# NEW YORK CENSUS EMPLOYMENT IN TECHNOLOGY TRENDS

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## Abstract

This project has executed a comprehensive analysis of the census data from 2014, 2019, 2020. The data that was implemented in this project evaluated the future trends in employment in the areas of technology. Using the important minorities in age, gender, and race in New York, the analysis was determined after cross-referencing these data demographics in employment in technology. This project generated SSRS reports, SSAS and ETL SSAS, to accomplish the goal to analyze the trends in employment in technology. SSAS is Microsoft SQL Server's Analysis Services. This is online analytical processing (OLAP), data mining, and reporting tool used in this project to demonstrate the data demographics. The project models the ETL SSAS through the data extractions, transformations, and loading. The use of Power BI had shown the results of the project's SSAS implementation of the New York census data demographics. This final analysis has provided a solution to a clear outlook in the next census in New York, for the people that will be employed in technology.

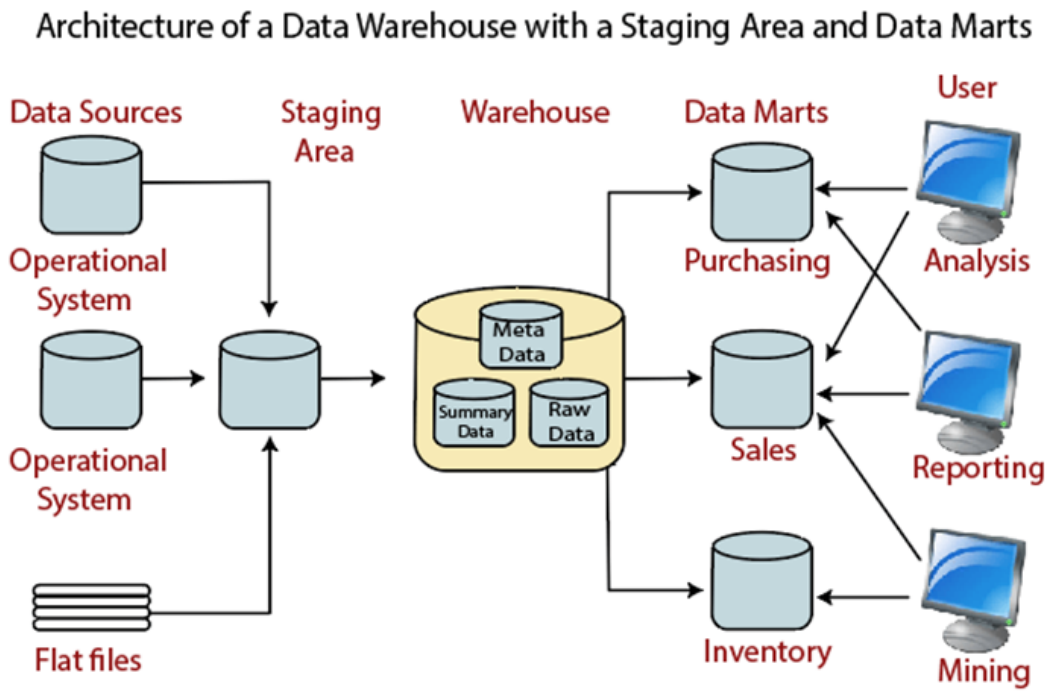
## Introduction

The purpose of this course project is to analyze the future trends in employment in the areas of technology in New York. This purpose was modeled by using databases from census employment in technology in New York from 2014 to 2020. The project demonstrates ETL SSAS, SSIS, and SSRS Reports to support this analysis. This project focused on using the database warehouse architecture to organize and execute the census databases. The project cross references employment in technology in three important areas : age, gender, and ethnicity. These groups are best fit to be analyzed for this purpose because it was the foundation of categories in this census. This is how the project completed this purpose of analyzing the future trends in employment in the areas of technology in New York. This project has informed and taught the readers how to analyze future trends using ETL SSAS, SSIS, and SSRS designs. The audience of this project report is open to advanced experience and entry level experience in the knowledge of data analysis.

# Data Warehouse Architecture

A Data Warehouse Architecture is a method of collecting, storing and sorting data. In this project, Data Warehouse Architecture with a Staging Area and Data Marts was used. In the Staging Area, the data was extracted from the data source, transformed into the standard format and loaded into the data warehouse after cleansing.The data was used for reporting and analysis of future trends in technology in minorities using census by adding Data Marts.

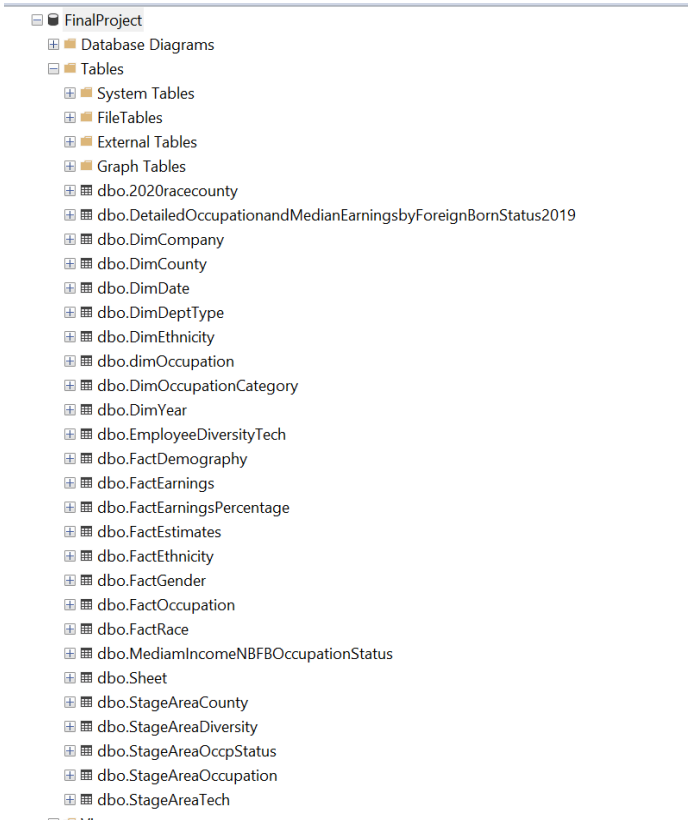
*Figure 1*



# Database Warehouse

Using the Microsoft SQL Server Management Studio 18, the data warehouse named FINALPROJECT was created for this project. Inside the database FINALPROJECT exists 5 Database Diagrams, 5 datasets, 5 Staging Area Tables, 8 Dim Tables, and 8 Fact Tables.

*Figure 2*



**SQL Queries:**

Following SQL queries were written to create 5 Staging Area Tables, 8 Dim Tables, and 8 Fact Tables.

- Statements to Create, Drop, Alter and Update Table StageAreaDiversity.

```
drop table dbo.StageAreaDiversity

CREATE TABLE [dbo].[StageAreaDiversity](
[StageAreaDiversityKey] int IDENTITY(1,1) NOT NULL PRIMARY KEY,
    [DateKey] int NULL,
        [CompKey] int NULL,
        [EthKey] int NULL,
    [date] smallint NULL,
    [Type] nvarchar (max) NULL,
    [Company] nvarchar (max) NULL,
    [Male] float NULL,
    [Female] float NULL,
    [White] float NULL,
    [Asian] float NULL,
    [Latino] float NULL,
    [Black] float NULL,
    [Multi] float NULL,
        [Non_Binary] float null,
    [Undeclared] float NULL,
)

ALTER TABLE StageAreaDiversity
ADD
FOREIGN KEY (CompKey)
REFERENCES DimCompany (CompKey);

ALTER TABLE StageAreaDiversity
ADD
FOREIGN KEY (DateKey)
REFERENCES DimDate(Datekey);

ALTER TABLE StageAreaDiversity
ADD
FOREIGN KEY (EthKey)
REFERENCES FactEthnicity(EthKey);


UPDATE dbo.StageAreaDiversity
SET dbo.StageAreaDiversity.CompKey = dbo.DimCompany.CompKey
FROM dbo.EmployeeDiversityTech
INNER JOIN dbo.DimCompany
ON (dbo.DimCompany.Company = dbo.EmployeeDiversityTech.Company)

UPDATE dbo.StageAreaDiversity
SET dbo.StageAreaDiversity.Datekey = dbo.DimDate.DateKey
FROM dbo.EmployeeDiversityTech
INNER JOIN dbo.DimDate
ON (dbo.DimDate.date = dbo.EmployeeDiversityTech.Date)

UPDATE dbo.StageAreaDiversity
SET dbo.StageAreaDiversity.EthKey = dbo.FactEthnicity.EthKey
FROM dbo.EmployeeDiversityTech
INNER JOIN dbo.FactEthnicity
ON (dbo.FactEthnicity.Asian = dbo.EmployeeDiversityTech.Asian)
```

- Statements to Create and Drop Tables DimDate and DimCompany.
- Statements to Create, Drop, Alter and Update Table FactEthnicity.

```
drop table dbo.DimDate

CREATE TABLE    [dbo].[DimDate](
[DateKey] INT IDENTITY(1,1) NOT NULL primary key,
        [Date] smallint  NULL)

-------------------------------------------------------------------------------------
Drop table dbo.DimCompany

Create table dbo.DimCompany (
 CompKey int IDENTITY(1,1) NOT NULL primary key,
 Type nvarchar(max) null,
 Company nvarchar(max) null)

 -------------------------------------------------------------------------------------
 drop table dbo.FactEthnicity

 Create table dbo.FactEthnicity(
EthKey int IDENTITY(1,1) NOT NULL PRIMARY KEY,
Datekey int null,
CompKey int null,
Male float null,
Female float null,
White float null,
Asian float null,
Latino float null,
Black float null,
Multi float null,
Non_Binary float null,
Undeclared float null,
)

ALTER TABLE FactEthnicity
ADD
FOREIGN KEY (CompKey)
REFERENCES DimCompany (CompKey);

ALTER TABLE FactEthnicity
ADD
FOREIGN KEY (DateKey)
REFERENCES DimDate(Datekey);



UPDATE dbo.FactEthnicity
SET dbo.FactEthnicity.CompKey = dbo.DimCompany.CompKey
FROM dbo.StageAreaDiversity
INNER JOIN dbo.DimCompany
ON (dbo.DimCompany.Company = dbo.StageAreaDiversity.Company)

UPDATE dbo.FactEthnicity
SET dbo.FactEthnicity.Datekey = dbo.DimDate.DateKey
FROM dbo.StageAreaDiversity
INNER JOIN dbo.DimDate
ON (dbo.DimDate.date = dbo.StageAreaDiversity.Date)
```

- Statements to Create, Drop, Alter and Update Table StageAreaTech.

```
Create TABLE dbo.StageAreaTech(
StageAreaTechKey int IDENTITY(1,1) NOT NULL PRIMARY KEY,
DemographyKey int null,
YearKey int null,
DeptKey int null,
EthnicityKey int null,
Genderkey int null,
Year nvarchar(max) NULL,
Dept_id int NULL,
Dept_id2 int NULL,
Dept_id3 int NULL,
Dept_name nvarchar(max) NULL,
Ethnicity_id int NULL,
EthnicityType nvarchar(max) NULL,
Gender nvarchar(max) NULL,
Gender_id int NULL,
Male float NULL,
Female float NULL,
Total_Male float NULL,
Total_Female float NULL,
Demography int NULL,
Distribution_gender float NULL,
Total_Distribution float NULL
)



ALTER TABLE StageAreaTech
ADD
FOREIGN KEY (Genderkey)
REFERENCES FactGender (Genderkey);

ALTER TABLE StageAreaTech
ADD
FOREIGN KEY (DeptKey)
REFERENCES DimDeptType (DeptKey);

ALTER TABLE StageAreaTech
ADD
FOREIGN KEY (YearKey)
REFERENCES DimYear (YearKey);

ALTER TABLE StageAreaTech
ADD
FOREIGN KEY (EthnicityKey)
REFERENCES DimEthnicity (EthnicityKey);

ALTER TABLE StageAreaTech
ADD
FOREIGN KEY (DemographyKey)
REFERENCES FactDemography (DemographyKey);
```

```
UPDATE dbo.StageAreaTech
SET dbo.StageAreaTech.DeptKey = dbo.DimDeptType.DeptKey
FROM dbo.Sheet
INNER JOIN dbo.DimDeptType
ON (dbo.DimDeptType.Dept_id = dbo.Sheet.Dept_id)



UPDATE dbo.StageAreaTech
SET dbo.StageAreaTech.YearKey = dbo.DimYear.YearKey
FROM dbo.Sheet
INNER JOIN dbo.DimYear
ON (dbo.DimYear.Year = dbo.Sheet.year)


UPDATE dbo.StageAreaTech
SET dbo.StageAreaTech.EthnicityKey = dbo.DimEthnicity.EthnicityKey
FROM dbo.Sheet
INNER JOIN dbo.DimEthnicity
ON (dbo.DimEthnicity.Ethnicity_id = dbo.Sheet.Etchnicity_id)

UPDATE dbo.StageAreaTech
SET dbo.StageAreaTech.Genderkey = dbo.FactGender.Genderkey
FROM dbo.Sheet
INNER JOIN dbo.FactGender
ON (dbo.FactGender.Gender_id = dbo.Sheet.Gender_id)

UPDATE dbo.StageAreaTech
SET dbo.StageAreaTech.DemographyKey = dbo.FactDemography.DemographyKey
FROM dbo.Sheet
INNER JOIN dbo.FactDemography
ON (dbo.FactDemography.Demography = dbo.Sheet.Demography)
```

- Statements to Create and Drop Tables DimYear, DimDeptType, and DimEthnicity.

```
drop TABLE dbo.DimYear

CREATE TABLE dbo.DimYear(
        YearKey int IDENTITY(1,1) NOT NULL Primary key,
        Year nvarchar(max) NULL)

-------------------------------------------------------------------------------------

 drop TABLE dbo.DimDeptType

CREATE TABLE dbo.DimDeptType (
DeptKey int IDENTITY(1,1) NOT NULL Primary key,
Dept_id int  NULL,
Dept_id2 int NULL,
Dept_id3 int NULL,
 Dept_name nvarchar(max) NULL)

-------------------------------------------------------------------------------------

 drop table dbo.DimEthnicity

CREATE TABLE dbo.DimEthnicity(
    EthnicityKey int IDENTITY(1,1) not null Primary key,
        Ethnicity_id int NULL,
        EthnicityType nvarchar(max) NULL,
        Gender nvarchar(max) NULL)

-------------------------------------------------------------------------------------
```

