DATA WAREHOUSE USING GOOGLE BIGQUERY

PEOPLE ANALYTICS

Google BigQuery is a data warehouse tool which in turn allows SQL operations.

https://cloud.google.com/bigquery/docs/introduction

Login to Google BigQuery Studio using your google workspace account.

https://console.cloud.google.com/bigquery

Note that SANDBOX is a way to utilize Google BigQuery without any enrollment as such. Here, your work/data is retained but queries are in the session only and not allowed to persist with cloud storage. Free for Beginners with limited access as such.

A data analyst is planning to record information shown, after certain processing steps, into a data warehouse. Provide schemas for data warehouse (multidimensional modeling), to be able to store using RDBMS. Narrate OLAP operations on this newly created data warehouse.

Employment statistics in the year of 2024

	EMPLOYMENT STATISTICS					
Employee Type	Company:A		Company:B		Company:C	
	Recruitement	Termination	Recruitement	Termination	Recruitement	Termination
Manager	2	4	14	9	5	5
Employee	20	7	10	6	7	8

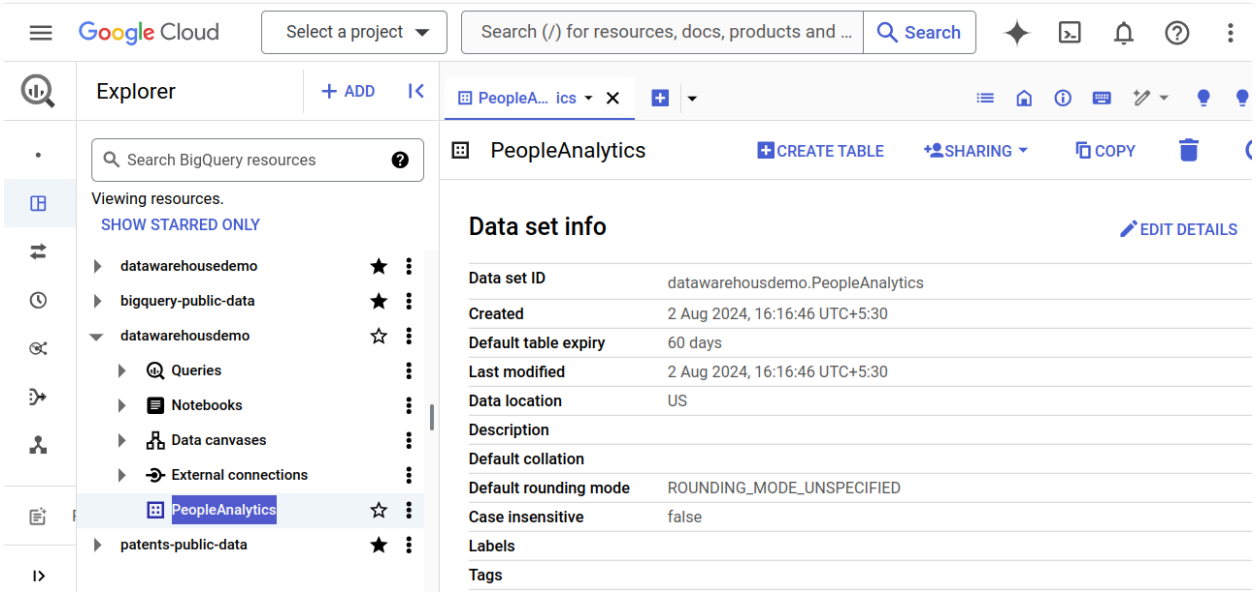
P.S. Note that the companies already had employees in the year of 1993

