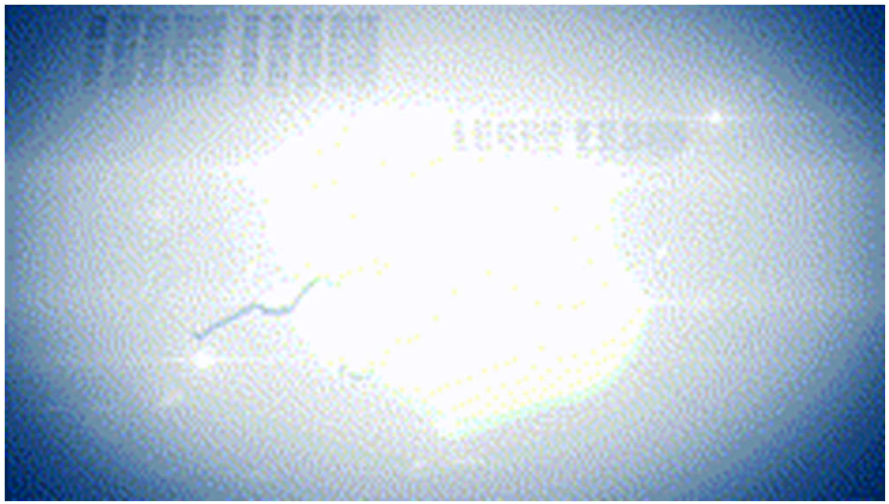
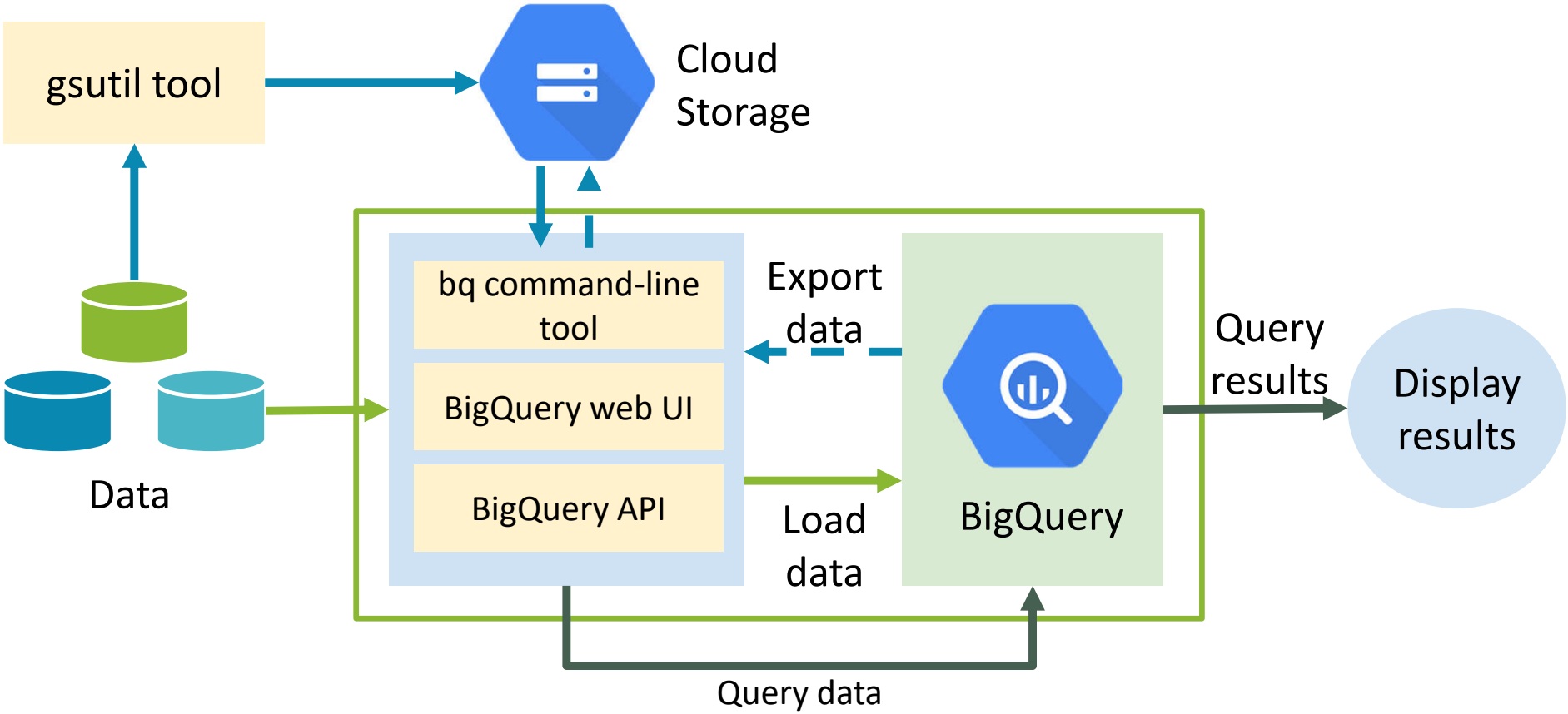
Google Cloud Platform
Data Queries with BigQuery