- Statements to Create, Drop, Alter and Update Tables FactGender and FactDemography..

```
 drop table dbo.FactGender

 Create  table dbo.FactGender(
Genderkey int IDENTITY(1,1) NOT NULL PRIMARY KEY,
EthnicityKey int null,
DeptKey int null,
Gender_id int NULL,
Female float NULL,
Male float NULL,
Total_Male float null,
Total_Female float null,
)

ALTER TABLE FactGender
ADD
FOREIGN KEY (EthnicityKey)
REFERENCES DimEthnicity (EthnicityKey);

ALTER TABLE FactGender
ADD
FOREIGN KEY (DeptKey)
REFERENCES DimDeptType (DeptKey);



UPDATE dbo.FactGender
SET dbo.FactGender.DeptKey = dbo.DimDeptType.DeptKey
FROM dbo.StageAreaTech
INNER JOIN dbo.DimDeptType
ON (dbo.DimDeptType.Dept_id = dbo.StageAreaTech.Dept_id)

UPDATE dbo.FactGender
SET dbo.FactGender.EthnicityKey = dbo.DimEthnicity.EthnicityKey
FROM dbo.StageAreaTech
INNER JOIN dbo.DimEthnicity
ON (dbo.DimEthnicity.Ethnicity_id = dbo.StageAreaTech.Ethnicity_id)


--------------------------------------------------------------------------------------
```

```
  drop table dbo.FactDemography

Create table dbo.FactDemography(
DemographyKey int IDENTITY(1,1) NOT NULL PRIMARY KEY,
YearKey int null,
DeptKey int null,
Genderkey int null,
Demography int NULL,
Distribution_Gender float null,
Total_Distribution float null
)

ALTER TABLE FactDemography
ADD
FOREIGN KEY (Genderkey)
REFERENCES FactGender (Genderkey);

ALTER TABLE FactDemography
ADD
FOREIGN KEY (DeptKey)
REFERENCES DimDeptType (DeptKey);

ALTER TABLE FactDemography
ADD
FOREIGN KEY (YearKey)
REFERENCES DimYear (YearKey);



UPDATE dbo.FactDemography
SET dbo.FactDemography.DeptKey = dbo.DimDeptType.DeptKey
FROM dbo.StageAreaTech
INNER JOIN dbo.DimDeptType
ON (dbo.DimDeptType.Dept_id = dbo.StageAreaTech.Dept_id)


UPDATE dbo.FactDemography
SET dbo.FactDemography.YearKey = dbo.DimYear.YearKey
FROM dbo.StageAreaTech
INNER JOIN dbo.DimYear
ON (dbo.DimYear.Year = dbo.StageAreaTech.Year)


UPDATE dbo.FactDemography
SET dbo.FactDemography.Genderkey = dbo.FactGender.Genderkey
FROM dbo.StageAreaTech
INNER JOIN dbo.FactGender
ON (dbo.FactGender.Gender_id = dbo.StageAreaTech.Gender_id)
```

- Statements to Create, Drop, Alter and Update Table StageAreaCounty.

```
Drop table dbo.StageAreaCounty

Create TABLE dbo.StageAreaCounty(
StageAreaCountyKey int IDENTITY(1,1) not null Primary key,
CountyKey int null,
RaceKey int null,
County nvarchar(max) null,
White float null,
Black float null,
Indian float null,
Asian float null,
Pacific nvarchar(max) null,
Other float null )


ALTER TABLE StageAreaCounty
ADD
FOREIGN KEY (CountyKey)
REFERENCES DimCounty (CountyKey);

ALTER TABLE StageAreaCounty
ADD
FOREIGN KEY (RaceKey)
REFERENCES FactRace (RaceKey);



UPDATE dbo.StageAreaCounty
SET dbo.StageAreaCounty.CountyKey = dbo.DimCounty.CountyKey
FROM dbo.[2020racecounty]
INNER JOIN dbo.DimCounty
ON (dbo.[2020racecounty].County = dbo.DimCounty.County);

UPDATE dbo.StageAreaCounty
SET dbo.StageAreaCounty.RaceKey = dbo.FactRace.RaceKey
FROM dbo.[2020racecounty]
INNER JOIN dbo.FactRace
ON (dbo.[2020racecounty].Asian = dbo.FactRace.Asian);
```

---

- Statements to Create and Drop Table DimCounty.
- Statements to Create, Drop, Alter and Update Table FactRace.

```
Drop table dbo.DimCounty

Create table dbo.DimCounty (
CountyKey int IDENTITY(1,1) NOT NULL PRIMARY KEY,
County nvarchar(max) null
)


-----------------------------------------------------------------------------------------------------------------------
Drop table dbo.FactRace

Create table dbo.FactRace (
RaceKey int IDENTITY(1,1) NOT NULL PRIMARY KEY,
CountyKey int null,
White float null,
Black float null,
Indian float null,
Asian float null,
Pacific nvarchar(max) null,
Other float null
)

ALTER TABLE FactRace
ADD
FOREIGN KEY (CountyKey)
REFERENCES DimCounty (CountyKey);


UPDATE dbo.FactRace
SET dbo.FactRace.CountyKey = dbo.DimCounty.CountyKey
FROM dbo.StageAreaCounty
INNER JOIN dbo.DimCounty
ON (dbo.StageAreaCounty.County = dbo.DimCounty.County);
```

- Statements to Create, Drop, Alter and Update Table StageAreaOccupation.

```
-----------------------------------------------------------------------------------------------------------------------

drop table dbo.StageAreaOccupation

Create TABLE dbo.StageAreaOccupation(
StageAreaOccupationKey int IDENTITY(1,1) not null Primary key,
OccupationCategorykey int null,
OccupationKey int null,
EarningsKey int null,
EarningsPercentageKey int null,
 OccupationalCategory   nvarchar(max) null,
 OccupationType   nvarchar(max) null,
 FT_Occupation_est  float null,
 FT_Occupation_est_MOE  float null,
 FT_Occupation_N_Born  float null,
 FT_Occupation_N_Born_est  float null,
 FT_Occupation_N_Born_Percentage  float null,
 FT_Occupation_N_Born_Perctenace_MOE  float null,
 FT_Occupation_F_Born_est  float null,
 FT_Occupation_F_Born_MOE  float null,
 FT_Occupation_N_Born_Percentage3  float null,
 Total_M_Earnings  float null,
 Total_M_Earnings_MOE  float null,
 M_EarningsN_Born_est  float null,
 M_EarningsN_Born_MOE  float null,
 M_EarningsF_Born_est  float null,
 M_EarningsF_Born_MOE  float null,
 F_Born_earningspercentageN_Born_est  float null,
 F_Born_earningspercentageN_Born_MOE  float null
)

ALTER TABLE StageAreaOccupation
ADD
FOREIGN KEY (OccupationCategorykey)
REFERENCES DimOccupationCategory (OccupationCategorykey);

ALTER TABLE StageAreaOccupation
ADD
FOREIGN KEY (OccupationKey)
REFERENCES FactOccupation (OccupationKey);

ALTER TABLE StageAreaOccupation
ADD
FOREIGN KEY (EarningsKey)
REFERENCES FactEarnings (EarningsKey);

ALTER TABLE StageAreaOccupation
ADD
FOREIGN KEY (EarningsPercentageKey)
REFERENCES FactEarningsPercentage (EarningsPercentageKey);
```

```
UPDATE dbo.StageAreaOccupation
SET dbo.StageAreaOccupation.OccupationCategorykey = dbo.DimOccupationCategory.OccupationCategorykey
FROM dbo.MediamIncomeNBFBOccupationStatus
INNER JOIN dbo.DimOccupationCategory
ON (dbo.MediamIncomeNBFBOccupationStatus.FT_Occupation_est = dbo.DimOccupationCategory.FT_Occupation_est);

UPDATE dbo.StageAreaOccupation
SET dbo.StageAreaOccupation.OccupationKey = dbo.FactOccupation.OccupationKey
FROM dbo.MediamIncomeNBFBOccupationStatus
INNER JOIN dbo.FactOccupation
ON (dbo.MediamIncomeNBFBOccupationStatus.FT_Occupation_N_Born_est = dbo.FactOccupation.FT_Occupation_N_Born_est);

UPDATE dbo.StageAreaOccupation
SET dbo.StageAreaOccupation.EarningsKey = dbo.FactEarnings.EarningsKey
FROM dbo.MediamIncomeNBFBOccupationStatus
INNER JOIN dbo.FactEarnings
ON (dbo.MediamIncomeNBFBOccupationStatus.Total_M_Earnings = dbo.FactEarnings.Total_M_Earnings);

UPDATE dbo.StageAreaOccupation
SET dbo.StageAreaOccupation.EarningsPercentageKey = dbo.FactEarningsPercentage.EarningsPercentageKey
FROM dbo.MediamIncomeNBFBOccupationStatus
INNER JOIN dbo.FactEarningsPercentage
ON (dbo.MediamIncomeNBFBOccupationStatus.[Foreign Born's earnings as a percentage of Native Born's earning] = dbo.FactEarningsPercentage.F_Born_earningspercentageN_Born_est);
```

- Statements to Create and Drop Table DmOccupationCategory.
- Statements to Create, Drop, and Update Tables FactOccupation and FactEarnings.

```
drop table DimOccupationCategory

Create TABLE dbo.DimOccupationCategory(
OccupationCategorykey int IDENTITY(1,1) NOT NULL PRIMARY KEY,
Occupation_Category nvarchar(max) null,
[Occupation Type] nvarchar(max) NULL,
[FT_Occupation_est] nvarchar(max) NULL,
[FT_Occupation_est_MOE] nvarchar(max) NULL
)
 ----------------------------------------------------------------------------------------------------------------------------------------------------------

 drop table FactOccupation

CREATE TABLE [dbo].[FactOccupation](
    [OccupationKey] int IDENTITY(1,1) NOT NULL PRIMARY KEY,
    [OccupationCategorykey] int NULL,
    [FT_Occupation_N_Born_est] float NULL,
    [FT_Occupation_N_Born_Percentage] float NULL,
    [FT_Occupation_N_Born_Percentage_MOE] float NULL,
    [FT_Occupation_F_Born_est] float NULL,
    [FT_Occupation_F_Born_Percentage_MOE] float NULL,
    [FT_Occupation_N_Born_Percentage3] float NULL,

FOREIGN KEY (OccupationCategorykey) REFERENCES DimOccupationCategory(OccupationCategorykey)
)

UPDATE dbo.FactOccupation
SET dbo.FactOccupation.OccupationCategorykey = dbo.DimOccupationCategory.OccupationCategorykey
FROM dbo.StageAreaOccupation
INNER JOIN dbo.DimOccupationCategory
ON (dbo.StageAreaOccupation.FT_Occupation_est = dbo.DimOccupationCategory.FT_Occupation_est);

----------------------------------------------------------------------------------------------------------------------------------------------------------

 drop table dbo.FactEarnings;

CREATE TABLE [dbo].[FactEarnings](
    [EarningsKey] int IDENTITY(1,1) NOT NULL PRIMARY KEY,
    [OccupationCategorykey] int NULL,
    [Total_M_Earnings] float NULL,
    [Total_M_Earnings_MOE] float NULL,
    [M_Earning N_Born_est] float NULL,
    [M_Earning N_Born_MOE] float NULL,
    [M_Earning F_Born_est] float NULL,
    [M_Earning F_Born_MOE] float NULL,

FOREIGN KEY (OccupationCategorykey) REFERENCES DimOccupationCategory(OccupationCategorykey)
)

UPDATE dbo.FactEarnings
SET dbo.FactEarnings.OccupationCategorykey = dbo.DimOccupationCategory.OccupationCategorykey
FROM dbo.StageAreaOccupation
INNER JOIN dbo.DimOccupationCategory
ON (dbo.StageAreaOccupation.FT_Occupation_est = dbo.DimOccupationCategory.FT_Occupation_est);
```

- Statements to Create, Drop, and Update Table FactEarningsPercentage.

```
-----------------------------------------------------------------------------------------------------------------------
drop table FactEarningsPercentage;

CREATE TABLE [dbo].[FactEarningsPercentage](
    [EarningsPercentageKey] int IDENTITY(1,1) NOT NULL PRIMARY KEY,
    [EarningsKey] int NULL,
    [OccupationKey] int NULL,
    [OccupationCategorykey] int NULL,
    F_Born_earningspercentageN_Born_est  float null,
    F_Born_earningspercentageN_Born_MOE  float null,

FOREIGN KEY (OccupationCategorykey) REFERENCES DimOccupationCategory(OccupationCategorykey),

FOREIGN KEY (OccupationKey) REFERENCES FactOccupation(OccupationKey),

FOREIGN KEY (EarningsKey) REFERENCES FactEarnings(EarningsKey)

 )


UPDATE dbo.FactEarningsPercentage
SET dbo.FactEarningsPercentage.OccupationCategorykey = dbo.DimOccupationCategory.OccupationCategorykey
FROM dbo.StageAreaOccupation
INNER JOIN dbo.DimOccupationCategory
ON (dbo.StageAreaOccupation.FT_Occupation_est = dbo.DimOccupationCategory.FT_Occupation_est);


UPDATE dbo.FactEarningsPercentage
SET dbo.FactEarningsPercentage.OccupationKey = dbo.FactOccupation.OccupationKey
FROM dbo.StageAreaOccupation
INNER JOIN dbo.FactOccupation
ON (dbo.StageAreaOccupation.FT_Occupation_N_Born_est = dbo.FactOccupation.FT_Occupation_N_Born_est);


UPDATE dbo.FactEarningsPercentage
SET dbo.FactEarningsPercentage.EarningsKey = dbo.FactEarnings.EarningsKey
FROM dbo.StageAreaOccupation
INNER JOIN dbo.FactEarnings
ON (dbo.StageAreaOccupation.Total_M_Earnings = dbo.FactEarnings.Total_M_Earnings);
```

- Statements to Create, Drop, Alter and Update Table StageAreaOccpStatus.

```
drop table dbo.StageAreaOccpStatus

Create table dbo.StageAreaOccpStatus (
StageAreaOccpStatusKey int IDENTITY(1,1) NOT NULL PRIMARY KEY,
EstimateKey int null,
Occupationkey int null,
 Occupational_Category nvarchar(max) null,
 Occupation_Type nvarchar(max) null,
 TotalEstimate int null,
 TotalMOE int null,
 NBEstimate nvarchar(max) null,
 NBMOE nvarchar(max) null,
 NBPercent nvarchar(max) null,
 NBMOEPercent nvarchar(max) null,
 FBEstimate nvarchar(max) null,
 FBMOE nvarchar(max) null,
 FBPercent nvarchar(max) null,
 FBMOEPercent nvarchar(max) null,
)


ALTER TABLE StageAreaOccpStatus
ADD
FOREIGN KEY (EstimateKey)
REFERENCES FactEstimates (EstimateKey);


ALTER TABLE StageAreaOccpStatus
ADD
FOREIGN KEY (Occupationkey)
REFERENCES dimOccupation (Occupationkey);




UPDATE dbo.StageAreaOccpStatus
SET dbo.StageAreaOccpStatus.EstimateKey = dbo.FactEstimates.EstimateKey
FROM dbo.DetailedOccupationandMedianEarningsbyForeignBornStatus2019
INNER JOIN dbo.FactEstimates
ON (dbo.DetailedOccupationandMedianEarningsbyForeignBornStatus2019.TotalEstimate = dbo.FactEstimates.TotalEstimate);

UPDATE dbo.StageAreaOccpStatus
SET dbo.StageAreaOccpStatus.Occupationkey = dbo.dimOccupation.Occupationkey
FROM dbo.DetailedOccupationandMedianEarningsbyForeignBornStatus2019
INNER JOIN dbo.dimOccupation
ON (dbo.dimOccupation.Occupational_Category = dbo.DetailedOccupationandMedianEarningsbyForeignBornStatus2019.Occupational_Category1);
```

- Statements to Create and Drop Table DimOccupation.
- Statements to Create, Drop, Alter and Update Table FactEstimate.

