIT 1;
```

2.6 lowest forest percentage relative to land in 1990 query:

```
SELECT country_name, ROUND(CAST(forest_percent AS NUMERIC), 2), year
FROM forestation
WHERE year = '1990' AND forest_percent IS NOT NULL
ORDER BY forest_percent
LIMIT 1;
```

2.7 forest percentage values by region (Table 2.1: Percent Forest Area by Region, 1990 & 2016) When I tried to use the general forestation view it didn't work: why? I think because it is an aggregation on top of another aggregation SUM used twice, and subqueries can only handle that.

query:

```
SELECT region, year, SUM(forest_percent)
FROM forestation
WHERE year = '2016' OR year = '1990'
GROUP BY region, year
ORDER BY region, year, forest_percent;
```

So I used an inline subquery:

```
SELECT region, year, ROUND(CAST(SUM(forest_percent) AS NUMERIC), 2) AS forest_p
FROM (
  (SELECT region, f.year,
  ( Sum(f.forest_area_sqkm) / Sum(land.total_area_sq_mi * 2.59) ) * 100
  AS forest_percent
  FROM forest_area f
  INNER JOIN land_area land
  ON land.country_code = f.country_code
  AND land.year = f.year
  INNER JOIN regions r
  ON r.country_code = land.country_code
  WHERE f.year = '1990' OR f.year = '2016'
  GROUP BY region, f.year)
) as sub
GROUP BY region, year
ORDER BY region, year, forest_p;
```

2.8 comparing 2016 to 1990 forest percentage relative to land_area

query:

```
WITH t2 AS
(
    SELECT region, f.year, f.country_code c_code,
    ( Sum(f.forest_area_sqkm) / Sum(land.total_area_sq_mi * 2.59) ) * 100
    AS forest_percent
    FROM forest_area f
    INNER JOIN land_area land
    ON land.country_code = f.country_code
    AND land.year = f.year
    INNER JOIN regions r
    ON r.country_code = land.country_code
    WHERE f.year = '2016'
    GROUP BY region, f.year, c_code
), t3 AS
(
    SELECT region, f.year, f.country_code c_code,
    ( Sum(f.forest_area_sqkm) / Sum(land.total_area_sq_mi * 2.59) ) * 100
    AS forest_percent
    FROM forest_area f
    INNER JOIN land_area land
    ON land.country_code = f.country_code
    AND land.year = f.year
    INNER JOIN regions r
    ON r.country_code = land.country_code
    WHERE f.year = '1990'
    GROUP BY region, f.year, c_code
```

```
)
SELECT t2.region, t2.year y_16, ROUND(CAST(AVG(t2.forest_percent) AS NUMERIC), 2)
       AS f_percent_16,
       t3.year y_90, ROUND(CAST(AVG(t3.forest_percent) AS NUMERIC), 2)
       AS f_percent_90
FROM t2
JOIN t3
ON t2.c_code = t3.c_code
GROUP BY 1, 2, 4
HAVING AVG(t2.forest_percent) < AVG(t3.forest_percent)
```

3. COUNTRY-LEVEL DETAIL

3.1 A: largest growth in total_forest_area from 1990 to 2016 query:

```
WITH t2 AS
(
    SELECT f.country_name, f.year y_16, f.country_code c_code,
    f.forest_area_sqkm f_area_16
    FROM forest_area f
    INNER JOIN land_area land
    ON land.country_code = f.country_code
    AND land.year = f.year
    INNER JOIN regions r
    ON r.country_code = land.country_code
    WHERE f.year = '2016'
), t3 AS
(
    SELECT f.country_name, f.year y_90, f.country_code c_code,
    f.forest_area_sqkm f_area_90
    FROM forest_area f
    INNER JOIN land_area land
    ON land.country_code = f.country_code
    AND land.year = f.year
    INNER JOIN regions r
    ON r.country_code = land.country_code
    WHERE f.year = '1990'
)
SELECT *, ROUND(CAST((t2.f_area_16 - t3.f_area_90) AS numeric), 2)
AS f_area_growth
FROM t3
JOIN t2
ON t2.c_code = t3.c_code
WHERE t2.f_area_16 IS NOT NULL AND t3.f_area_90 IS NOT NULL
ORDER BY f_area_growth DESC;
```

3.2 A: largest growth in percent from 1990 to 2016 query:

