  --Q1: Calculate total visit, pageview, transaction for Jan, Feb and March 2017 (order by month)

WITH

  total\_3\_first\_month AS (

  SELECT

    date,

    SUM(totals.visits) AS total\_visits,

    SUM(totals.pageviews) AS total\_pageview,

    SUM(totals.transactions) AS total\_transactions

  FROM

    `bigquery-public-data.google\_analytics\_sample.ga\_sessions\_2017\*`

  WHERE

    \_table\_suffix BETWEEN '0101'

    AND '0331'

  GROUP BY

    date

  ORDER BY

    date ASC ),

  total\_each\_month AS (

  SELECT

    FORMAT\_DATE("%Y%m", PARSE\_DATE("%Y%m%d", date)) AS month,

    SUM(total\_visits) AS visits,

    SUM(total\_pageview) AS pageviews,

    SUM(total\_transactions) AS transactions

  FROM

    total\_3\_first\_month

  GROUP BY

    date

  ORDER BY

    date ASC )

SELECT

  month,

  SUM(visits) AS Visits,

  SUM(pageviews) AS Pageviews,

  SUM(transactions) AS Transactions

FROM

  total\_each\_month

GROUP BY

  month

ORDER BY

  month;

  --Q2 Bounce rate per traffic source in July 2017 (Bounce\_rate = num\_bounce/total\_visit) (order by total\_visit DESC)

SELECT

  trafficSource.source AS SOURCE,

  SUM(totals.visits) AS total\_visits,

  SUM(totals.Bounces) AS total\_no\_of\_bounces,

  (SUM(totals.Bounces)/SUM(totals.visits))\* 100 AS bounce\_rate

FROM

  `bigquery-public-data.google\_analytics\_sample.ga\_sessions\_201707\*`

GROUP BY SOURCE

ORDER BY

  total\_visits DESC;

  --Q3 Revenue by traffic source by week, by month in June 2017

SELECT

  'WEEK'AS time\_type,

  FORMAT\_DATE("%Y%W",PARSE\_DATE('%Y%m%d',date)) AS time,

  trafficSource.source AS SOURCE,

  SUM(totals.totalTransactionRevenue)/1000000 AS revenue

FROM

  `bigquery-public-data.google\_analytics\_sample.ga\_sessions\_2017\*`

WHERE

  \_table\_suffix BETWEEN '0601'

  AND '0630'

GROUP BY

  time\_type,

  time,

  SOURCE

UNION ALL

SELECT

  'MONTH' AS time\_type,

  FORMAT\_DATE("%Y%m",PARSE\_DATE('%Y%m%d',date)) AS time,

  trafficSource.source AS SOURCE,

  SUM(totals.totalTransactionRevenue)/1000000 AS revenue

FROM

  `bigquery-public-data.google\_analytics\_sample.ga\_sessions\_2017\*`

WHERE

  \_table\_suffix BETWEEN '0601'

  AND '0630'

GROUP BY

  time\_type,

  time,

  SOURCE

ORDER BY

  revenue DESC;

  --Q4 Average number of pageviews by purchaser type (purchasers vs non-purchasers) in June, July 2017

WITH

  purchaser\_data AS(

  SELECT

    FORMAT\_DATE("%Y%m",PARSE\_DATE("%Y%m%d",date)) AS month,

    (SUM(totals.pageviews)/COUNT(DISTINCT fullvisitorid)) AS avg\_pageviews\_purchase,

  FROM

    `bigquery-public-data.google\_analytics\_sample.ga\_sessions\_2017\*`,

    UNNEST(hits) hits,

    UNNEST(product) product

  WHERE

    \_table\_suffix BETWEEN '0601'

    AND '0731'

    AND totals.transactions >= 1

    AND product.productRevenue IS NOT NULL

  GROUP BY

    month ),

  non\_purchaser\_data AS(

  SELECT

    FORMAT\_DATE("%Y%m",PARSE\_DATE("%Y%m%d",date)) AS month,

    SUM(totals.pageviews)/COUNT(DISTINCT fullvisitorid) AS avg\_pageviews\_non\_purchase,

  FROM

    `bigquery-public-data.google\_analytics\_sample.ga\_sessions\_2017\*`,

    UNNEST(hits) hits,

    UNNEST(product) product

  WHERE

    \_table\_suffix BETWEEN '0601'

    AND '0731'

    AND totals.transactions IS NULL

    AND product.productRevenue IS NULL

  GROUP BY

    month )

SELECT

  pd.\*,

  avg\_pageviews\_non\_purchase

FROM

  purchaser\_data pd

LEFT JOIN

  non\_purchaser\_data

USING

  (month)

ORDER BY

  pd.month;

  --Q5 Average number of transactions per user that made a purchase in July 2017 (tháng 7 năm 2017)