---

```
Drop table dbo.dimOccupation

Create TABLE dbo.dimOccupation(
Occupationkey int IDENTITY(1,1) NOT NULL PRIMARY KEY,
Occupational_Category nvarchar(max) NULL,
Occupation_Type nvarchar(max) NULL
)
```

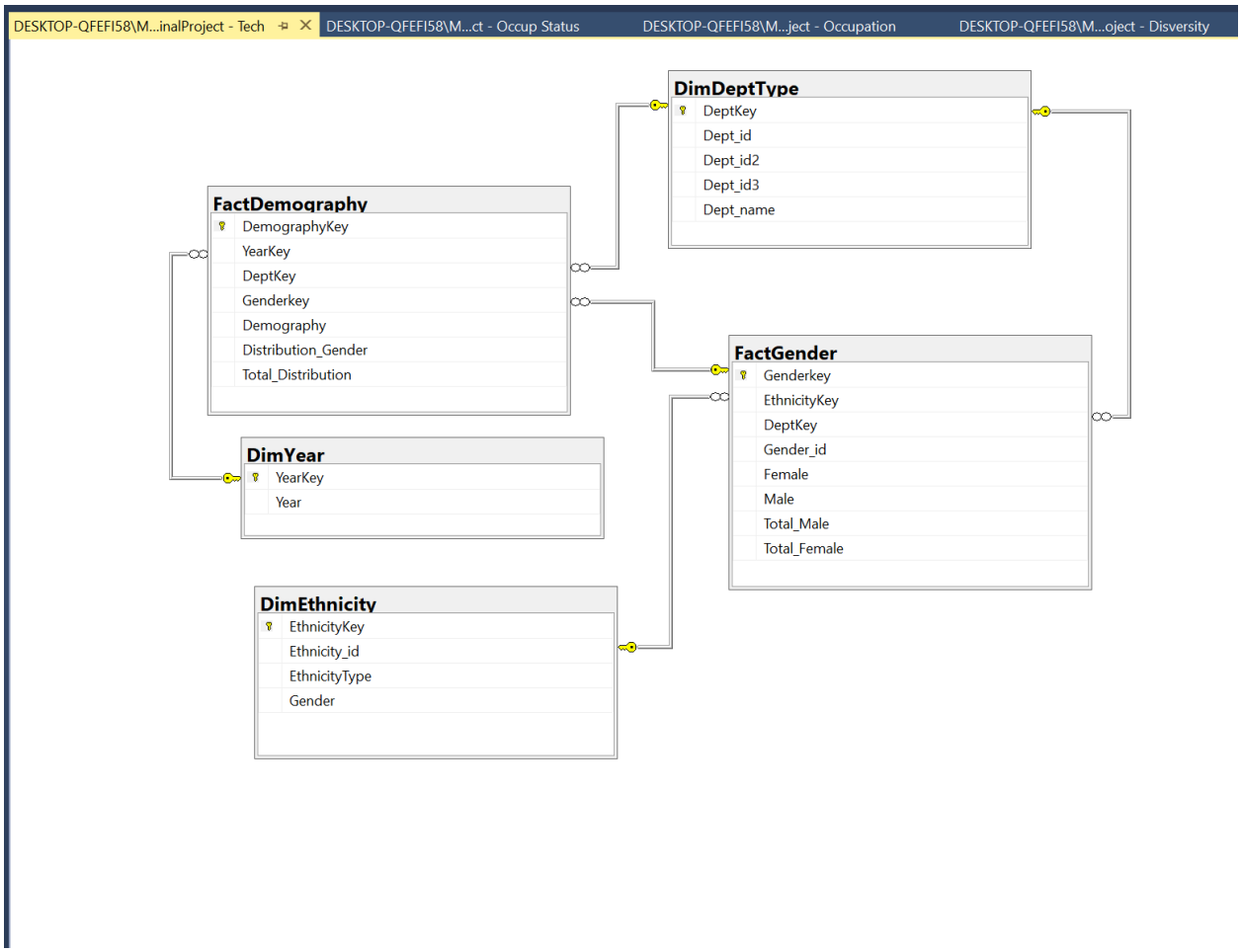
---

```
Drop table dbo.FactEstimates

Create Table dbo.FactEstimates(
EstimateKey int IDENTITY(1,1) NOT NULL PRIMARY KEY,
Occupationkey int null,
TotalEstimate int NULL,
TotalMOE int NULL,
NBEstimate nvarchar(max) NULL,
NBMOE nvarchar(max) NULL,
NBPercent nvarchar(max) NULL,
NBMOEPercent nvarchar(max) NULL,
FBEstimate nvarchar(max) NULL,
FBMOE nvarchar(max) NULL,
FBMOEPercent nvarchar(max) NULL,
)

ALTER TABLE FactEstimates
ADD
FOREIGN KEY (Occupationkey)
REFERENCES dimOccupation (Occupationkey);


UPDATE dbo.FactEstimates
SET dbo.FactEstimates.Occupationkey = dbo.dimOccupation.Occupationkey
FROM dbo.StageAreaOccpStatus
INNER JOIN dbo.dimOccupation
ON (dbo.dimOccupation.Occupational_Category = dbo.StageAreaOccpStatus.Occupational_Category);
```

## Database Diagram

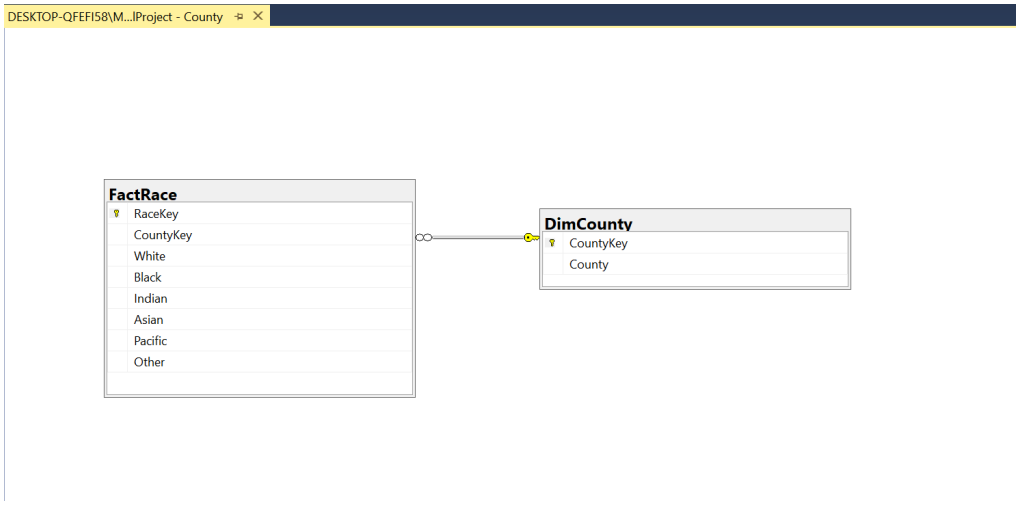
★ **Fact Demography:**

*Figure 3*



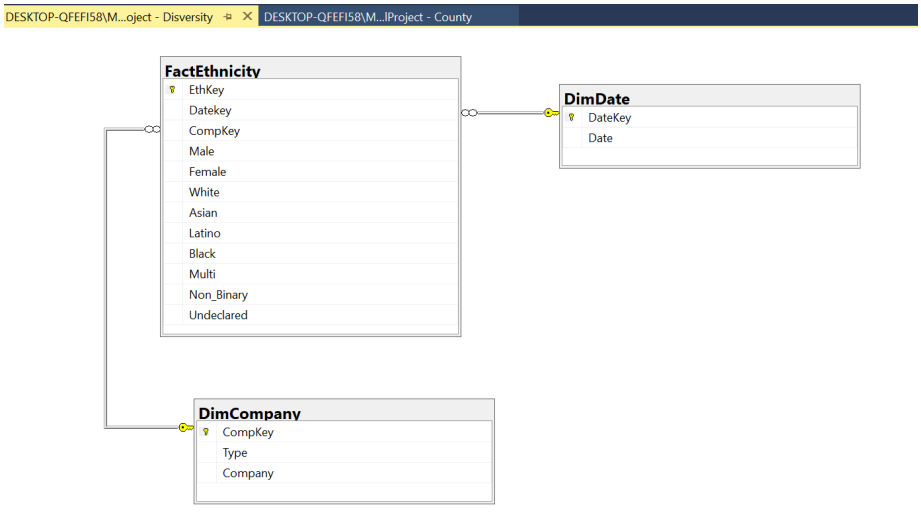
## ★ Fact Race:

*Figure 4*



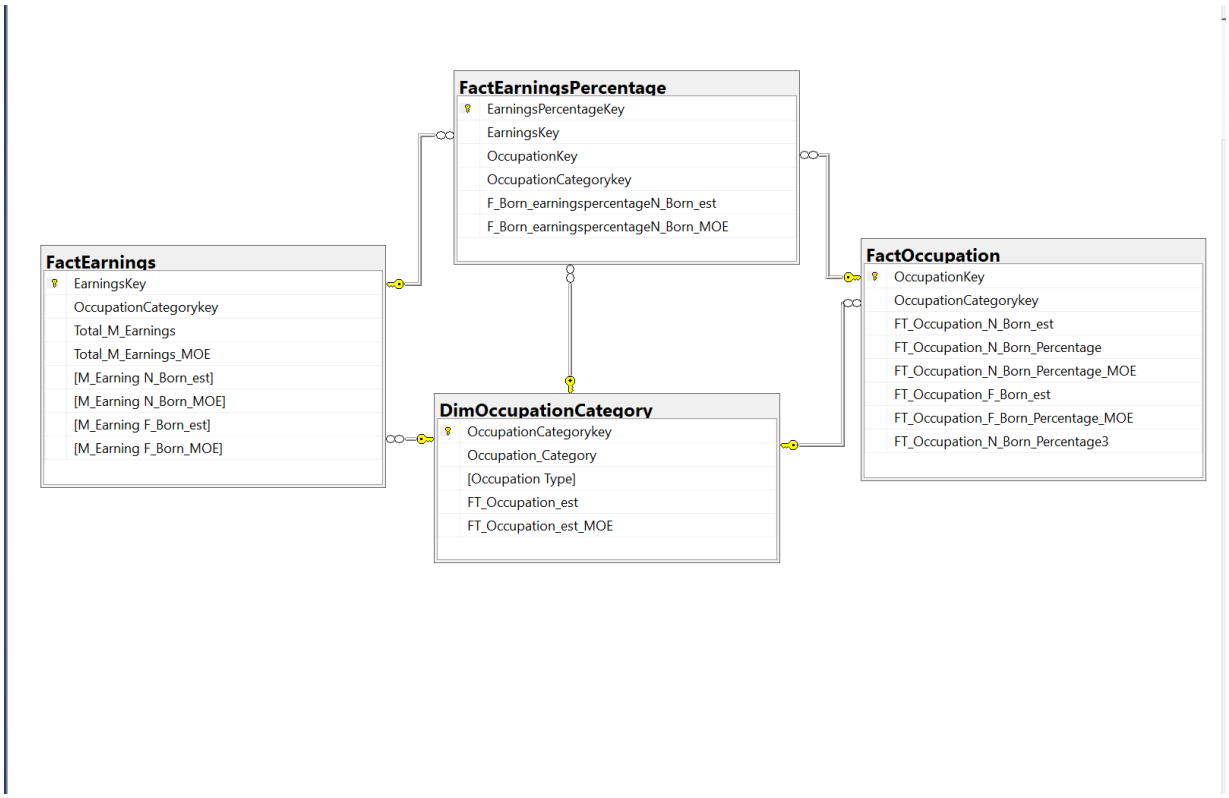

## ★ Fact Ethnicity:

*Figure 5*



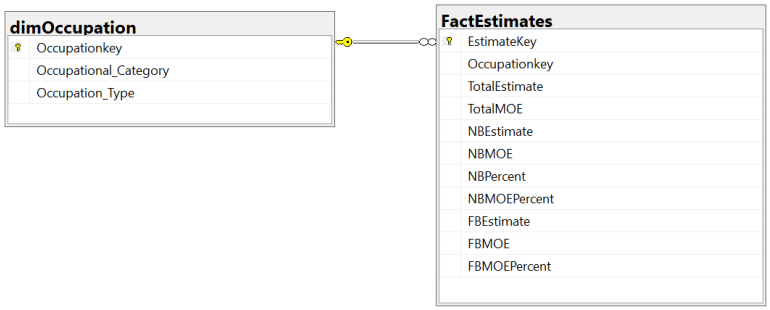
★ **Fact Earning Percentage:**

*Figure 6*




★ **Fact Estimate:**

*Figure 7*



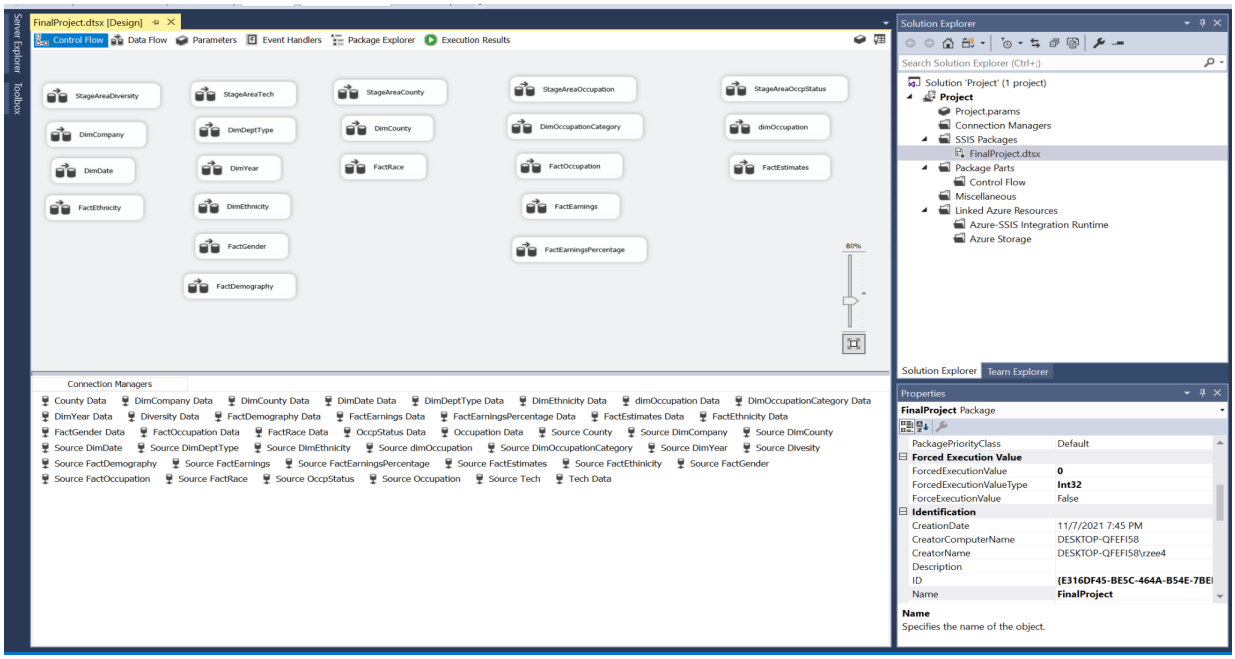
## SSIS Design

Microsoft SQL Server Integration Services is a platform used for building high-performance data integrating solutions, including extraction, transformation, and load (ETL) packages for data warehousing. In this project, SSIS is used to transfer and load data into 5 different staging Area Tables  and related Dim and Fact Tables.