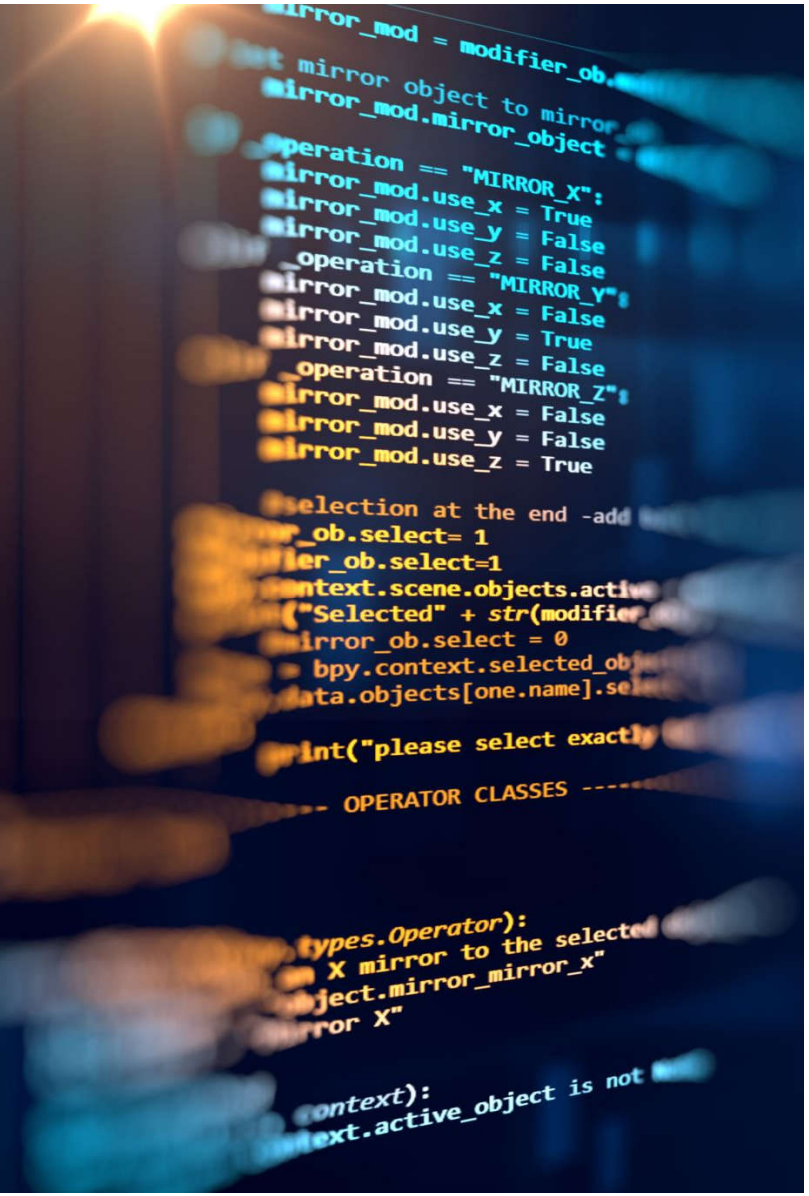
Harvesting, Storing, and Retrieving Data

You Have the Data, but What Are You Doing with It?