SELECT

  FORMAT\_DATE("%Y%m",PARSE\_DATE("%Y%m%d",date)) AS month,

  SUM(totals.transactions)/COUNT(DISTINCT fullvisitorid) AS Avg\_total\_transactions\_per\_user

FROM

  `bigquery-public-data.google\_analytics\_sample.ga\_sessions\_201707\*`,

  UNNEST (hits) hits,

  UNNEST(product) product

WHERE

  totals.transactions>=1

  AND totals.totalTransactionRevenue IS NOT NULL

  AND product.productRevenue IS NOT NULL

GROUP BY

  month;

  --Q6 Average amount of money spent per session. Only include purchaser data in July 2017

SELECT

  FORMAT\_DATE("%Y%m",PARSE\_DATE("%Y%m%d",date)) AS month,

  ((SUM(product.productRevenue)/SUM(totals.visits))/POWER(10,6)) AS avg\_revenue\_by\_user\_per\_visit

FROM

  `bigquery-public-data.google\_analytics\_sample.ga\_sessions\_201707\*`,

  UNNEST(hits) hits,

  UNNEST(product) product

WHERE

  product.productRevenue IS NOT NULL

GROUP BY

  month;

  --Q7 Other products purchased by customers who purchased product "YouTube Men's Vintage Henley" in July 2017.

WITH

  buyer\_list AS(

  SELECT

    DISTINCT fullVisitorId

  FROM

    `bigquery-public-data.google\_analytics\_sample.ga\_sessions\_201707\*`,

    UNNEST(hits) AS hits,

    UNNEST(hits.product) AS product

  WHERE

    product.v2ProductName = "YouTube Men's Vintage Henley"

    AND totals.transactions>=1

    AND product.productRevenue IS NOT NULL )

SELECT

  product.v2ProductName AS other\_purchased\_products,

  SUM(product.productQuantity) AS quantity

FROM

  `bigquery-public-data.google\_analytics\_sample.ga\_sessions\_201707\*`,

  UNNEST(hits) AS hits,

  UNNEST(hits.product) AS product

JOIN

  buyer\_list

USING

  (fullVisitorId)

WHERE

  product.v2ProductName != "YouTube Men's Vintage Henley"

  AND product.productRevenue IS NOT NULL

GROUP BY

  other\_purchased\_products

ORDER BY

  quantity DESC;

  --Q8: Calculate cohort map from product view to addtocart to purchase in Jan, Feb and March 2017.

WITH

  product\_view AS(

  SELECT

    FORMAT\_DATE("%Y%m", PARSE\_DATE("%Y%m%d", date)) AS month,

    COUNT(product.productSKU) AS num\_product\_view

  FROM

    `bigquery-public-data.google\_analytics\_sample.ga\_sessions\_\*`,

    UNNEST(hits) AS hits,

    UNNEST(hits.product) AS product

  WHERE

    \_TABLE\_SUFFIX BETWEEN '20170101'

    AND '20170331'

    AND hits.eCommerceAction.action\_type = '2'

  GROUP BY

    1 ),

  add\_to\_cart AS(

  SELECT

    FORMAT\_DATE("%Y%m", PARSE\_DATE("%Y%m%d", date)) AS month,

    COUNT(product.productSKU) AS num\_addtocart

  FROM

    `bigquery-public-data.google\_analytics\_sample.ga\_sessions\_\*`,

    UNNEST(hits) AS hits,

    UNNEST(hits.product) AS product

  WHERE

    \_TABLE\_SUFFIX BETWEEN '20170101'

    AND '20170331'

    AND hits.eCommerceAction.action\_type = '3'

  GROUP BY

    1 ),

  purchase AS(

  SELECT

    FORMAT\_DATE("%Y%m", PARSE\_DATE("%Y%m%d", date)) AS month,

    COUNT(product.productSKU) AS num\_purchase

  FROM

    `bigquery-public-data.google\_analytics\_sample.ga\_sessions\_\*`,

    UNNEST(hits) AS hits,

    UNNEST(hits.product) AS product

  WHERE

    \_TABLE\_SUFFIX BETWEEN '20170101'

    AND '20170331'

    AND hits.eCommerceAction.action\_type = '6'

    AND product.productRevenue IS NOT NULL

  GROUP BY

    1 )

SELECT

  pv.\*,

  num\_addtocart,

  num\_purchase,

  ROUND(num\_addtocart\*100/num\_product\_view,2) AS add\_to\_cart\_rate,

  ROUND(num\_purchase\*100/num\_product\_view,2) AS purchase\_rate

FROM

  product\_view pv

LEFT JOIN

  add\_to\_cart a

ON

  pv.month = a.month

LEFT JOIN

  purchase p

ON

  pv.month = p.month

ORDER BY

  pv.month;