**Visual Studio 2017 (SSDT):**

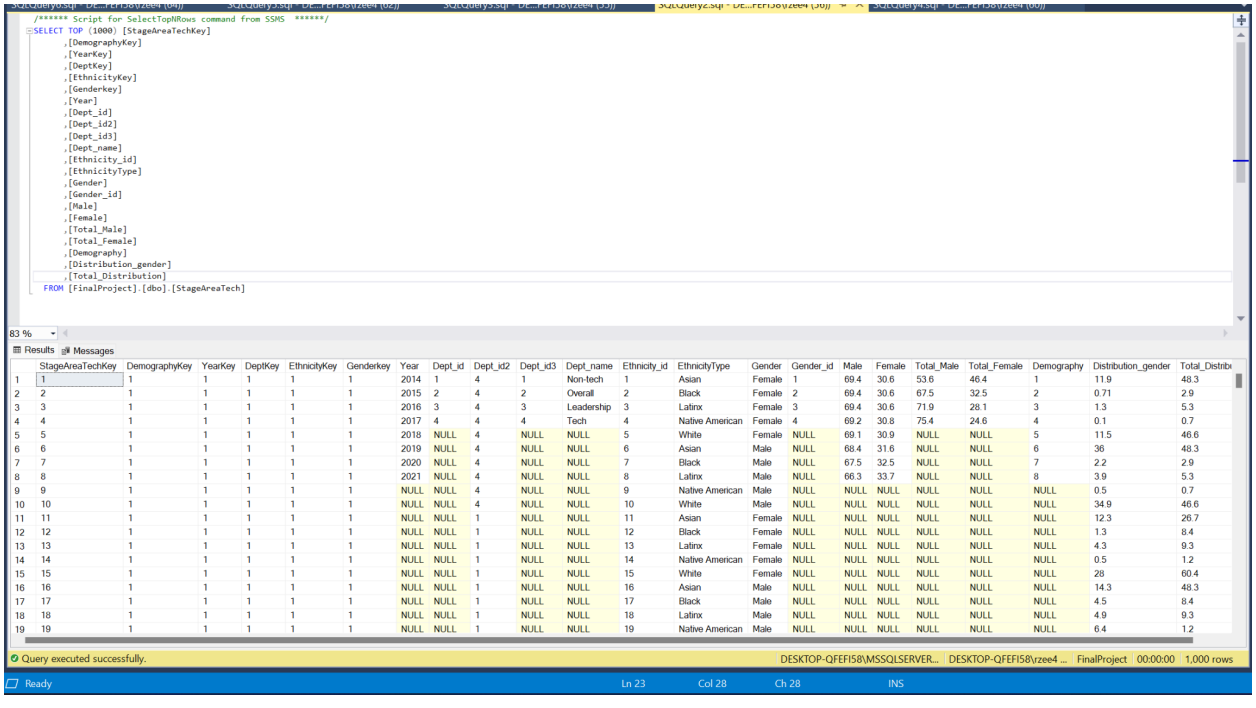
In this project, Visual Studio 2017 (SSDT) was used to transfer and load data into tables in the existing FINALPROJECT database. By creating various Control Flows for different tables, the connection between Integration Package and Data warehouse was created. Inside the Data Flow, the data was obtained from the sources and transferred to the destination.