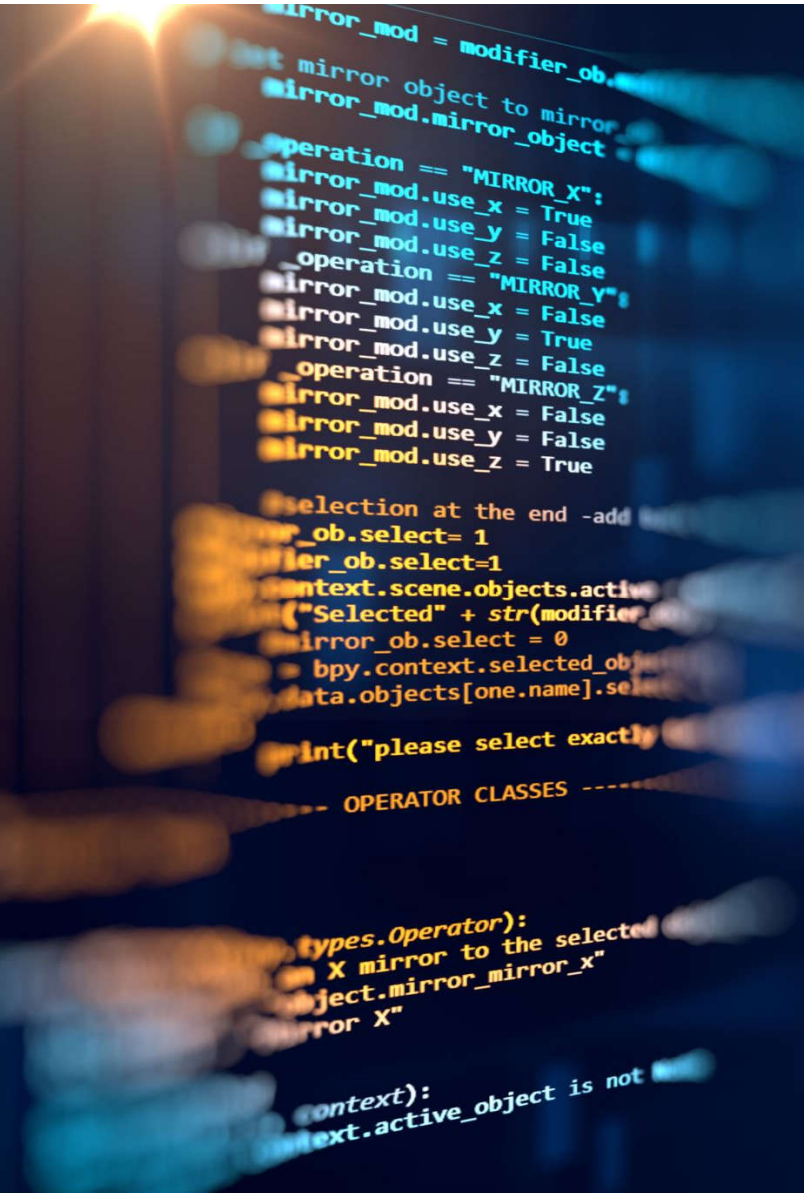
Loading Data into BigQuery





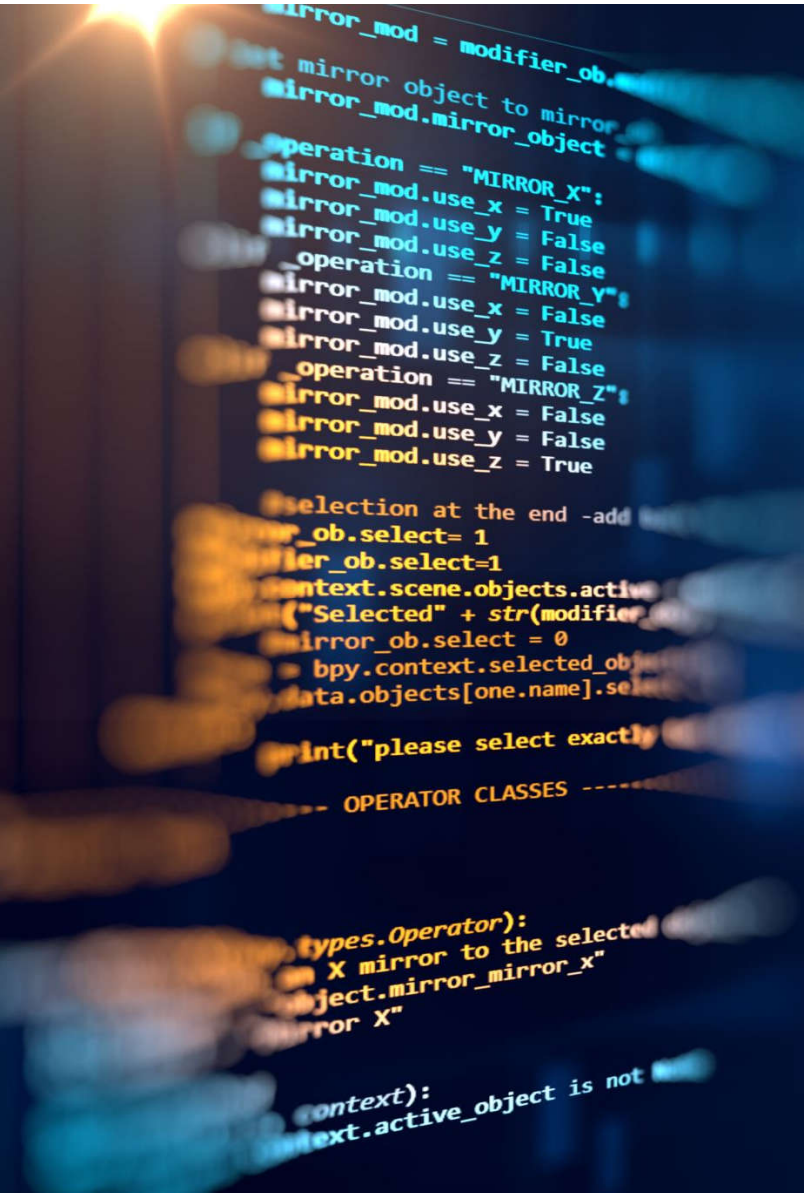
Why do we Use SQL Commands for BigQuery

- High Performance
- High Availability
- Scalability and Flexibility
- Ease of Management



What Can We Use SQL Commands for BigQuery

- Execute queries against a database
- Retrieve data from a database
