# SQL 103 case study – Set 1

## Steps:

1. Import the three tables provided in the data-base
   1. Calls Assignment
   2. Product Quintile
   3. Spec-Specgroup Mapping
2. Ensure that rows provided in excel matches the one imported in SQL
3. Answer the 20 questions given below and submit the results along with your SQL queries

## Background:

There are 3 datasets to do the analysis

* **Call Assignment:** It defines the position of the calls (P1 and P2) for different products against territories aligned to different sales forces.
* **Product Quintile:** It gives the quintile information for different physicians for product W.
* **Spec-Specgroup mapping:** multiple specialities are clubbed under one spec group. This file aligns the specialty of the physician with the spec group.

## Rules:

* Calls at P1 and P2 position both will be counted with weight 1. Example: If product M is called at P1 in one territory and P2 in another territory, then total calls for product M in two territories are 2.
* PDE calculation for a product will include counting calls at P1 position with weight 1 and counting calls at P2 position with weight 0.5. Example: If product M is called at P1 in one territory and P2 in another territory, then total PDEs for product M in two territories are 1.5.
* Frequency for a product in a segment will be total PDEs / number of distinct physicians in that segment
* The data-set for calls / PDEs is semester. For questions where quarterly / annual calculations are required, please proportionate accordingly.

**Questions –**

1. **How many number of territories are assigned to the salesforce “SALESFORCE\_SP”** 
   1. 134
   2. 412
   3. 635
   4. 411

SELECT COUNT(DISTINCT(territory\_id)) FROM call\_assignments

WHERE salesforce\_id='salesforce\_sp'

1. **How many number of doctors are assigned per territory in salesforce “SALESFORCE\_STR”** 
   1. 120
   2. 150
   3. 11250
   4. 16680

SELECT COUNT(Doc\_id) as doctors, territory\_id FROM call\_assignments

WHERE salesforce\_id='salesforce\_str'

GROUP BY TERRITORY\_ID

1. **Calculate the annual PDEs(000s) for “PRODUCT\_S” AND “PRODUCT\_M”**
   1. 271, 873
   2. 272, 874
   3. 270, 872
   4. 123, 160

WITH temp as

(SELECT CASE

WHEN P1='Product\_s' THEN 1\*calls

WHEN P2 ='Product\_s' THEN 0.5\*calls

ELSE 0

END as S\_PDE,

CASE

WHEN P1='Product\_M' THEN 1\*calls

WHEN P2 ='Product\_M' THEN 0.5\*calls

ELSE 0

END as M\_PDE

FROM call\_assignments)

SELECT SUM(S\_PDE)\*2 as Product\_S\_PDE , SUM(M\_PDE)\*2 as Product\_M\_PDE

FROM temp

1. **Out of total calls made for Product E, what is the percentage of calls made at position P1.**
   1. 100%
   2. 85%
   3. 17%
   4. 43%

SELECT ROUND(SUM (

CASE

WHEN P1='product\_e' THEN CALLS

ELSE 0

END)\*100/

SUM(

CASE

WHEN P1= 'product\_e' or P2='product\_e' THEN calls

ELSE 0

END),2)

FROM call\_assignments

1. **Out of total doctors called for product\_W in all sales forces, what is the percentage of doctors being called on for “PRODUCT\_W” by reps in salesforce “SALESFORCE\_SP”**
   1. 100%
   2. 50%
   3. 99%
   4. 49%

WITH temp as

(SELECT \* FROM call\_assignments

WHERE P1 ='product\_w' or P2='product\_w'),

temp1 as

(SELECT \* FROM temp

WHERE SALESFORCE\_ID='salesforce\_sp')

SELECT

(SELECT count(DOC\_ID) FROM temp1)\*100/

(SELECT count(doc\_id) FROM temp)

1. **What percentage of physicians in Quintile Q3 are being called on for “PRODUCT\_W”** 
   1. 44%
   2. 48%
   3. 42%
   4. 46%

WITH temp as(

SELECT \*

FROM PRODUCT\_QUINTILE

WHERE

product\_w\_quintile = '3'),

temp1 as (

SELECT pq.\* from temp as pq

join

call\_assignments as call\_assign on pq.doc\_id= call\_assign.doc\_id

WHERE call\_assign.p2 in ('product\_w') or call\_assign.p1 in ('product\_w'))