*Figure 8*



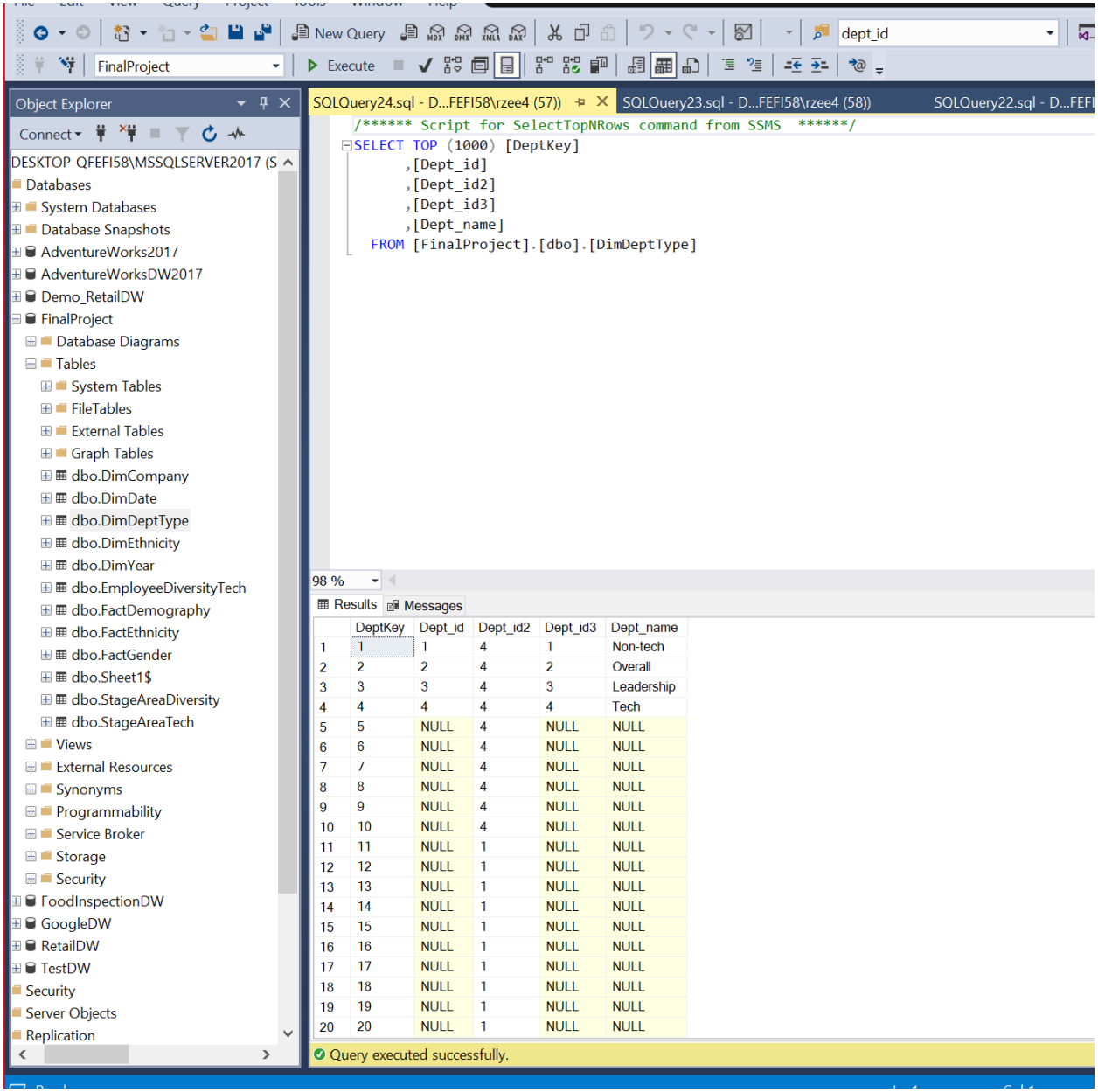

## ❖ Staging Area Tech:

*Figure 9*



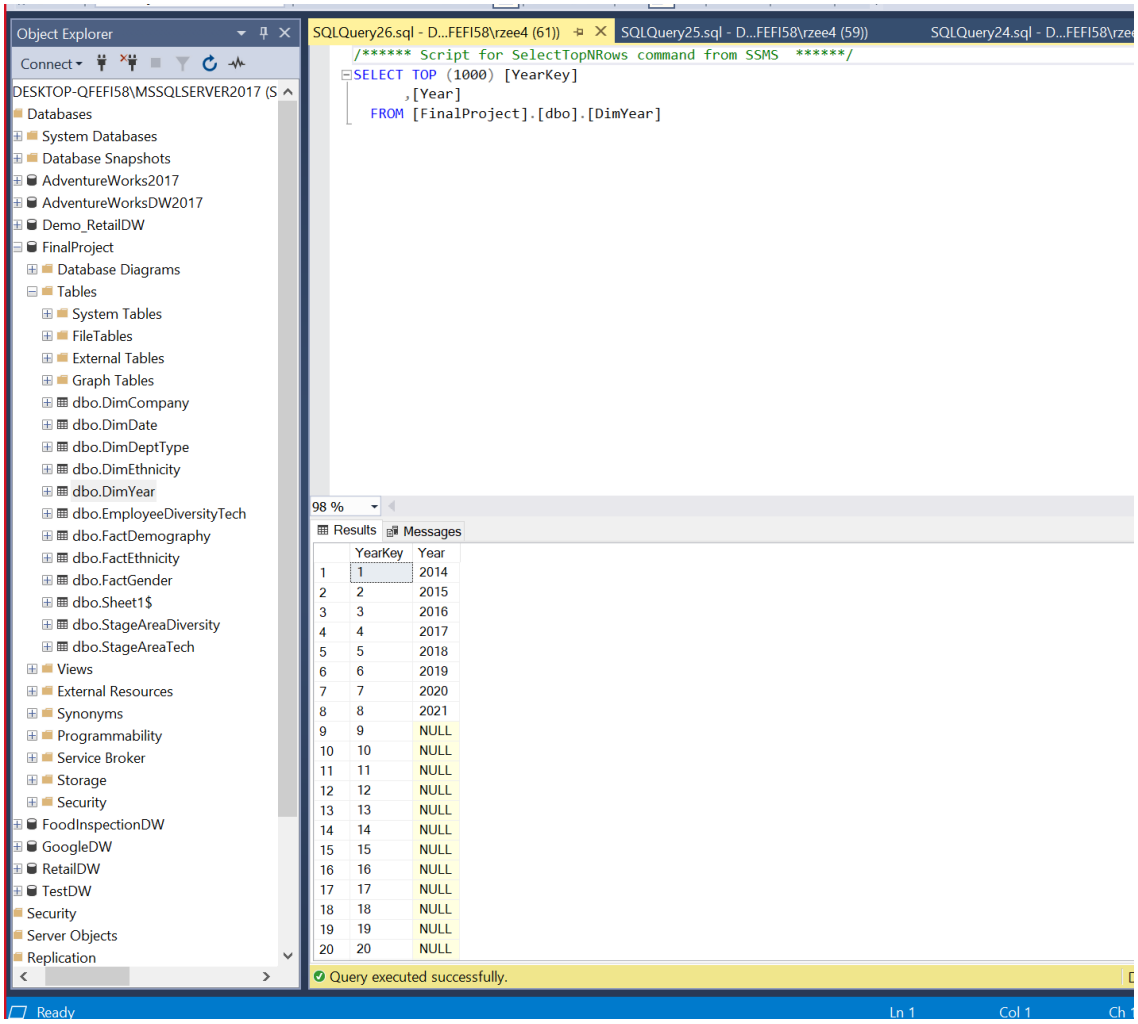
➔ **DimDeptType:**

*Figure 10*



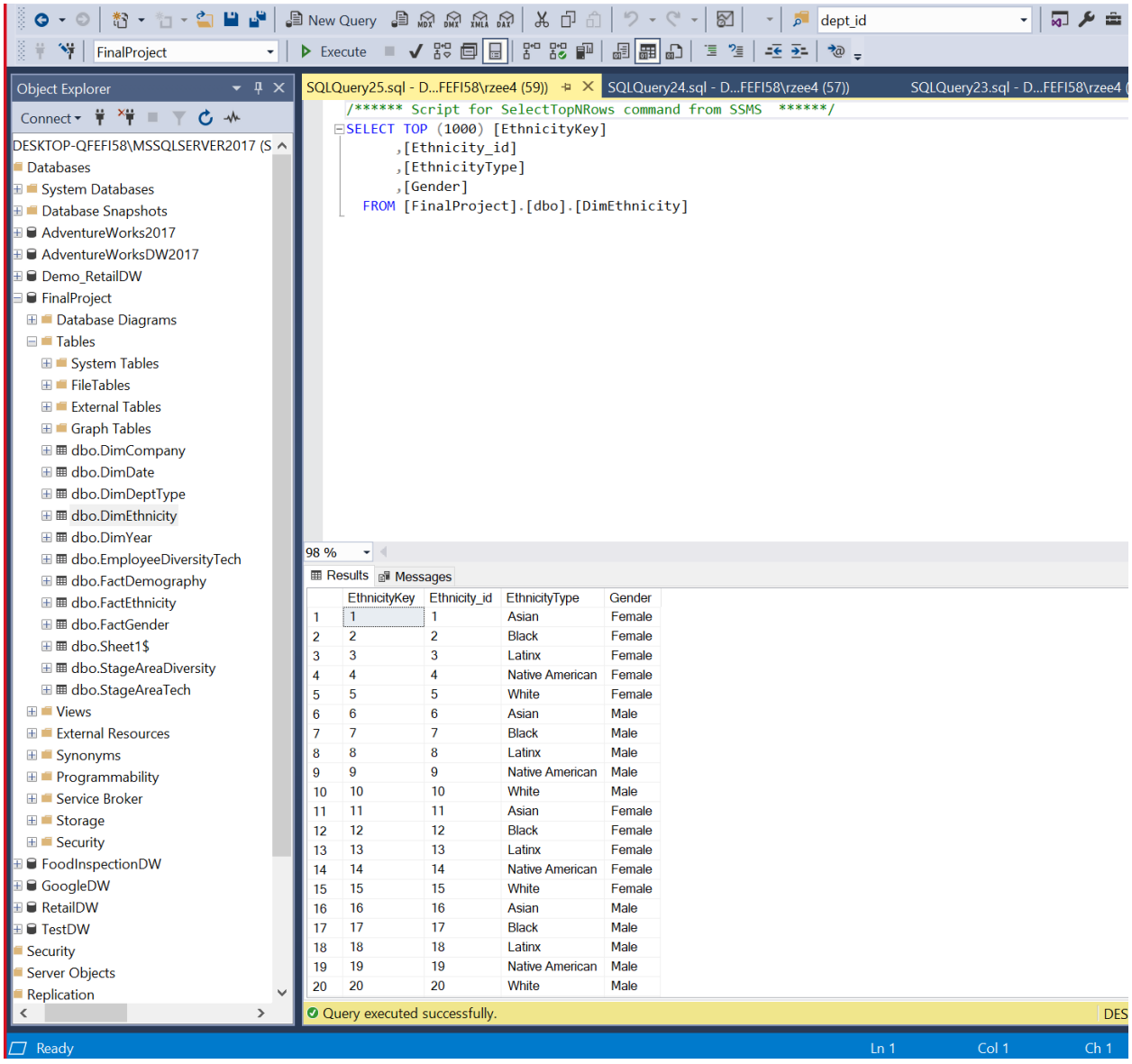
➔ **DimYear:**

*Figure 11*



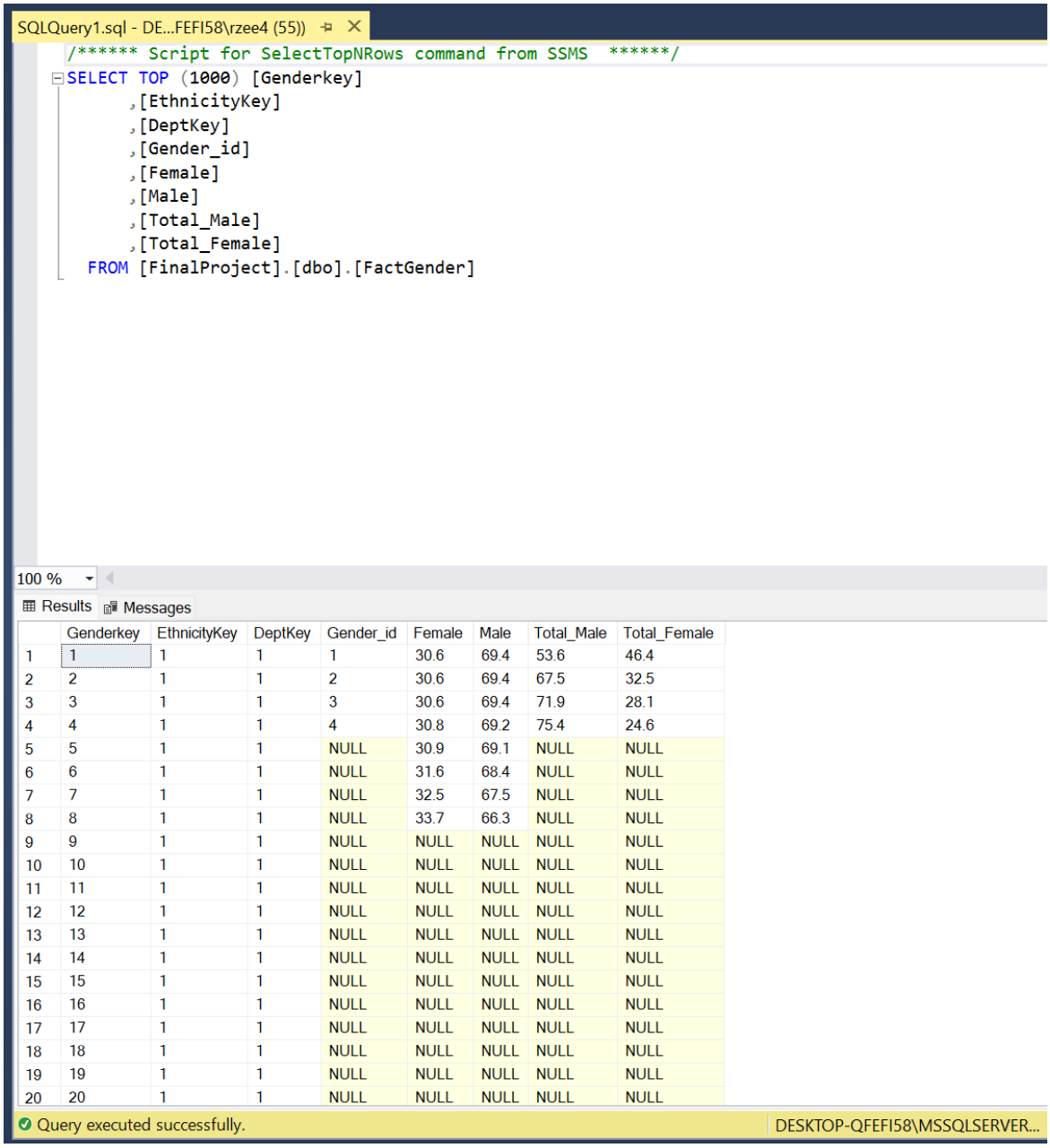
➔ **DimEthnicity:**

*Figure 12*



➔ **FactGender:**

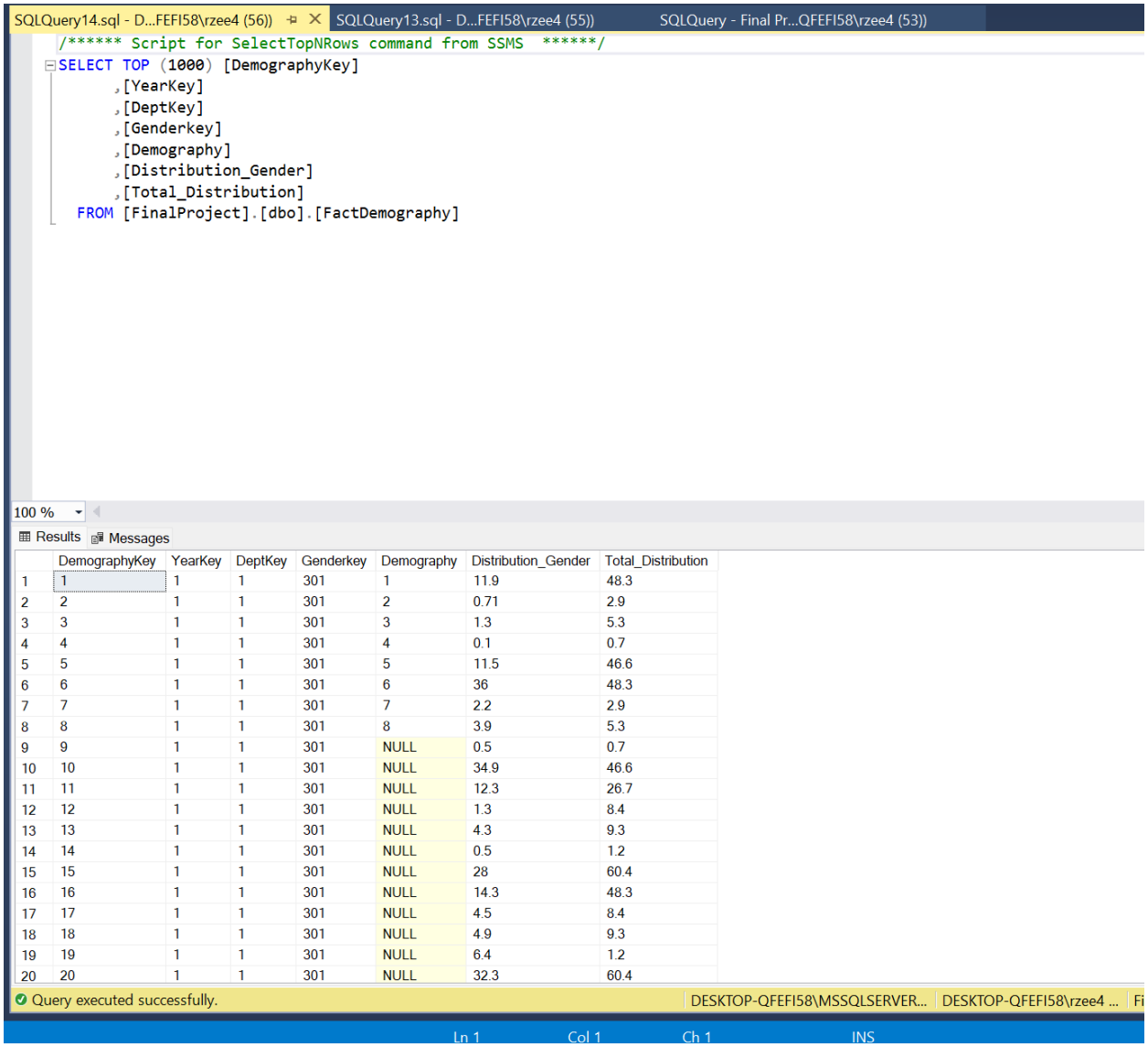
*Figure 13*




| | Genderkey | EthnicityKey | DeptKey | Gender_id | Female | Male | Total_Male | Total_Female |
|---|---|---|---|---|---|---|---|---|
| 1 | 1 | 1 | 1 | 1 | 30.6 | 69.4 | 53.6 | 46.4 |
| 2 | 2 | 1 | 1 | 2 | 30.6 | 69.4 | 67.5 | 32.5 |
| 3 | 3 | 1 | 1 | 3 | 30.6 | 69.4 | 71.9 | 28.1 |
| 4 | 4 | 1 | 1 | 4 | 30.8 | 69.2 | 75.4 | 24.6 |
| 5 | 5 | 1 | 1 | NULL | 30.9 | 69.1 | NULL | NULL |
| 6 | 6 | 1 | 1 | NULL | 31.6 | 68.4 | NULL | NULL |
| 7 | 7 | 1 | 1 | NULL | 32.5 | 67.5 | NULL | NULL |
| 8 | 8 | 1 | 1 | NULL | 33.7 | 66.3 | NULL | NULL |
| 9 | 9 | 1 | 1 | NULL | NULL | NULL | NULL | NULL |
| 10 | 10 | 1 | 1 | NULL | NULL | NULL | NULL | NULL |
| 11 | 11 | 1 | 1 | NULL | NULL | NULL | NULL | NULL |
| 12 | 12 | 1 | 1 | NULL | NULL | NULL | NULL | NULL |
| 13 | 13 | 1 | 1 | NULL | NULL | NULL | NULL | NULL |
| 14 | 14 | 1 | 1 | NULL | NULL | NULL | NULL | NULL |
| 15 | 15 | 1 | 1 | NULL | NULL | NULL | NULL | NULL |
| 16 | 16 | 1 | 1 | NULL | NULL | NULL | NULL | NULL |
| 17 | 17 | 1 | 1 | NULL | NULL | NULL | NULL | NULL |
| 18 | 18 | 1 | 1 | NULL | NULL | NULL | NULL | NULL |
| 19 | 19 | 1 | 1 | NULL | NULL | NULL | NULL | NULL |
| 20 | 20 | 1 | 1 | NULL | NULL | NULL | NULL | NULL |

➔ **FactDemography:**

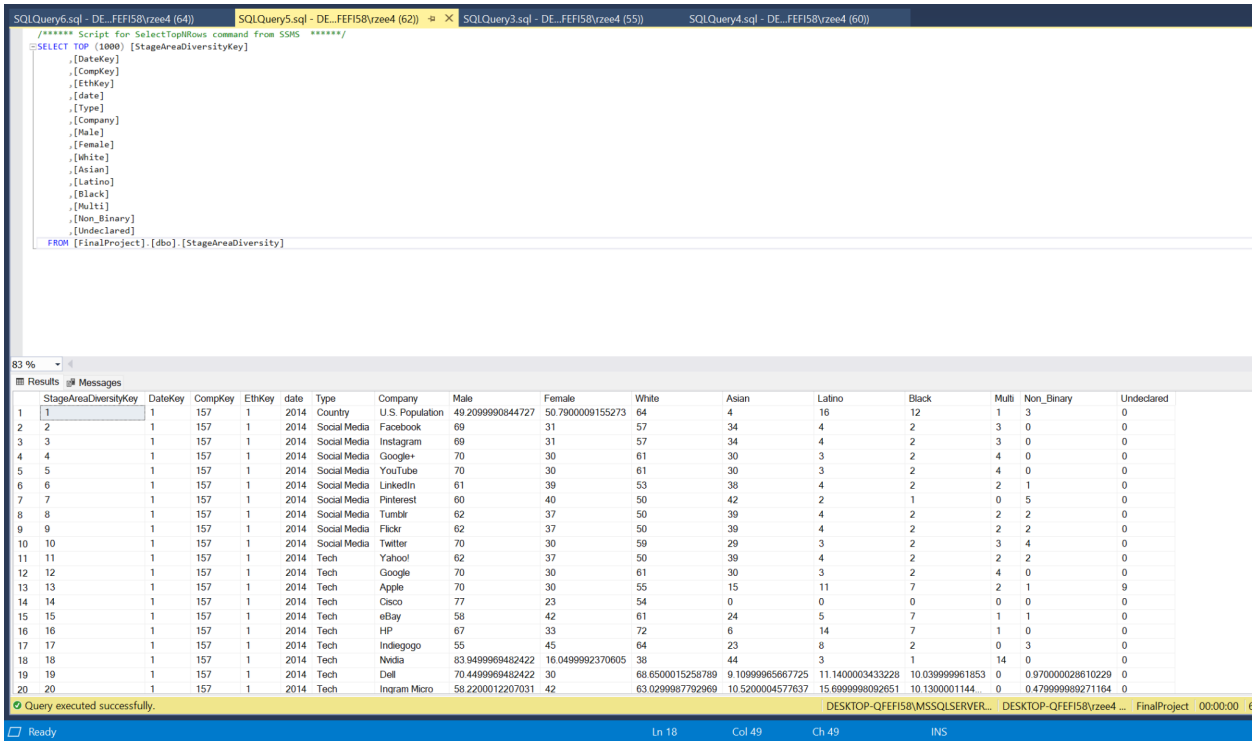
*Figure 14*




| | DemographyKey | YearKey | DeptKey | Genderkey | Demography | Distribution_Gender | Total_Distribution |
|---|---|---|---|---|---|---|---|
| 1 | 1 | 1 | 1 | 301 | 1 | 11.9 | 48.3 |
| 2 | 2 | 1 | 1 | 301 | 2 | 0.71 | 2.9 |
| 3 | 3 | 1 | 1 | 301 | 3 | 1.3 | 5.3 |
| 4 | 4 | 1 | 1 | 301 | 4 | 0.1 | 0.7 |
| 5 | 5 | 1 | 1 | 301 | 5 | 11.5 | 46.6 |
| 6 | 6 | 1 | 1 | 301 | 6 | 36 | 48.3 |
| 7 | 7 | 1 | 1 | 301 | 7 | 2.2 | 2.9 |
| 8 | 8 | 1 | 1 | 301 | 8 | 3.9 | 5.3 |
| 9 | 9 | 1 | 1 | 301 | NULL | 0.5 | 0.7 |
| 10 | 10 | 1 | 1 | 301 | NULL | 34.9 | 46.6 |
| 11 | 11 | 1 | 1 | 301 | NULL | 12.3 | 26.7 |
| 12 | 12 | 1 | 1 | 301 | NULL | 1.3 | 8.4 |
| 13 | 13 | 1 | 1 | 301 | NULL | 4.3 | 9.3 |
| 14 | 14 | 1 | 1 | 301 | NULL | 0.5 | 1.2 |
| 15 | 15 | 1 | 1 | 301 | NULL | 28 | 60.4 |
| 16 | 16 | 1 | 1 | 301 | NULL | 14.3 | 48.3 |
| 17 | 17 | 1 | 1 | 301 | NULL | 4.5 | 8.4 |
| 18 | 18 | 1 | 1 | 301 | NULL | 4.9 | 9.3 |
| 19 | 19 | 1 | 1 | 301 | NULL | 6.4 | 1.2 |
| 20 | 20 | 1 | 1 | 301 | NULL | 32.3 | 60.4 |