- Insert records in a database
- Update records in a database
- Delete records from a database
- Create new databases
- Create new tables in a database



Some Basic SQL Commands for BigQuery

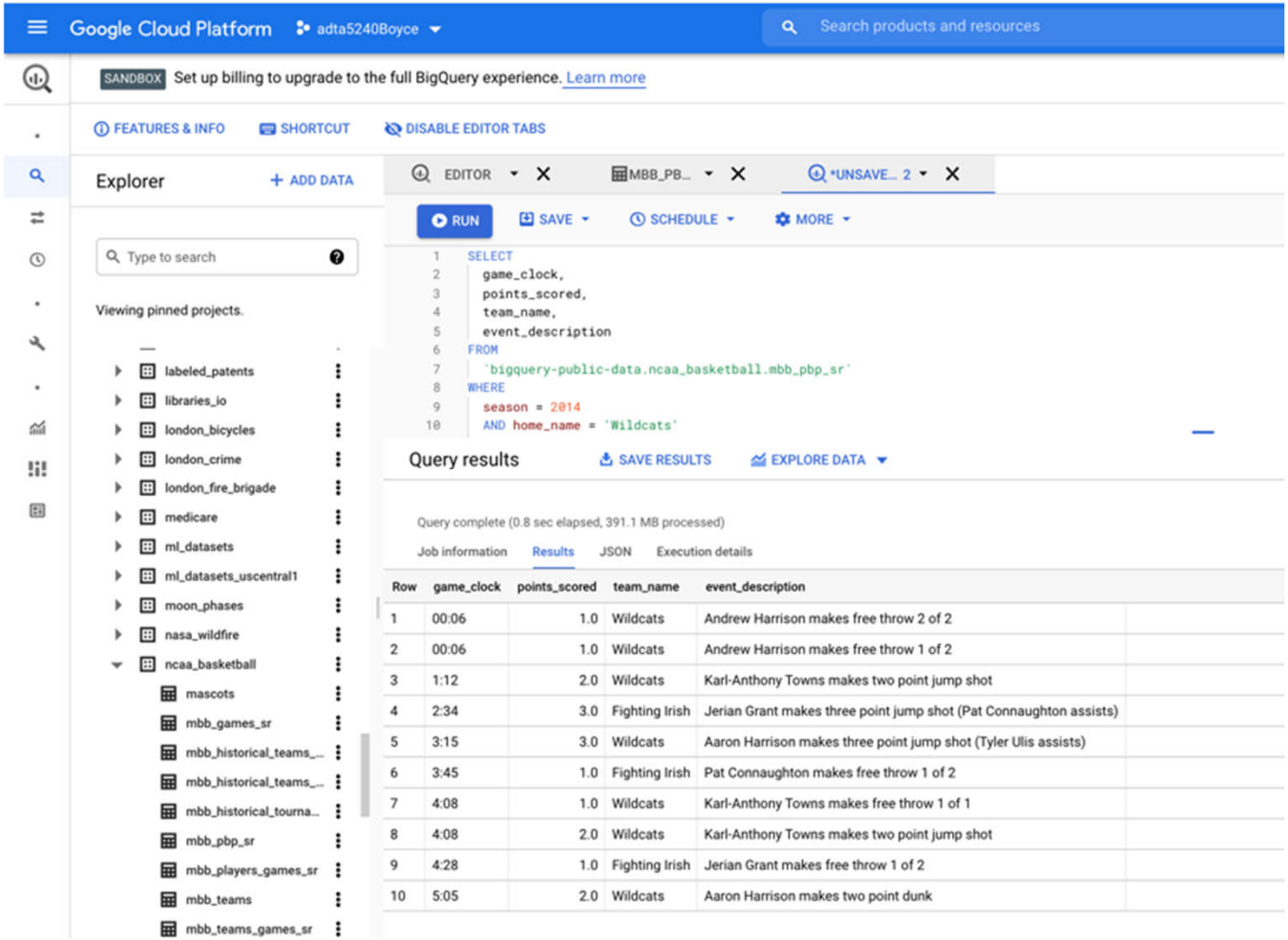
- SELECT list
- FROM clause
- JOIN operation
- WHERE clause
- GROUP BY clause
- HAVING clause
- ORDER BY clause