Create a project

datawarehousedemo

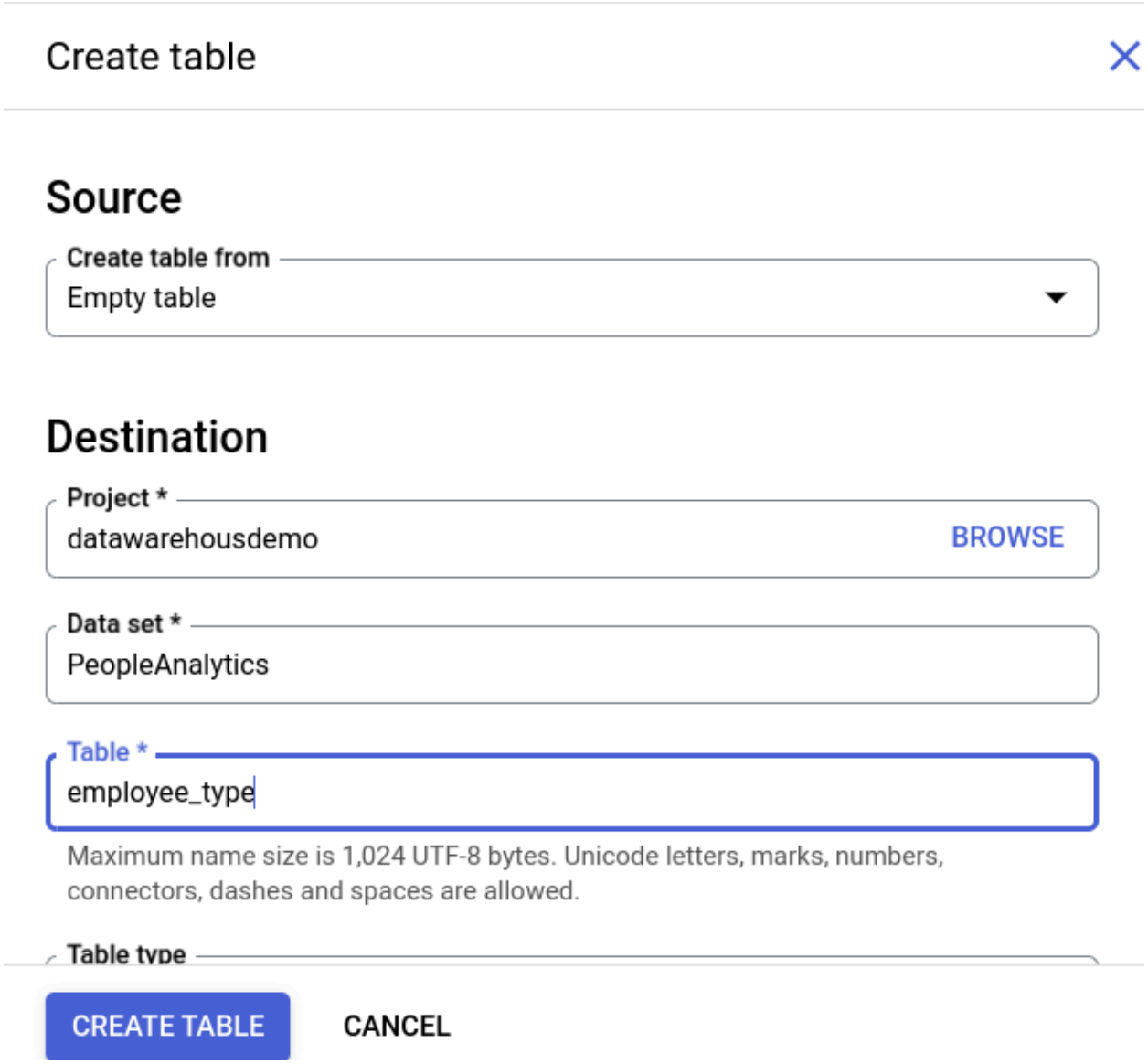
Create a dataset

datawarehousdemo.PeopleAnalytics



Create table

1) **Employee_type (X axis)**



While trying to insert into empty table using SQL ‘insert’ limitation of not being able to perform DML was thrown.

```
insert into
 datawarehousdemo.PeopleAnalytics.employee_type
 (employee_type_id, employee_type_name, employee_type_description)
 values(1,'Manager','Employee who is a manager by job title');
```