SELECT(

(SELECT COUNT(DISTINCT( doc\_id)) FROM temp1)\*100/

(SELECT COUNT(DISTINCT( doc\_id)) FROM temp))

1. **Frequency for quintile Q5 for “PRODUCT\_W” is?** 
   1. 2.8
   2. 2.9
   3. 2.6
   4. 3.0

WITH temp as

(SELECT call\_assign.\* FROM call\_assignments as call\_assign

join product\_quintile as pq

on call\_assign.DOC\_ID=pq.DOC\_ID

WHERE P1='Product\_W' OR P2='Product\_W' AND PRODUCT\_W\_QUINTILE=5)

SELECT

(SELECT SUM(

CASE WHEN P1='Product\_w' THEN 1\*calls

WHEN P2='product\_w' THEN 0.5\* calls

ELSE 0

END) FROM temp)/

(SELECT COUNT(DISTINCT(DOC\_ID)) FROM temp)

1. **Number of P2 calls (000s) given by sales force team “SALESFORCE\_STR” for “PRODUCT\_S” ?**
   1. 24
   2. 35
   3. 36
   4. 22

SELECT SUM(calls) as P2\_Call FROM call\_assignments

WHERE P2='Product\_s' AND SALESFORCE\_ID='salesforce\_str'

GROUP BY P2

1. **What are the total PDEs(000s) for specialty group “1PAIN\_MEDICINE” for “PRODUCT\_M”** 
   1. 259
   2. 49
   3. 12
   4. 102

WITH temp as

(

SELECT call\_assign.\* ,spec\_group FROM call\_assignments as call\_assign

JOIN spec\_specgroup\_mapping as specialty\_group

ON call\_assign.doc\_id=specialty\_group.doc\_id

WHERE spec\_group = ('1pain\_medicine' ))

SELECT

(SELECT SUM(

CASE WHEN P1='Product\_M' THEN calls\*1

WHEN P2='Product\_M' THEN calls\*0.5

ELSE 0

END)FROM temp)

1. **What are the total PDEs (000) and calls (000) for “PRODUCT\_W” in quintile Q5?**
   1. 3,7
   2. 12,13
   3. 7,3
   4. 17,34

WITH temp as

(

SELECT call\_assign.\* FROM call\_assignments as call\_assign

LEFT JOIN product\_quintile as pq

ON call\_assign.doc\_id=pq.doc\_id

WHERE (PRODUCT\_W\_QUINTILE = 5) AND (P1='Product\_w' OR P2='Product\_w'))

SELECT

SUM(

CASE WHEN P1='Product\_W' THEN calls\*1

WHEN P2='Product\_W' THEN calls\*0.5

ELSE 0

END)as PDE , SUM(calls) as Total\_calls FROM temp

1. **Number of doctors common for “PRODUCT\_M” and “PRODUCT\_W”** 
   1. 28846
   2. 28849
   3. 27911
   4. 27910

SELECT COUNT(DISTINCT(doc\_id)) as DOC\_COUNT,P1,P2 FROM call\_assignments

WHERE (P1 ='Product\_M' AND P2 ='Product\_W') OR (P2='Product\_W' AND P2='Product\_M')

GROUP BY P1,P2

1. **Number of doctors being called upon for “PRODUCT\_E”** 
   1. 16107
   2. 14812
   3. 14810
   4. 16105

SELECT COUNT(DISTINCT(DOC\_ID)) as DOC\_COUNT FROM call\_assignments

WHERE P1 ='Product\_E' OR P2 ='Product\_E'

1. **Calculate the PDE ratio of all the products in order “PRODUCT\_M”, ”PRODUCT\_W”, “PRODUCT\_S”, “PRODUCT\_E” for territory “AXBCAECS1”** 
   1. 90%, 10%, 0%, 0%
   2. 0%, 0%, 62%, 38%
   3. 59%, 0%, 41%, 0%
   4. 35%, 5%, 46%, 15%

SELECT SUM(CASE

WHEN P1='Product\_M' THEN calls\*1

WHEN P2='Product\_M' THEN calls\*05

ELSE 0

END)as PDE\_M,

SUM(CASE

WHEN P1='Product\_W' THEN calls\*1

WHEN P2='Product\_W' THEN calls\*05

ELSE 0

END) as PDE\_W,

SUM(CASE

WHEN P1='Product\_S' THEN calls\*1

WHEN P2='Product\_S' THEN calls\*05

ELSE 0

END) as PDE\_S,

SUM(CASE

WHEN P1='Product\_E' THEN calls\*1

WHEN P2='Product\_E' THEN calls\*05

ELSE 0

END) as PDE\_E FROM call\_assignments

WHERE Territory\_id='AXBCAECS1'