Google BigQuery Basic SQL: Select, From, & Where

```
SELECT
  game_clock,
  points_scored,
  team_name,
  event_description

FROM
  `bigquery-public-data.ncaa_basketball.mbb_pbp_sr`
WHERE
  season = 2014
  AND home_name = 'Wildcats'
  AND away_name = 'Fighting Irish'
  AND points_scored IS NOT NULL
```

Google BigQuery Basic SQL: Select, From, & Where



Row	game_clock	points_scored	team_name	event_description
1	00:06	1.0	Wildcats	Andrew Harrison makes free throw 2 of 2
2	00:06	1.0	Wildcats	Andrew Harrison makes free throw 1 of 2
3	1:12	2.0	Wildcats	Karl-Anthony Towns makes two point jump shot
4	2:34	3.0	Fighting Irish	Jerian Grant makes three point jump shot (Pat Connaughton assists)
5	3:15	3.0	Wildcats	Aaron Harrison makes three point jump shot (Tyler Ulis assists)
6	3:45	1.0	Fighting Irish	Pat Connaughton makes free throw 1 of 2
7	4:08	1.0	Wildcats	Karl-Anthony Towns makes free throw 1 of 1
8	4:08	2.0	Wildcats	Karl-Anthony Towns makes two point jump shot
9	4:28	1.0	Fighting Irish	Jerian Grant makes free throw 1 of 2
10	5:05	2.0	Wildcats	Aaron Harrison makes two point dunk

Google BigQuery Basic SQL: DISTINCT

```
SELECT DISTINCT payment_type
```

```
FROM `bigquery-public-data.chicago_taxi_trips.taxi_trips`
```

```
ORDER BY payment_type
```

BigQuery SQL Functions

Function	Function type	Action
CHAR_LENGTH	String	Returns the length of a string
CONCAT	String	Concatenates two or more values into a single string
LOWER	String	Coerces a string to lowercase
TRIM	String	Removes leading and trailing spaces from a string
SUBSTR	String	Returns the string starting from the position specified
SUM	Aggregate	Returns the sum of the input values
AVG	Aggregate	Returns the average of the input values
MIN	Aggregate	Returns the minimum of the input values
MAX	Aggregate	Returns the maximum of the input values