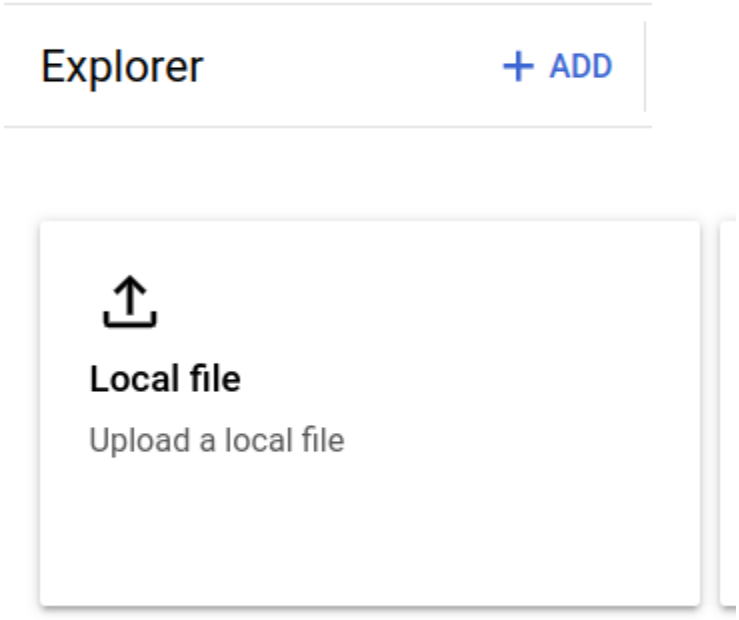
Billing has not been enabled for this project. Enable billing at https://console.cloud.google.com/billing. DML queries are not allowed in the free tier. Set up a billing account to remove this restriction. at [3:1]

Hence

employee_type_id	employee_type_name	employee_type_description
1	Manager	Employee who is a manager by job title
2	GeneralEmployee	Regular employee who may be assigned any given task per day.

employee_type.csv

employee_type_id,employee_type_name,employee_type_description
1,Manager,"Employee who is a manager by job title."
2,GeneralEmployee,"Regular employee who may be assigned any given task per day."



Upload csv file content and verify the records in employee_type table.

```
select * from datawarehousdemo.PeopleAnalytics.employee_type;
```

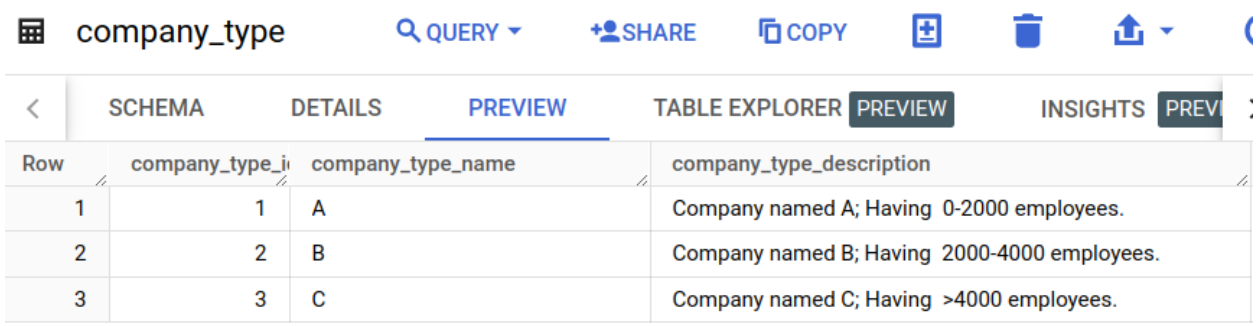
JOB INFORMATION | RESULTS | CHART | JSON | EXECUTION DETAILS | E

Row	employee_type_id	employee_type_name	employee_type_description
1	1	Manager	Employee who is a manager by job title
2	2	GeneralEmployee	Regular employee who may be assigned any given task p...

2) Company_type (Y axis)

company_type_id,company_type_name,company_type_description
1,A,"Company named A; Having 0-2000 employees."
2,B,"Company named B; Having 2000-4000 employees."
3,C,"Company named C; Having >4000 employees."

Utilise “+ADD” button to create table and insert data from file same single step. Verify with the preview tab or SQL results way.



Row	company_type_i	company_type_name	company_type_description
1	1	A	Company named A; Having 0-2000 employees.
2	2	B	Company named B; Having 2000-4000 employees.
3	3	C	Company named C; Having >4000 employees.