## ❖ Staging Area Diversity:

*Figure 15*

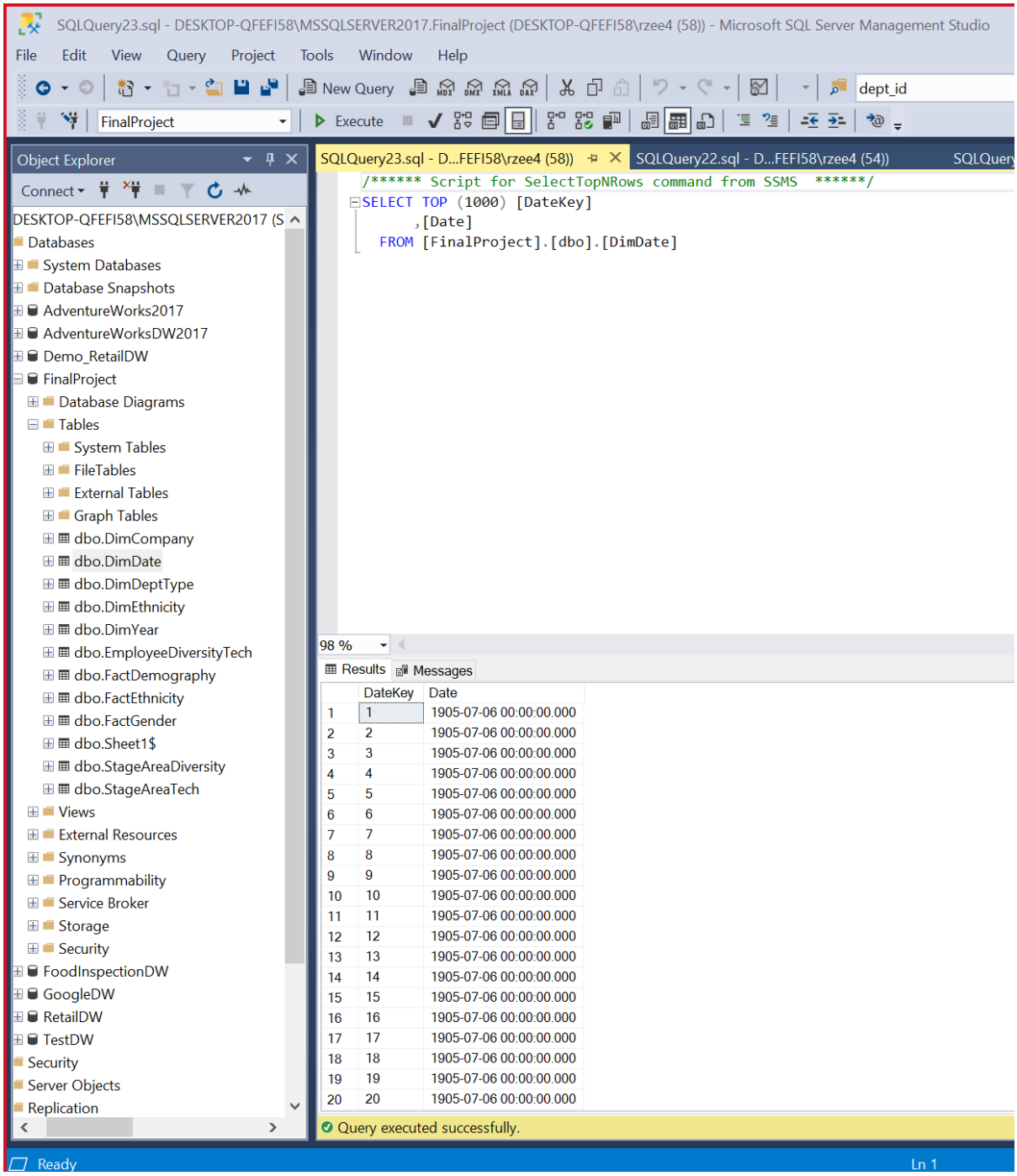


```
/****** Script for SelectTopNRows command from SSMS  ******/
SELECT TOP (1000) [StageAreaDiversityKey]
      ,[DateKey]
      ,[CompKey]
      ,[EthKey]
      ,[date]
      ,[Type]
      ,[Company]
      ,[Male]
      ,[Female]
      ,[White]
      ,[Asian]
      ,[Latino]
      ,[Black]
      ,[Multi]
      ,[Non_Binary]
      ,[Undeclared]
  FROM [FinalProject].[dbo].[StageAreaDiversity]
```

| | StageAreaDiversityKey | DateKey | CompKey | EthKey | date | Type | Company | Male | Female | White | Asian | Latino | Black | Multi | Non_Binary | Undeclared |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1 | 1 | 157 | 1 | 2014 | Country | U.S. Population | 49.2099990844727 | 50.7900009155273 | 64 | 4 | 16 | 12 | 1 | 3 | 0 |
| 2 | 2 | 1 | 157 | 1 | 2014 | Social Media | Facebook | 69 | 31 | 57 | 34 | 4 | 2 | 3 | 0 | 0 |
| 3 | 3 | 1 | 157 | 1 | 2014 | Social Media | Instagram | 69 | 31 | 57 | 34 | 4 | 2 | 3 | 0 | 0 |
| 4 | 4 | 1 | 157 | 1 | 2014 | Social Media | Google+ | 70 | 30 | 61 | 30 | 3 | 2 | 4 | 0 | 0 |
| 5 | 5 | 1 | 157 | 1 | 2014 | Social Media | YouTube | 70 | 30 | 61 | 30 | 3 | 2 | 4 | 0 | 0 |
| 6 | 6 | 1 | 157 | 1 | 2014 | Social Media | LinkedIn | 61 | 39 | 53 | 38 | 4 | 2 | 2 | 1 | 0 |
| 7 | 7 | 1 | 157 | 1 | 2014 | Social Media | Pinterest | 60 | 40 | 50 | 42 | 2 | 1 | 0 | 5 | 0 |
| 8 | 8 | 1 | 157 | 1 | 2014 | Social Media | Tumblr | 62 | 37 | 50 | 39 | 4 | 2 | 2 | 2 | 0 |
| 9 | 9 | 1 | 157 | 1 | 2014 | Social Media | Flickr | 62 | 37 | 50 | 39 | 4 | 2 | 2 | 2 | 0 |
| 10 | 10 | 1 | 157 | 1 | 2014 | Social Media | Twitter | 70 | 30 | 59 | 29 | 3 | 2 | 3 | 4 | 0 |
| 11 | 11 | 1 | 157 | 1 | 2014 | Tech | Yahoo! | 62 | 37 | 50 | 39 | 4 | 2 | 2 | 2 | 0 |
| 12 | 12 | 1 | 157 | 1 | 2014 | Tech | Google | 70 | 30 | 61 | 30 | 3 | 2 | 4 | 0 | 0 |
| 13 | 13 | 1 | 157 | 1 | 2014 | Tech | Apple | 70 | 30 | 55 | 15 | 11 | 7 | 2 | 1 | 9 |
| 14 | 14 | 1 | 157 | 1 | 2014 | Tech | Cisco | 77 | 23 | 54 | 0 | 0 | 0 | 0 | 0 | 0 |
| 15 | 15 | 1 | 157 | 1 | 2014 | Tech | eBay | 58 | 42 | 61 | 24 | 5 | 7 | 1 | 1 | 0 |
| 16 | 16 | 1 | 157 | 1 | 2014 | Tech | HP | 67 | 33 | 72 | 6 | 14 | 7 | 1 | 0 | 0 |
| 17 | 17 | 1 | 157 | 1 | 2014 | Tech | Indiegogo | 55 | 45 | 64 | 23 | 8 | 2 | 0 | 3 | 0 |
| 18 | 18 | 1 | 157 | 1 | 2014 | Tech | Nvidia | 83.9499969482422 | 16.0499992370605 | 38 | 44 | 3 | 1 | 14 | 0 | 0 |
| 19 | 19 | 1 | 157 | 1 | 2014 | Tech | Dell | 70.4499969482422 | 30 | 68.6500015258789 | 9.10999965667725 | 11.1400003433228 | 10.039999961853 | 0 | 0.970000028610229 | 0 |
| 20 | 20 | 1 | 157 | 1 | 2014 | Tech | Ingram Micro | 58.2200012207031 | 42 | 63.0299987792969 | 10.5200004577637 | 15.6999998092651 | 10.1300001144... | 0 | 0.479999989271164 | 0 |

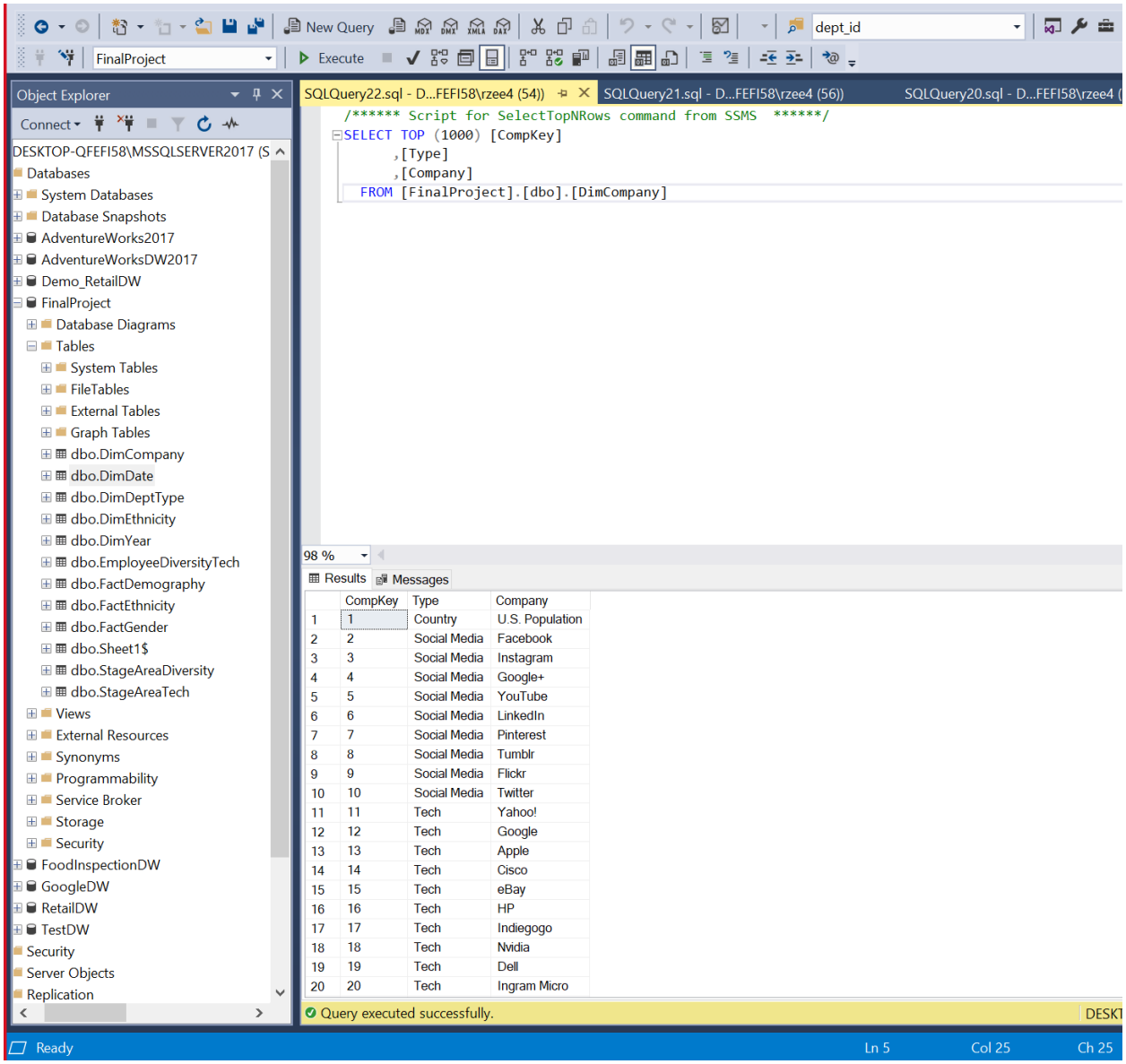
➔ **DimDate:**

*Figure 16*



➔ **DimCompany:**

*Figure 17*




➔ **FactEthnicity:**

*Figure 18*

SQLQuery3.sql - DE...FEFI58\rzee4 (56))

```
/****** Script for SelectTopNRows command from SSMS  ******/
SELECT TOP (1000) [EthKey]
      ,[Datekey]
      ,[CompKey]
      ,[Male]
      ,[Female]
      ,[White]
      ,[Asian]
      ,[Latino]
      ,[Black]
      ,[Multi]
      ,[Non_Binary]
      ,[Undeclared]
  FROM [FinalProject].[dbo].[FactEthnicity]
```

