

# BigQuery GIS

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# Agenda

- BigQuery GIS Intro
- BigQuery GIS Data Types
- BigQuery GIS Functions
- BigQuery GeoViz
- Demo



# What is BigQuery?

- Fully Managed, Zero-Ops Data Warehouse
- Petabyte-Scale
- Industry-Standard SQL
- Automatically Encrypted, Durable, and Highly Available
- Virtually Unlimited Resources



# What is BigQuery GIS?

- Integrates geospatial data types and functions as first class citizens within BigQuery.
- It uses the same S2 library used in Google Maps
- GEOGRAPHY data type represents a pointset on Earth
- A pointset is a set of points, lines and polygons
- A GEOGRAPHY pointset can be created using the geographic functions that generate data in WKT format



# Data Types



POINT(10 30)



LINESTRING(10 30, 50 20)



MULTILINESTRING(((10 30, 50 20)), ((60 40, 70 30)))



POLYGON ((30 10, 40 40, 20 40, 10 20, 30 10))



MULTIPOLYGON (((30 20, 45 40, 10 40, 30 20)), ((15 5, 40 10, 10 20, 5 10, 15 5)))



# Function Types

- Constructors
- Transformations
- Predicates
- Measures
- Parsers



# Functions

- ST\_GEOGPOINT(longitude, latitude)
- ST\_MAKELINE(geography\_1, geography\_2)
- ST\_MAKEPOLYGON(geography\_expression)
- ST\_GEOGFROMGEOJSON(geojson\_string)
- ST\_GEOGFROMTEXT(wkt\_string)





# Functions

- ST\_ASJSON(*geography\_expression*)
- ST\_ASTEXT(*geography\_expression*)
- ST\_BOUNDARY(*geography\_expression*)
- ST\_CENTROID(*geography\_expression*)
- ST\_CLOSESTPOINT(*geography\_1*,*geography\_2*)



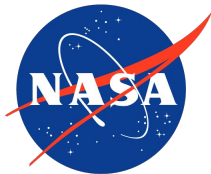


# GeoViz



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# BigQuery Public Datasets



NYC OpenData

citi bike



GDELT

looker



United States™  
Census  
Bureau

NYC  
Taxi & Limousine  
Commission



GitHub

esa



stackoverflow



DEMO!!



Let's discuss!