**For questions 14-20, write the SQL queries and submit your answers in excel / word format -**

1. Alter table call assignment to add another column called Spec\_group

ALTER TABLE call\_assignments

ADD spec\_group VARCHAR(100)

1. Update spec-group column with appropriate speciality group types using spec to spec group mapping table.

UPDATE call\_assignments

SET spec\_group= group\_map.spec\_group FROM call\_assignments

JOIN spec\_specgroup\_mapping as group\_map

ON call\_assignments.doc\_id=group\_map.doc\_id

1. Calculate the unique and common doctors called for product W and product S. Represent this scenario through a venn diagram.

SELECT DISTINCT DOC\_ID INTO #P\_W

FROM call\_assignments

WHERE

P1='PRODUCT\_W' OR P2='PRODUCT\_W'

SELECT DISTINCT DOC\_ID INTO #P\_S

FROM call\_assignments

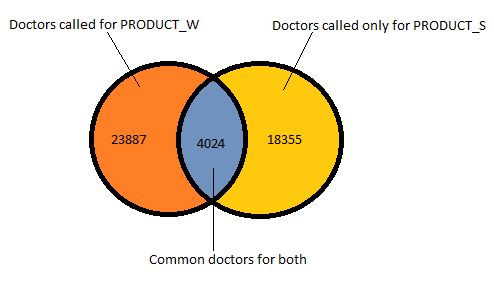
WHERE

P1='PRODUCT\_S' OR P2='PRODUCT\_S'

SELECT \* FROM #P\_S--22379

INTERSECT --4024

SELECT\* FROM #P\_W --27911



1. Generate a summary of unique doctors by areas and specialty group which are being called upon for product S. Illustration shown below -

|  |  |  |
| --- | --- | --- |
| **Area** | **Specialty group** | **Total number of doctors** |
| AXB000000 | 5PRIMARY\_CARE | 1000 |
| AXB000000 | 7ALL\_OTHER\_SPECIALTIES | 400 |

WITH temp as (

SELECT \* FROM call\_assignments

WHERE P1='product\_s' or P2='product\_s')

SELECT area\_id,spec\_group,COUNT (DISTINCT(doc\_id)) as[Total Number of Doctors]FROM temp

WHERE spec\_group is not null

GROUP BY area\_id, spec\_group

ORDER BY 3 DESC;

1. Which area has got the maximum doctors who are being called on for product W in quintile 5?

WITH temp as(

SELECT a.\*,b.product\_w\_quintile

FROM call\_assignments as a

join PRODUCT\_QUINTILE b

ON a.DOC\_ID=b.DOC\_ID

)

SELECT area\_id,COUNT(DISTINCT(doc\_id)) doc FROM temp

WHERE product\_w\_quintile=5 and (p1='product\_w' or p2='product\_w')

GROUP BY area\_id

ORDER BY doc desc

**ANS-AXD000000**

1. Alter table call assignment to add column PDEs\_product\_M. Update PDE\_product\_M with the PDEs values for product M.

ALTER TABLE call\_assignments

ADD PDEs\_prodcut\_M float(50)

UPDATE call\_assignments

SET PDEs\_prodcut\_M = CASE

WHEN p1 in ('product\_m') THEN 1\*CALLS

WHEN p2 in('product\_m') THEN 0.5\*CALLS

ELSE 0

END

FROM call\_assignments

1. Generate a summary of total calls by different selling teams and products. Illustration shown below:

|  |  |  |
| --- | --- | --- |
| **Selling Team** | **Product\_name** | **Total number of calls** |
| SALESFORCE\_SP | PRODUCT\_M | 500 |
| SALESFORCE\_SP | PRODUCT\_S | 500 |

with temp as

(select salesforce\_id,p1 product ,sum(calls) call

from call\_assignments

group by SALESFORCE\_ID,p1),

temp1 as

(select salesforce\_id,P2 product,sum(calls) call

from call\_assignments

where p2<>''

group by SALESFORCE\_ID,p2

),

temp2 as(

select \* from temp

union

select \* from temp1 )

select salesforce\_id,product,sum(call) total\_number\_of\_call

from temp2

group by salesforce\_id,product

order by 1,2,3