100 %

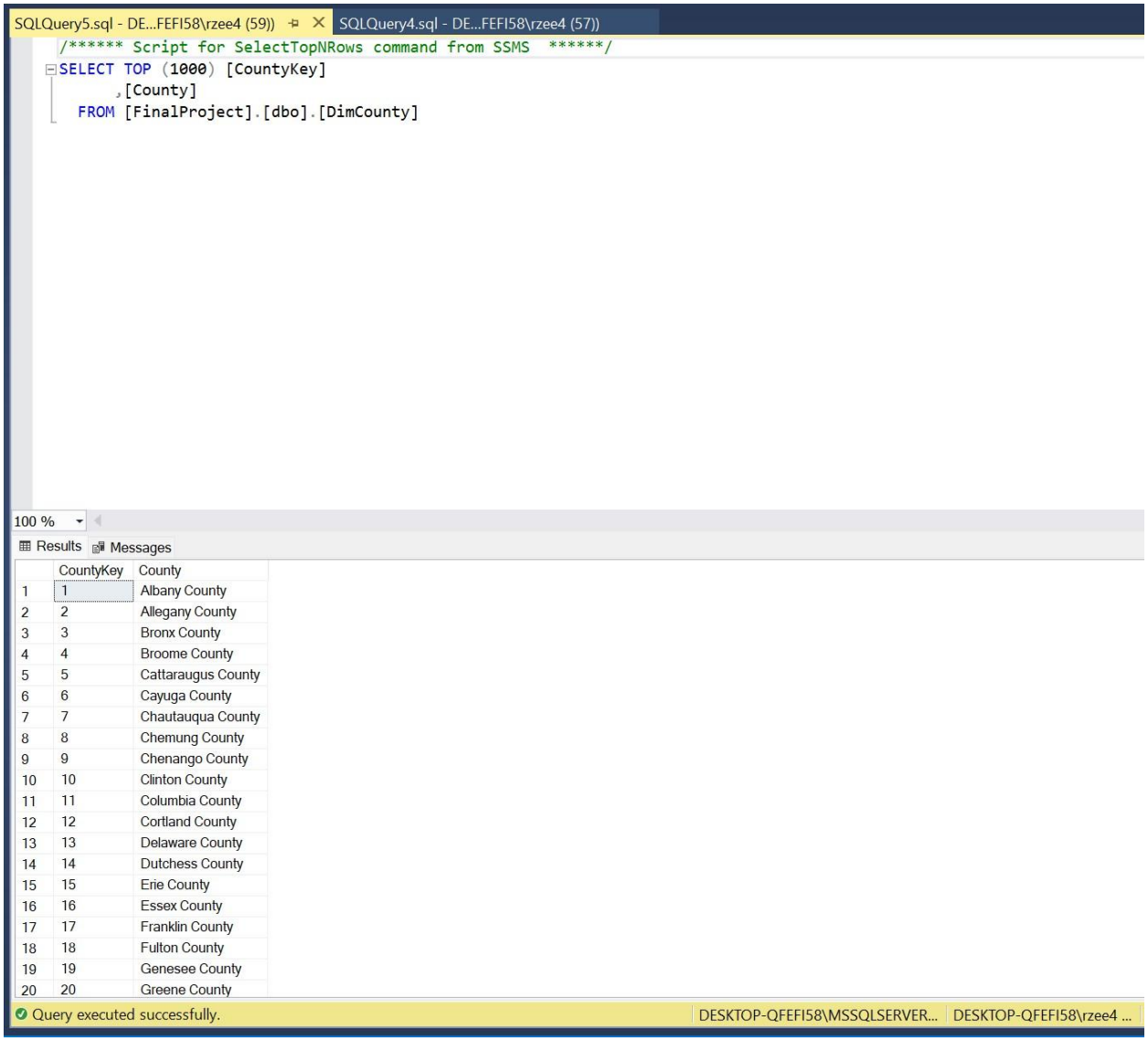
Results | Messages

| | EthKey | Datekey | CompKey | Male | Female | White | Asian | Latino | Black | Multi | Non_Binary | Undeclared |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1 | 1 | 157 | 49.2099990844727 | 50.7900009155273 | 64 | 4 | 16 | 12 | 1 | 3 | 0 |
| 2 | 2 | 1 | 157 | 69 | 31 | 57 | 34 | 4 | 2 | 3 | 0 | 0 |
| 3 | 3 | 1 | 157 | 69 | 31 | 57 | 34 | 4 | 2 | 3 | 0 | 0 |
| 4 | 4 | 1 | 157 | 70 | 30 | 61 | 30 | 3 | 2 | 4 | 0 | 0 |
| 5 | 5 | 1 | 157 | 70 | 30 | 61 | 30 | 3 | 2 | 4 | 0 | 0 |
| 6 | 6 | 1 | 157 | 61 | 39 | 53 | 38 | 4 | 2 | 2 | 1 | 0 |
| 7 | 7 | 1 | 157 | 60 | 40 | 50 | 42 | 2 | 1 | 0 | 5 | 0 |
| 8 | 8 | 1 | 157 | 62 | 37 | 50 | 39 | 4 | 2 | 2 | 2 | 0 |
| 9 | 9 | 1 | 157 | 62 | 37 | 50 | 39 | 4 | 2 | 2 | 2 | 0 |
| 10 | 10 | 1 | 157 | 70 | 30 | 59 | 29 | 3 | 2 | 3 | 4 | 0 |
| 11 | 11 | 1 | 157 | 62 | 37 | 50 | 39 | 4 | 2 | 2 | 2 | 0 |
| 12 | 12 | 1 | 157 | 70 | 30 | 61 | 30 | 3 | 2 | 4 | 0 | 0 |
| 13 | 13 | 1 | 157 | 70 | 30 | 55 | 15 | 11 | 7 | 2 | 1 | 9 |
| 14 | 14 | 1 | 157 | 77 | 23 | 54 | 0 | 0 | 0 | 0 | 0 | 0 |
| 15 | 15 | 1 | 157 | 58 | 42 | 61 | 24 | 5 | 7 | 1 | 1 | 0 |
| 16 | 16 | 1 | 157 | 67 | 33 | 72 | 6 | 14 | 7 | 1 | 0 | 0 |
| 17 | 17 | 1 | 157 | 55 | 45 | 64 | 23 | 8 | 2 | 0 | 3 | 0 |
| 18 | 18 | 1 | 157 | 83.9499969482422 | 16.0499992370605 | 38 | 44 | 3 | 1 | 14 | 0 | 0 |
| 19 | 19 | 1 | 157 | 70.4499969482422 | 30 | 68.6500015258789 | 9.10999965667725 | 11.1400003433228 | 10.039999961853 | 0 | 0.970000028610229 | 0 |
| 20 | 20 | 1 | 157 | 58.2200012207031 | 42 | 63.0299987792969 | 10.5200004577637 | 15.6999998092651 | 10.1300001144... | 0 | 0.479999989271164 | 0 |

Query executed successfully. | DESKTOP-QFEFI58\MSSQLSERVER... | DESKTOP-QFEFI58\rzee4 ... | FinalProject | 00:00:00 | 972

❖ **Staging Area County:**

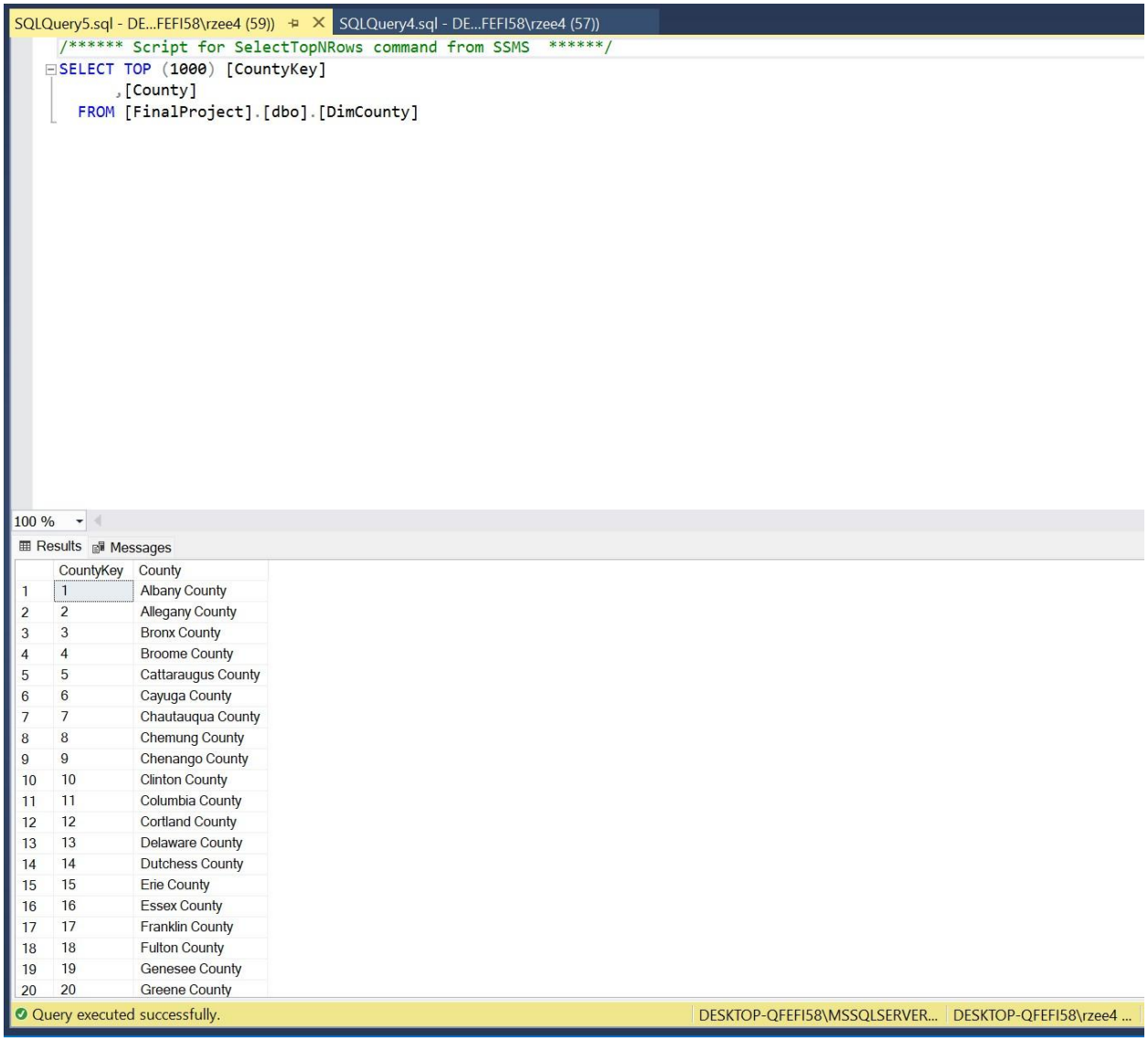
*Figure 19*




| | CountyKey | County |
|---|---|---|
| 1 | 1 | Albany County |
| 2 | 2 | Allegany County |
| 3 | 3 | Bronx County |
| 4 | 4 | Broome County |
| 5 | 5 | Cattaraugus County |
| 6 | 6 | Cayuga County |
| 7 | 7 | Chautauqua County |
| 8 | 8 | Chemung County |
| 9 | 9 | Chenango County |
| 10 | 10 | Clinton County |
| 11 | 11 | Columbia County |
| 12 | 12 | Cortland County |
| 13 | 13 | Delaware County |
| 14 | 14 | Dutchess County |
| 15 | 15 | Erie County |
| 16 | 16 | Essex County |
| 17 | 17 | Franklin County |
| 18 | 18 | Fulton County |
| 19 | 19 | Genesee County |
| 20 | 20 | Greene County |

➔ **DimCounty:**

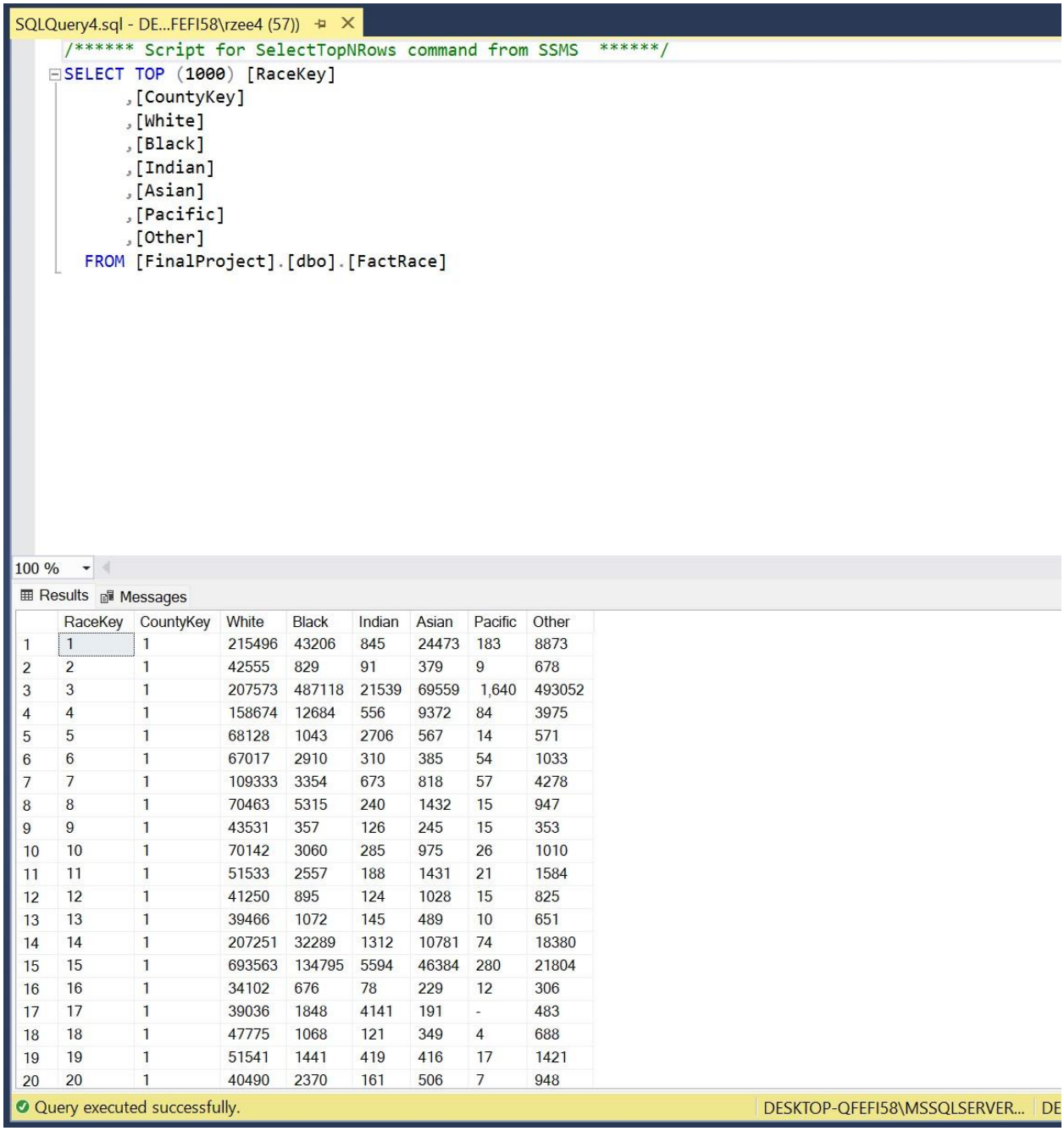
*Figure 20*




| | CountyKey | County |
|---|---|---|
| 1 | 1 | Albany County |
| 2 | 2 | Allegany County |
| 3 | 3 | Bronx County |
| 4 | 4 | Broome County |
| 5 | 5 | Cattaraugus County |
| 6 | 6 | Cayuga County |
| 7 | 7 | Chautauqua County |
| 8 | 8 | Chemung County |
| 9 | 9 | Chenango County |
| 10 | 10 | Clinton County |
| 11 | 11 | Columbia County |
| 12 | 12 | Cortland County |
| 13 | 13 | Delaware County |
| 14 | 14 | Dutchess County |
| 15 | 15 | Erie County |
| 16 | 16 | Essex County |
| 17 | 17 | Franklin County |
| 18 | 18 | Fulton County |
| 19 | 19 | Genesee County |
| 20 | 20 | Greene County |