Google BigQuery Functions

```
FUNCTION_NAME (value, <parameter>)
```

```
SELECT MIN (trip_start_timestamp), MAX
(trip_start_timestamp)
FROM (bigquery-public-data: Chicago_taxi_trips.taxi_trips)
```

```
SELECT
EXTRACT(YEAR from MIN(trip_start_timestamp)) as
minyear,
EXTRACT (YEAR from MAX(trip_start_timestamp)) as
maxyear
 FROM `bigquery-public-data.chicago_taxi_trips.taxi_trips`
LIMIT 1000;
```

Google BigQuery Aggregate Functions: Count

```
SELECT FORMAT_DATE('%Y%m',
CAST(trip_start_timestamp AS DATE)) as
trip_year_month, company, count(1) trip_per_month
FROM `bigquery-public-
data.chicago_taxi_trips.taxi_trips`
WHERE company is not null
AND company != ‘ '
GROUP BY trip_year_month, company
ORDER by trip_year_month, company
```

Google BigQuery Aggregate Functions: Count

Job information | Results | JSON | Execution details

Row	trip_year_month	company	trip_per_month
1	201301	2767 - Sayed M Badri	321
2	201301	5437 - Great American Cab Co	96
3	201301	6743 - Luhak Corp	571
4	201301	Blue Ribbon Taxi Association Inc.	108082
5	201301	Chicago Elite Cab Corp.	1
6	201301	Choice Taxi Association	46441
7	201301	Dispatch Taxi Affiliation	206410
8	201301	Northwest Management LLC	69795
9	201301	Taxi Affiliation Services	439209
10	201301	Yellow Cab	1
11	201302	1085 - N and W Cab Co	29
12	201302	2767 - Sayed M Badri	434

Google BigQuery Aggregate Functions

Google BigQuery Aggregate Functions: COUNT

Google BigQuery Aggregate Functions: AVG

Google BigQuery Aggregate Functions: SUM

Google BigQuery Aggregate Functions: Average & Sum

```
SELECT SUBSTR(trip_year_month,1,4) as trip_year, company, AVG(trip_per_month) as monthly_average,
SUM(trip_per_month) as total_trips_year
FROM ( SELECT FORMAT_DATE('%Y%m', CAST(trip_start_timestamp AS DATE)) as trip_year_month, company, count(1) trip_per_month
FROM `bigquery-public-data.chicago_taxi_trips.taxi_trips`
WHERE company is not null
AND company != ''
GROUP BY trip_year_month, company
ORDER by trip_year_month, company )
GROUP BY trip_year, company
HAVING monthly_average > 100 and total_trips_year > 1500
ORDER by trip_year, company
```

Google BigQuery Aggregate Functions: Average & Sum

Row	trip_year	company	monthly_average	total_trips_year
1	2013	1085 - N and W Cab Co	498.3636363636363	5482
2	2013	2192 - Zeymane Corp	441.1	4411
3	2013	2733 - Benny Jona	416.0	3744
4	2013	3319 - C&D Cab Company	594.5	2378
5	2013	3620 - David K. Cab Corp.	220.0	1760
6	2013	3897 - Ilie Malec	321.8888888888889	2897
7	2013	4615 - Tyrone Henderson	215.18181818181816	2367
8	2013	4787 - Reny Cab Co	315.0	3465
9	2013	5 Star Taxi	999.6666666666667	2999
10	2013	5437 - Great American Cab Co	181.25	2175
11	2013	5776 - Mekonen Cab Company	615.0	4920
12	2013	5874 - Sergey Cab Corp.	273.6666666666667	1642
13	2013	6743 - Luhak Corp	520.75	6249
14	2013	American United	11204.714285714286	78433
15	2013	Blue Ribbon Taxi Association Inc.	157949.16666666666	1895390
16	2013	Chicago Elite Cab Corp.	85238.16666666667	1022858

There Are Various Ways That You Can Connect To BigQuery And Analyze The Data

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SAP® Analytics Cloud bime by zendesk Yellowfin

