National Parks Recreational Database SQL Results

December
2022

Prepared for:

Geography 574,
Professor Qunying Huang

Prepared by:

Michael Connolly (9083777145),
Kuang-Cheng Cheng (9083544867),
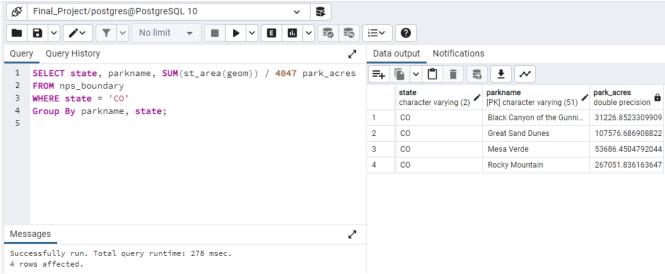Drew Smith (9077663509)

Table of Contents

1.1 Question 1

Q1: What National Parks are in Colorado and what are the sizes of each park?

SELECT state, parkname, SUM(st_area(geom)) / 4047 park_acres
FROM nps_boundary
WHERE state = 'CO'
Group By parkname, state;
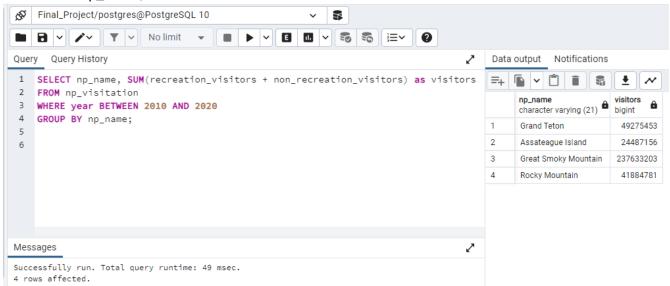

1.2 Question 2

Q2: What was the total visitation of each national park from 2010 to 2020?

SELECT np_name, SUM(recreation_visitors + non_recreation_visitors) as visitors
FROM np_visitation
WHERE year BETWEEN 2010 AND 2020
GROUP BY np_name;

1.3 Question 3

Q3: What are the total number of campsites, historical sites, trails, and parking areas in Rocky Mountain National Park?

SELECT nb.parkname, COUNT(*) AS campground_num, nrhp.nrhp_sites AS nrhp_num, trail_number.trails AS trail_num, parkinglot.parking AS pk_lot_num
FROM nps_boundary AS nb JOIN nps_facilities AS nf ON ST_Contains(nb.geom, nf.geom),
    (SELECT COUNT(*) AS nrhp_sites
FROM nps_boundary AS b JOIN nps_facilities AS f ON ST_Contains(b.geom, f.geom) JOIN nrhp_points AS n ON ST_Contains(b.geom, n.geom)
WHERE b.parkname = 'Rocky Mountain' AND f.facility_type = 'Campground'
) AS nrhp,
    (SELECT COUNT(*) AS trails
    FROM park_trails
    WHERE park_name = 'Rocky Mountain'
) AS trail_number,
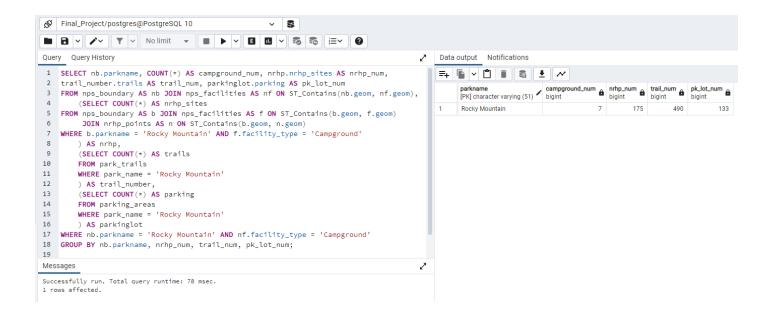   (SELECT COUNT(*) AS parking
    FROM parking_areas
    WHERE park_name = 'Rocky Mountain'
) AS parkinglot
WHERE nb.parkname = 'Rocky Mountain' AND nf.facility_type = 'Campground'
GROUP BY nb.parkname, nrhp_num, trail_num, pk_lot_num;

```
Final_Project/postgres@PostgreSQL 10

Query    Query History

1   SELECT nb.parkname, COUNT(*) AS campground_num, nrhp.nrhp_sites AS nrhp_num,
2   trail_number.trails AS trail_num, parkinglot.parking AS pk_lot_num
3   FROM nps_boundary AS nb JOIN nps_facilities AS nf ON ST_Contains(nb.geom, nf.geom),
4       (SELECT COUNT(*) AS nrhp_sites
5   FROM nps_boundary AS b JOIN nps_facilities AS f ON ST_Contains(b.geom, f.geom)
6       JOIN nrhp_points AS n ON ST_Contains(b.geom, n.geom)
7   WHERE b.parkname = 'Rocky Mountain' AND f.facility_type = 'Campground'
8       ) AS nrhp,
9       (SELECT COUNT(*) AS trails
10      FROM park_trails
11      WHERE park_name = 'Rocky Mountain'
12      ) AS trail_number,
13      (SELECT COUNT(*) AS parking
14      FROM parking_areas
15      WHERE park_name = 'Rocky Mountain'
16      ) AS parkinglot
17  WHERE nb.parkname = 'Rocky Mountain' AND nf.facility_type = 'Campground'
18  GROUP BY nb.parkname, nrhp_num, trail_num, pk_lot_num;
19
```