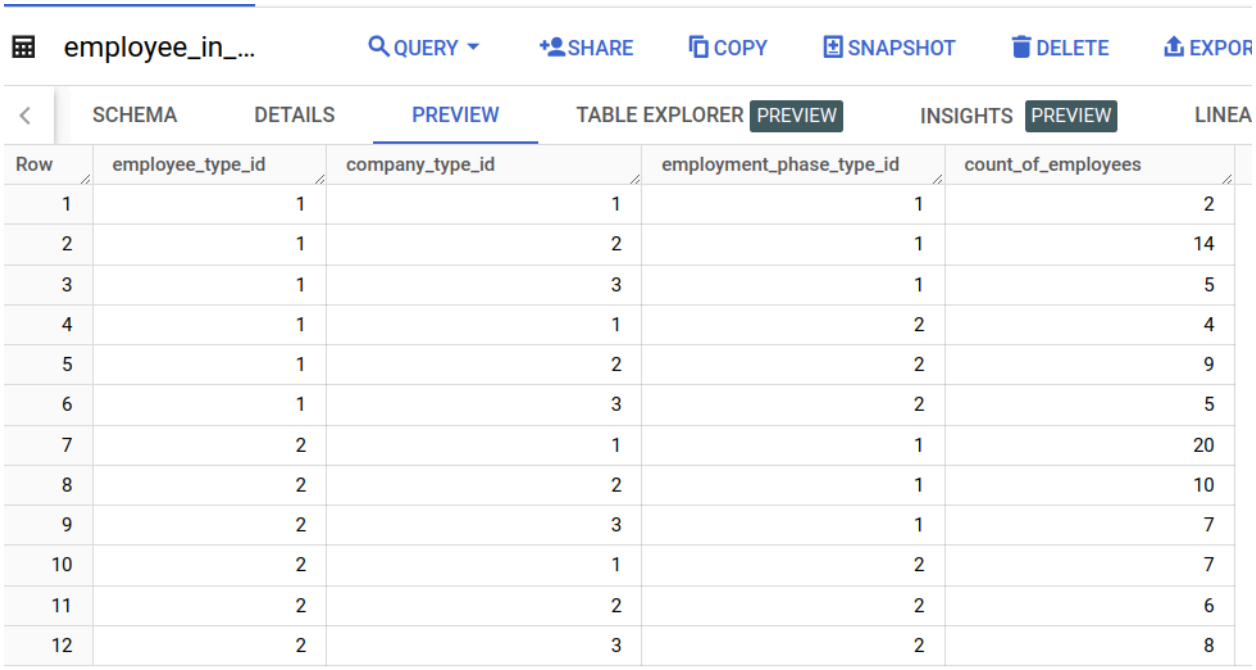
3) Employement_phase_type (Z axis)

employment_phase_type_id,employment_phase_type_name,employment_phase_type_description
1,Recruitement,"Entry to the company"
2,Termination,"Exit from the company"

Row	employment_phase_type_id	employment_phase_type_name	employment_phase_type_description
1	1	Recruitement	Entry to the company
2	2	Termination	Exit from the company