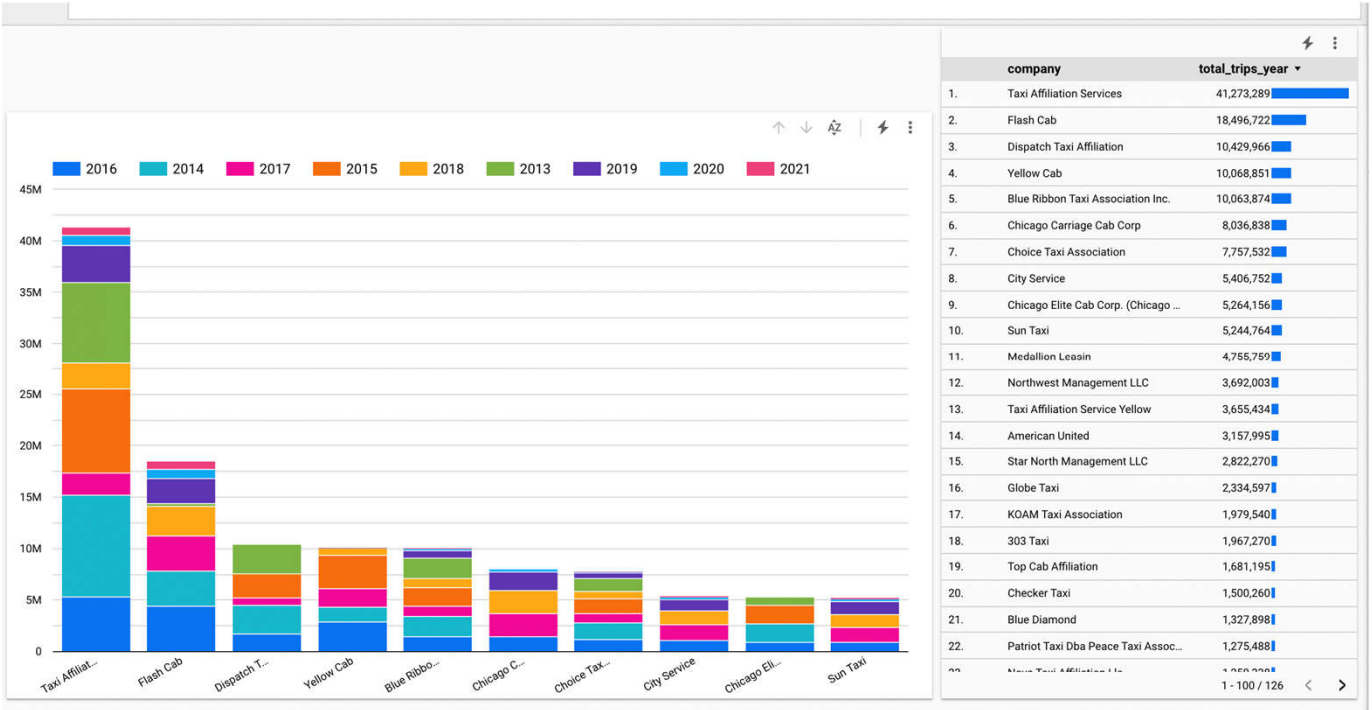
ZOOMDATA iCharts OWOX atscale

MicroStrategy Dundas BI MODE DOMO

IBM Cognos Analytics Qlik re:dash

Data Analysis and Visualization Partners

Google BigQuery Aggregate Functions: Sum Visualization with Explorer



	company	total_trips_year
1.	Taxi Affiliation Services	41,273,289
2.	Flash Cab	18,496,722
3.	Dispatch Taxi Affiliation	10,429,966
4.	Yellow Cab	10,068,851
5.	Blue Ribbon Taxi Association Inc.	10,063,874
6.	Chicago Carriage Cab Corp	8,036,838
7.	Choice Taxi Association	7,757,532
8.	City Service	5,406,752
9.	Chicago Elite Cab Corp. (Chicago ...	5,264,156
10.	Sun Taxi	5,244,764
11.	Medallion Leasin	4,755,759
12.	Northwest Management LLC	3,692,003
13.	Taxi Affiliation Service Yellow	3,655,434
14.	American United	3,157,995
15.	Star North Management LLC	2,822,270
16.	Globe Taxi	2,334,597
17.	KOAM Taxi Association	1,979,540
18.	303 Taxi	1,967,270
19.	Top Cab Affiliation	1,681,195
20.	Checker Taxi	1,500,260
21.	Blue Diamond	1,327,898
22.	Patriot Taxi Dba Peace Taxi Assoc...	1,275,488

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