Data output   Notifications

parkname [PK] character varying (51)	campground_num bigint	nrhp_num bigint	trail_num bigint	pk_lot_num bigint
1	Rocky Mountain	7	175	490	133

Messages

Successfully run. Total query runtime: 78 msec.
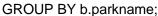1 rows affected.

1.4   Question 4

Q4: How many unpaved roads are in Rocky Mountain, Great Smoky Mountain, AND Grand Teton National Parks, and what are the total lengths of the roads?
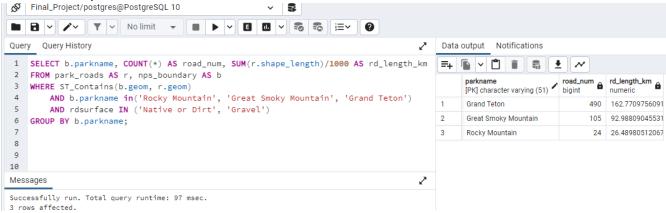
```
SELECT b.parkname, COUNT(*) AS road_num, SUM(r.shape_length)/1000 AS rd_length_km
FROM park_roads AS r, nps_boundary AS b
WHERE ST_Contains(b.geom, r.geom)
        AND b.parkname in('Rocky Mountain', 'Great Smoky Mountain', 'Grand Teton')
        AND rdsurface IN ('Native or Dirt', 'Gravel')
GROUP BY b.parkname;
```

Final_Project/postgres@PostgreSQL 10

```
1  SELECT b.parkname, COUNT(*) AS road_num, SUM(r.shape_length)/1000 AS rd_length_km
2  FROM park_roads AS r, nps_boundary AS b
3  WHERE ST_Contains(b.geom, r.geom)
4      AND b.parkname in('Rocky Mountain', 'Great Smoky Mountain', 'Grand Teton')
5      AND rdsurface IN ('Native or Dirt', 'Gravel')
6  GROUP BY b.parkname;
7
8
9
10
```

Data output   Notifications

	parkname [PK] character varying (51)	road_num bigint	rd_length_km numeric
1	Grand Teton	490	162.7709756091
2	Great Smoky Mountain	105	92.98809045531
3	Rocky Mountain	24	26.48980512067

Messages

Successfully run. Total query runtime: 97 msec.
3 rows affected.

1.5   Question 5

Q5: Which National Park has visitation larger than the average visitation of all four National Parks in this database?

```
SELECT np_name, SUM(recreation_visitors+non_recreation_visitors) AS visitors
FROM np_visitation
GROUP BY np_name
HAVING SUM(recreation_visitors + non_recreation_visitors) > (SELECT AVG(s.total_visitation)
FROM (SELECT np_name, SUM(recreation_visitors+non_recreation_visitors) AS total_visitation
FROM np_visitation
GROUP BY np_name) AS s);
```

```
1  SELECT np_name, SUM(recreation_visitors+non_recreation_visitors) AS visitors
2  FROM np_visitation
3  GROUP BY np_name
4  HAVING SUM(recreation_visitors + non_recreation_visitors) > (
5  SELECT AVG(s.total_visitation)
6  FROM (
7  SELECT np_name, SUM(recreation_visitors+non_recreation_visitors) AS total_visitation
8  FROM np_visitation
9  GROUP BY np_name) AS s
10 );
11
```

Data output   Notifications

	np_name character varying (21)	visitors bigint
1	Great Smoky Mountain	824684974

Messages

Successfully run. Total query runtime: 52 msec.
1 rows affected.