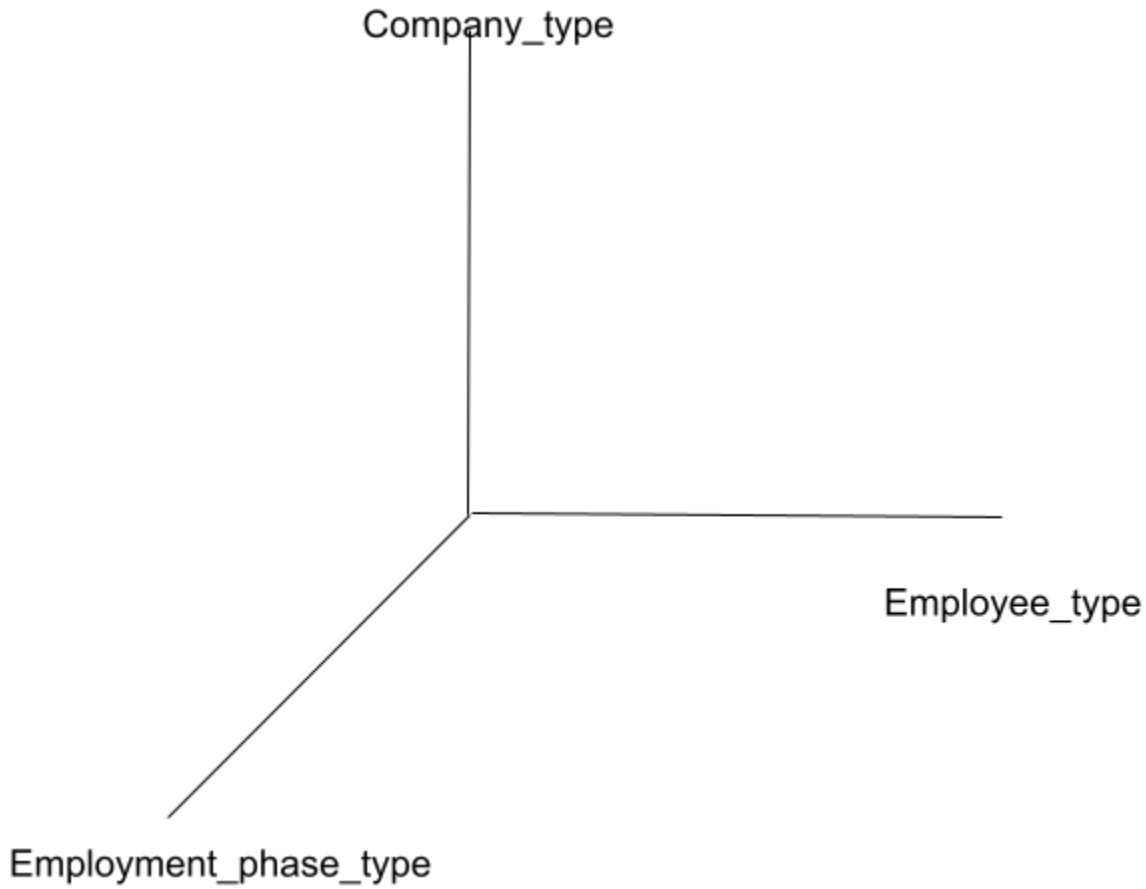
4) employee_in_out_facts

employee_type_id,company_type_id,employment_phase_type_id,count_of_employees
1,1,1,2
1,1,2,4
1,2,1,14
1,2,2,9
1,3,1,5
1,3,2,5
2,1,1,20
2,1,2,7
2,2,1,10
2,2,2,6
2,3,1,7
2,3,2,8



Row	employee_type_id	company_type_id	employment_phase_type_id	count_of_employees
1	1	1	1	2
2	1	2	1	14
3	1	3	1	5
4	1	1	2	4
5	1	2	2	9
6	1	3	2	5
7	2	1	1	20
8	2	2	1	10
9	2	3	1	7
10	2	1	2	7
11	2	2	2	6
12	2	3	2	8

Diagram



Operations

(1) How many managers were recruited?

```
select sum(count_of_employees) from
datawarehousdemo.PeopleAnalytics.employee_in_out_facts
where employee_type_id=1 and employment_phase_type_id=1;
```

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(2) How many employees were terminated in type A companies?

```
select sum(count_of_employees) from
datawarehousdemo.PeopleAnalytics.employee_in_out_facts
where company_type_id=1 and employment_phase_type_id=2;
```

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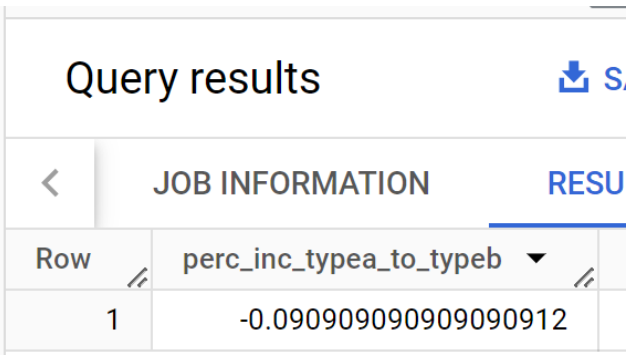
P.s. Considering employees both manager and non-manager.