```
WITH t2 AS
(
    SELECT f.country_name, f.year, f.country_code c_code,
    ( Sum(f.forest_area_sqkm) / Sum(land.total_area_sq_mi * 2.59) ) * 100
    AS forest_percent
    FROM forest_area f
    INNER JOIN land_area land
    ON land.country_code = f.country_code
    AND land.year = f.year
    INNER JOIN regions r
    ON r.country_code = land.country_code
    WHERE f.year = '2016'
    GROUP BY f.country_name, f.year, c_code
), t3 AS
(
    SELECT f.country_name, f.year, f.country_code c_code,
    ( Sum(f.forest_area_sqkm) / Sum(land.total_area_sq_mi * 2.59) ) * 100
    AS forest_percent
    FROM forest_area f
    INNER JOIN land_area land
    ON land.country_code = f.country_code
    AND land.year = f.year
    INNER JOIN regions r
    ON r.country_code = land.country_code
    WHERE f.year = '1990'
    GROUP BY f.country_name, f.year, c_code
), t4 AS
(
SELECT t2.country_name, t2.year y_16, AVG(t2.forest_percent) f_percent_16,
t3.year y_90, AVG(t3.forest_percent) f_percent_90
FROM t2
JOIN t3
ON t2.c_code = t3.c_code
GROUP BY 1, 2, 4
  )
SELECT *, ROUND(CAST((f_percent_16 - f_percent_90) AS numeric), 2)
AS f_percent_gained_90_16
FROM t4
GROUP BY t4.country_name, t4.y_16, t4.y_90, t4.f_percent_16, t4.f_percent_90
HAVING f_percent_16 > f_percent_90 AND
f_percent_16 - f_percent_90 = MAX(f_percent_16 - f_percent_90)
ORDER BY f_percent_gained_90_16 DESC
LIMIT 1;
```

3.3 B: Top 5 Amount Decrease in Forest Area by Country query:

```
WITH t1 AS
(
    SELECT country_code code_16, country_name, region, year y_16,
    ROUND(CAST(forest_area_sqkm AS NUMERIC), 2) AS f_area_16
    FROM forestation
    WHERE year = '2016'
    AND forest_area_sqkm IS NOT NULL
    AND country_name != 'World'
), t2 AS
(
    SELECT country_code code_90, country_name, region,
    ROUND(CAST(forest_area_sqkm AS NUMERIC), 2) AS f_area_90
    FROM forestation
    WHERE year = '1990'
    AND forest_area_sqkm IS NOT NULL
    AND country_name != 'World'
)
SELECT t1.country_name, t1.region, f_area_90 - f_area_16 AS f_area_lost,
f_area_90, f_area_16
FROM t1
JOIN t2
ON code_16 = code_90
ORDER BY f_area_lost DESC;
```

3.4 B: Top 5 Percent Decrease in Forest Area by Country query:

```
WITH t1 AS
(
    SELECT country_code code_16, country_name, region, year y_16,
    ROUND(CAST(forest_percent AS NUMERIC), 2) AS f_percent_16
    FROM forestation
    WHERE year = '2016'
    AND forest_percent IS NOT NULL
), t2 AS
(
    SELECT country_code code_90, country_name, region, year y_90,
    ROUND(CAST(forest_percent AS NUMERIC), 2) AS f_percent_90
    FROM forestation
    WHERE year = '1990'
    AND forest_percent IS NOT NULL
)
SELECT t1.country_name, t1.region, Round(Cast(( ( f_percent_90 -
f_percent_16 ) / f_percent_90 ) * 100 AS NUMERIC), 2) AS f_percent_decrease,
f_percent_16, f_percent_90
```

```
FROM t1
JOIN t2
ON code_16 = code_90
WHERE f_percent_90 != 0
ORDER BY f_percent_decrease DESC;
```

3.5 C: If countries were grouped by percent forestation in quartiles, which group had the most countries in it in 2016? view:

```
CREATE VIEW forestation
AS
 SELECT f.country_code,
 f.country_name,
 f.year,
 f.forest_area_sqkm,
 land.total_area_sq_mi,
 land.total_area_sq_mi * 2.59 AS total_area_sqkm,
 r.region,
 r.income_group
 FROM forest_area f
 INNER JOIN land_area land
 ON land.country_code = f.country_code
 AND land.year = f.year
 INNER JOIN regions r
 ON r.country_code = land.country_code
 GROUP BY f.country_code,
 f.country_name,
 f.year,
 f.forest_area_sqkm,
 land.total_area_sq_mi,
 r.region,
 r.income_group
```

query:

```
WITH t1 AS
(
    SELECT country_name, year,
    (forest_area_sqkm/ total_area_sqkm) AS
    f_percent_16
    FROM forestation
    WHERE year = 2016
    AND country_name != 'World'
    AND forest_area_sqkm IS NOT NULL
    AND total_area_sqkm IS NOT NULL
 )
SELECT
```