(3) What was the overall increase in recruitment in type A companies?

As we only have data available for a single year i.e. 2024. We don't have anything to compare with the recruitment in type A companies. We may be able to use baseline with either type B companies or type C companies.

Let's find out the overall increase in recruitment in type A companies to type B companies.

```
select (inner_table.typeacomp-inner_table.typebcomp)/inner_table.typeacomp as
perc_inc_typea_to_typeb from
(select (select sum(count_of_employees) from
datawarehousdemo.PeopleAnalytics.employee_in_out_facts
where company_type_id=1 and employment_phase_type_id=1) as typeacomp, (select
sum(count_of_employees) from datawarehousdemo.PeopleAnalytics.employee_in_out_facts
where company_type_id=2 and employment_phase_type_id=1) as typebcomp) as inner_table;
```




```
select sum(count_of_employees) from
datawarehousdemo.PeopleAnalytics.employee_in_out_facts
where company_type_id=1 and employment_phase_type_id=1;
```

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```
select sum(count_of_employees) from
datawarehousdemo.PeopleAnalytics.employee_in_out_facts
where company_type_id=2 and employment_phase_type_id=1;
```

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(22-24)/22 =-0.0909

The negative symbol shows that there was actually a percentage decrease of company types A to company types B overall recruitment.

-9.1 %

(4) If the total number of managers at the beginning of 2024 was 65, then what was the percentage increase in it at the end of 2024?

Newly recruited managers

```
select sum(count_of_employees) from
datawarehousdemo.PeopleAnalytics.employee_in_out_facts
where employee_type_id=1 and employment_phase_type_id=1 ;
```

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Managers terminated from the job/post

```
select sum(count_of_employees) from
datawarehousdemo.PeopleAnalytics.employee_in_out_facts
where employee_type_id=1 and employment_phase_type_id=2 ;
```

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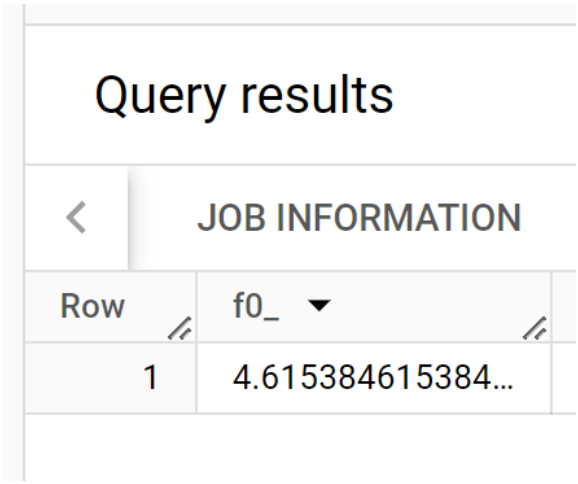
Hence, there were 21-18=3 only 3 managers were added to the existing count that is 65 at the beginning of 2024.

Percentage increase
(68-65)/65 = 0.046

4.6 %

```
select
(((((select sum(count_of_employees) from
datawarehousdemo.PeopleAnalytics.employee_in_out_facts
where employee_type_id=1 and employment_phase_type_id=1))
```

```
-((select sum(count_of_employees) from
datawarehousdemo.PeopleAnalytics.employee_in_out_facts where employee_type_id=1
and employment_phase_type_id=2))+65)-65)/65)*100;
```



(5) Net employment about managers overall across all companies

21-18=3

```
select employment_phase_type_id,  sum(count_of_employees) from
datawarehousdemo.PeopleAnalytics.employee_in_out_facts
where employee_type_id=1
group by employment_phase_type_id
```


```
select (select sum(count_of_employees) from
datawarehousdemo.PeopleAnalytics.employee_in_out_facts
```

```
where employee_type_id=1 and employment_phase_type_id=1)-
(select sum(count_of_employees) from
datawarehousdemo.PeopleAnalytics.employee_in_out_facts
where employee_type_id=1 and employment_phase_type_id=2) as net_employment;
```