```
    Count( CASE
    WHEN t1.f_percent_16 < 0.25 THEN 1
    ELSE NULL
    END) AS quartile_1,
    Count( CASE
    WHEN t1.f_percent_16 > 0.25
    AND t1.f_percent_16 < 0.50 THEN 1
    ELSE NULL
    END) AS quartile_2,
    Count( CASE
    WHEN t1.f_percent_16 > 0.50
    AND t1.f_percent_16 < 0.75 THEN 1
    ELSE NULL
    END) AS quartile_3,
    Count( CASE
    WHEN t1.f_percent_16 > 0.75 THEN 1
    ELSE NULL
    END) AS quartile_4
FROM t1
```

3.6 C: List all of the countries that were in the 4th quartile (percent forest $>$ 75%) in 2016. view:

```
CREATE VIEW forestation
AS
 SELECT f.country_code,
 f.country_name,
 f.year,
 f.forest_area_sqkm,
 land.total_area_sq_mi,
 land.total_area_sq_mi * 2.59 AS total_area_sqkm,
 r.region,
 r.income_group
 FROM forest_area f
 INNER JOIN land_area land
 ON land.country_code = f.country_code
 AND land.year = f.year
 INNER JOIN regions r
 ON r.country_code = land.country_code
 GROUP BY f.country_code,
 f.country_name,
 f.year,
 f.forest_area_sqkm,
 land.total_area_sq_mi,
 r.region,
 r.income_group
```

query:

```
SELECT country_name, year, region,
ROUND(CAST((forest_area_sqkm/ total_area_sqkm) * 100 AS NUMERIC), 2) AS
f_percent_16
FROM forestation
WHERE year = 2016
AND country_name != 'World'
AND forest_area_sqkm IS NOT NULL
AND total_area_sqkm IS NOT NULL
AND (forest_area_sqkm/ total_area_sqkm) * 100 > 75
ORDER BY f_percent_16 DESC;
```

3.7 C: How many countries had a percent forestation higher than the United States in 2016? view:

```
CREATE VIEW forestation
AS
 SELECT f.country_code,
 f.country_name,
 f.year,
 f.forest_area_sqkm,
 land.total_area_sq_mi,
 land.total_area_sq_mi * 2.59 AS total_area_sqkm,
 r.region,
 r.income_group
 FROM forest_area f
 INNER JOIN land_area land
 ON land.country_code = f.country_code
 AND land.year = f.year
 INNER JOIN regions r
 ON r.country_code = land.country_code
 GROUP BY f.country_code,
 f.country_name,
 f.year,
 f.forest_area_sqkm,
 land.total_area_sq_mi,
 r.region,
 r.income_group
```

hardcoded query: (works)

```
WITH t1 AS
(
    SELECT country_name, year,
    (forest_area_sqkm/ total_area_sqkm) AS
    f_percent_16
```

```
    FROM forestation
    WHERE year = 2016
    AND country_name != 'World'
    AND forest_area_sqkm IS NOT NULL
    AND total_area_sqkm IS NOT NULL
    AND (forest_area_sqkm/ total_area_sqkm) > 0.34
 )
SELECT
    COUNT(*) AS country_counter
FROM t1
```

I tried this with 2 CTEs:

```
WITH t1 AS
(
    SELECT country_name, year,
    (forest_area_sqkm/ total_area_sqkm) AS
    f_percent_16
    FROM forestation
    WHERE year = 2016
    AND country_name != 'World'
    AND forest_area_sqkm IS NOT NULL
    AND total_area_sqkm IS NOT NULL
    AND (forest_area_sqkm/ total_area_sqkm) > 0.34
 ), t2 AS
 (
    SELECT country_name, f_percent_16 AS f_percent_16_US
    FROM t1
    WHERE country_name = 'United States'
 )
SELECT
    COUNT( CASE
    WHEN f_percent_16 > f_percent_16_US THEN 1
    ELSE NULL
    END) AS country_counter
FROM t1
JOIN t2
ON t1.country_name = t2.country_name
```

OR this with CTE and inline subquery:

```
WITH t1 AS
 (
    SELECT country_name, year,
    (forest_area_sqkm/ total_area_sqkm) AS f_percent_16_US
    FROM forestation
    WHERE country_name = 'United States'
    AND year = 2016
```

```
 )
SELECT
    COUNT( CASE
    WHEN f_percent_16 > f_percent_16_US THEN 1
    ELSE NULL
    END) AS country_counter
FROM (
    SELECT country_name, year,
    (forest_area_sqkm/ total_area_sqkm) AS
    f_percent_16
    FROM forestation
    WHERE year = 2016
    AND country_name != 'World'
    AND forest_area_sqkm IS NOT NULL
    AND total_area_sqkm IS NOT NULL
 ) sub
JOIN t1
ON t1.country_name = sub.country_name
```

But both solutions don't count 0.