➔ **FactRace:**

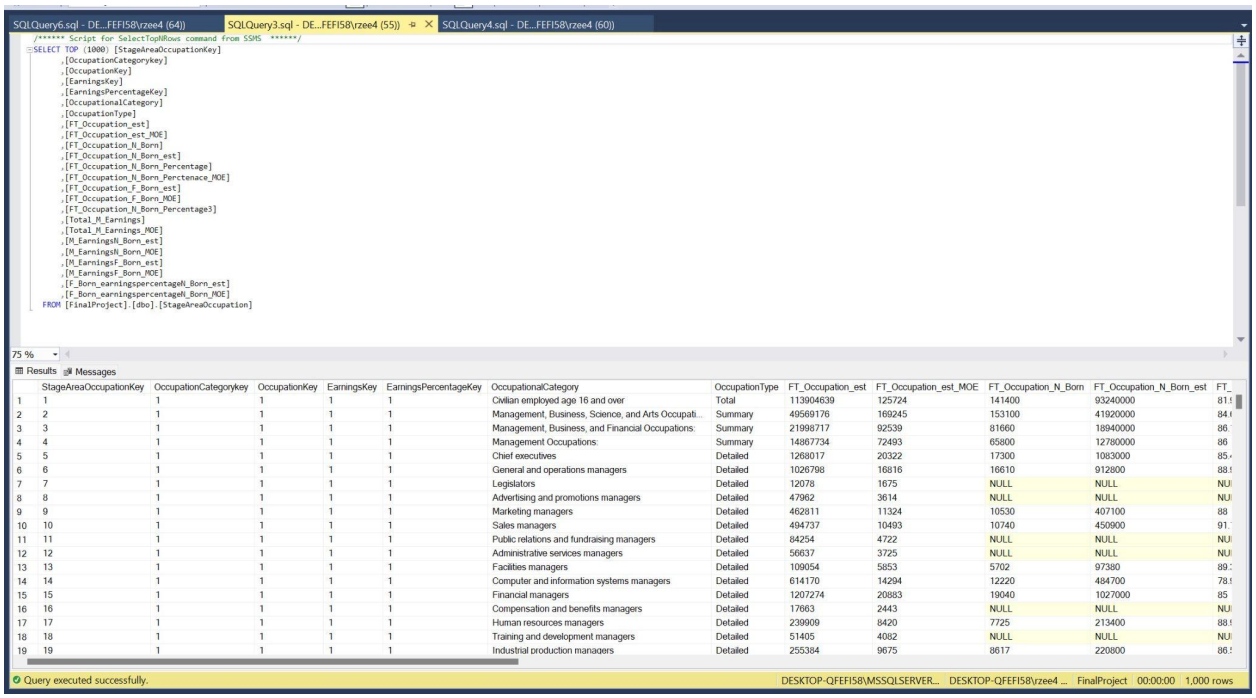
*Figure 21*




| | RaceKey | CountyKey | White | Black | Indian | Asian | Pacific | Other |
|---|---|---|---|---|---|---|---|---|
| 1 | 1 | 1 | 215496 | 43206 | 845 | 24473 | 183 | 8873 |
| 2 | 2 | 1 | 42555 | 829 | 91 | 379 | 9 | 678 |
| 3 | 3 | 1 | 207573 | 487118 | 21539 | 69559 | 1,640 | 493052 |
| 4 | 4 | 1 | 158674 | 12684 | 556 | 9372 | 84 | 3975 |
| 5 | 5 | 1 | 68128 | 1043 | 2706 | 567 | 14 | 571 |
| 6 | 6 | 1 | 67017 | 2910 | 310 | 385 | 54 | 1033 |
| 7 | 7 | 1 | 109333 | 3354 | 673 | 818 | 57 | 4278 |
| 8 | 8 | 1 | 70463 | 5315 | 240 | 1432 | 15 | 947 |
| 9 | 9 | 1 | 43531 | 357 | 126 | 245 | 15 | 353 |
| 10 | 10 | 1 | 70142 | 3060 | 285 | 975 | 26 | 1010 |
| 11 | 11 | 1 | 51533 | 2557 | 188 | 1431 | 21 | 1584 |
| 12 | 12 | 1 | 41250 | 895 | 124 | 1028 | 15 | 825 |
| 13 | 13 | 1 | 39466 | 1072 | 145 | 489 | 10 | 651 |
| 14 | 14 | 1 | 207251 | 32289 | 1312 | 10781 | 74 | 18380 |
| 15 | 15 | 1 | 693563 | 134795 | 5594 | 46384 | 280 | 21804 |
| 16 | 16 | 1 | 34102 | 676 | 78 | 229 | 12 | 306 |
| 17 | 17 | 1 | 39036 | 1848 | 4141 | 191 | - | 483 |
| 18 | 18 | 1 | 47775 | 1068 | 121 | 349 | 4 | 688 |
| 19 | 19 | 1 | 51541 | 1441 | 419 | 416 | 17 | 1421 |
| 20 | 20 | 1 | 40490 | 2370 | 161 | 506 | 7 | 948 |

❖ **Staging Area Occupation:**

*Figure 22*




| | StageAreaOccupationKey | OccupationCategorykey | OccupationKey | EarningsKey | EarningsPercentageKey | OccupationalCategory | OccupationType | FT_Occupation_est | FT_Occupation_est_MOE | FT_Occupation_N_Born | FT_Occupation_N_Born_est | FT_ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1 | 1 | 1 | 1 | 1 | Civilian employed age 16 and over | Total | 113904639 | 125724 | 141400 | 93240000 | 81.9 |
| 2 | 2 | 1 | 1 | 1 | 1 | Management, Business, Science, and Arts Occupati... | Summary | 49569176 | 169245 | 153100 | 41920000 | 84.6 |
| 3 | 3 | 1 | 1 | 1 | 1 | Management, Business, and Financial Occupations: | Summary | 21998717 | 92539 | 81660 | 18940000 | 86. |
| 4 | 4 | 1 | 1 | 1 | 1 | Management Occupations: | Summary | 14867734 | 72493 | 65800 | 12780000 | 86 |
| 5 | 5 | 1 | 1 | 1 | 1 | Chief executives | Detailed | 1268017 | 20322 | 17300 | 1083000 | 85.4 |
| 6 | 6 | 1 | 1 | 1 | 1 | General and operations managers | Detailed | 1026798 | 16816 | 16610 | 912800 | 88.9 |
| 7 | 7 | 1 | 1 | 1 | 1 | Legislators | Detailed | 12078 | 1675 | NULL | NULL | NUI |
| 8 | 8 | 1 | 1 | 1 | 1 | Advertising and promotions managers | Detailed | 47962 | 3614 | NULL | NULL | NUI |
| 9 | 9 | 1 | 1 | 1 | 1 | Marketing managers | Detailed | 462811 | 11324 | 10530 | 407100 | 88 |
| 10 | 10 | 1 | 1 | 1 | 1 | Sales managers | Detailed | 494737 | 10493 | 10740 | 450900 | 91. |
| 11 | 11 | 1 | 1 | 1 | 1 | Public relations and fundraising managers | Detailed | 84254 | 4722 | NULL | NULL | NUI |
| 12 | 12 | 1 | 1 | 1 | 1 | Administrative services managers | Detailed | 56637 | 3725 | NULL | NULL | NUI |
| 13 | 13 | 1 | 1 | 1 | 1 | Facilities managers | Detailed | 109054 | 5853 | 5702 | 97380 | 89.2 |
| 14 | 14 | 1 | 1 | 1 | 1 | Computer and information systems managers | Detailed | 614170 | 14294 | 12220 | 484700 | 78.9 |
| 15 | 15 | 1 | 1 | 1 | 1 | Financial managers | Detailed | 1207274 | 20883 | 19040 | 1027000 | 85 |
| 16 | 16 | 1 | 1 | 1 | 1 | Compensation and benefits managers | Detailed | 17863 | 2443 | NULL | NULL | NUI |
| 17 | 17 | 1 | 1 | 1 | 1 | Human resources managers | Detailed | 239909 | 8420 | 7725 | 213400 | 88.9 |
| 18 | 18 | 1 | 1 | 1 | 1 | Training and development managers | Detailed | 51405 | 4082 | NULL | NULL | NUI |
| 19 | 19 | 1 | 1 | 1 | 1 | Industrial production managers | Detailed | 255384 | 9675 | 8617 | 220800 | 86.5 |

➔ **DimOccupationCategory:**

*Figure 23*

```
/****** Script for SelectTopNRows command from SSMS  ******/
SELECT TOP (1000) [OccupationCategorykey]
      ,[Occupation_Category]
      ,[Occupation Type]
      ,[FT_Occupation_est]
      ,[FT_Occupation_est_MOE]
  FROM [FinalProject].[dbo].[DimOccupationCategory]
```

100 %

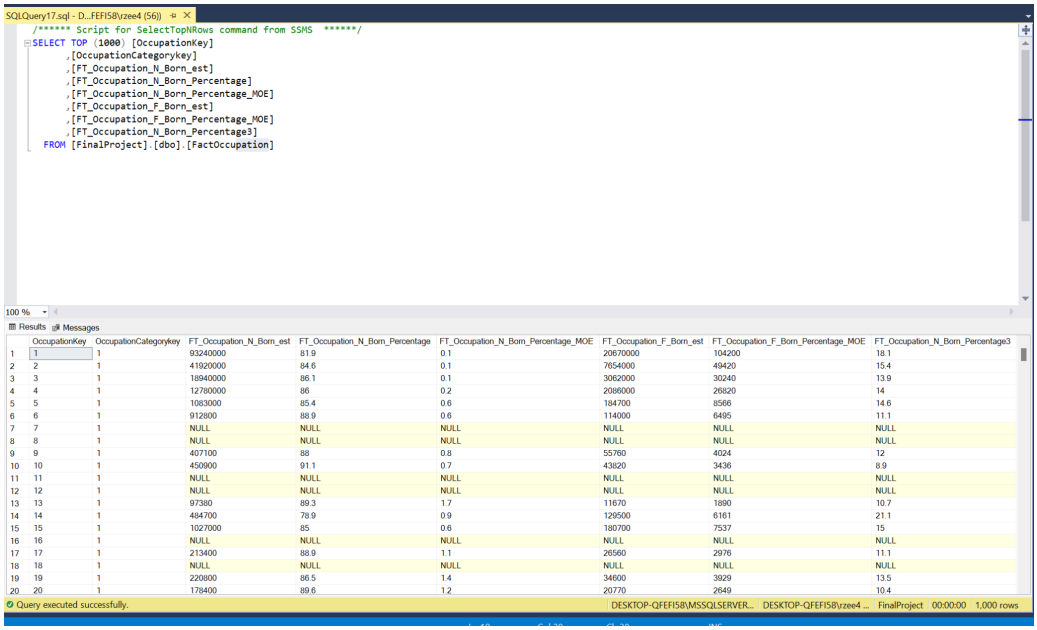
Results | Messages

| | OccupationCategorykey | Occupation_Category | Occupation Type | FT_Occupation_est | FT_Occupation_est_MOE |
|---|---|---|---|---|---|
| 1 | 1 | Civilian employed age 16 and over | Total | 113904639 | 125724 |
| 2 | 2 | Management, Business, Science, and Arts Occupati... | Summary | 49569176 | 169245 |
| 3 | 3 | Management, Business, and Financial Occupations: | Summary | 21998717 | 92539 |
| 4 | 4 | Management Occupations: | Summary | 14867734 | 72493 |
| 5 | 5 | Chief executives | Detailed | 1268017 | 20322 |
| 6 | 6 | General and operations managers | Detailed | 1026798 | 16816 |
| 7 | 7 | Legislators | Detailed | 12078 | 1675 |
| 8 | 8 | Advertising and promotions managers | Detailed | 47962 | 3614 |
| 9 | 9 | Marketing managers | Detailed | 462811 | 11324 |
| 10 | 10 | Sales managers | Detailed | 494737 | 10493 |
| 11 | 11 | Public relations and fundraising managers | Detailed | 84254 | 4722 |
| 12 | 12 | Administrative services managers | Detailed | 56637 | 3725 |
| 13 | 13 | Facilities managers | Detailed | 109054 | 5853 |
| 14 | 14 | Computer and information systems managers | Detailed | 614170 | 14294 |
| 15 | 15 | Financial managers | Detailed | 1207274 | 20883 |
| 16 | 16 | Compensation and benefits managers | Detailed | 17663 | 2443 |
| 17 | 17 | Human resources managers | Detailed | 239909 | 8420 |
| 18 | 18 | Training and development managers | Detailed | 51405 | 4082 |
| 19 | 19 | Industrial production managers | Detailed | 255384 | 9675 |
| 20 | 20 | Purchasing managers | Detailed | 199161 | 7913 |

Query executed successfully. | DESKTOP-QFEFI58\MSSQLSERVER... | DESKTOP-QFEFI58\rzee4 ... | FinalProject | 00:00:00

➔ **FactOccupation:**

*Figure 24*

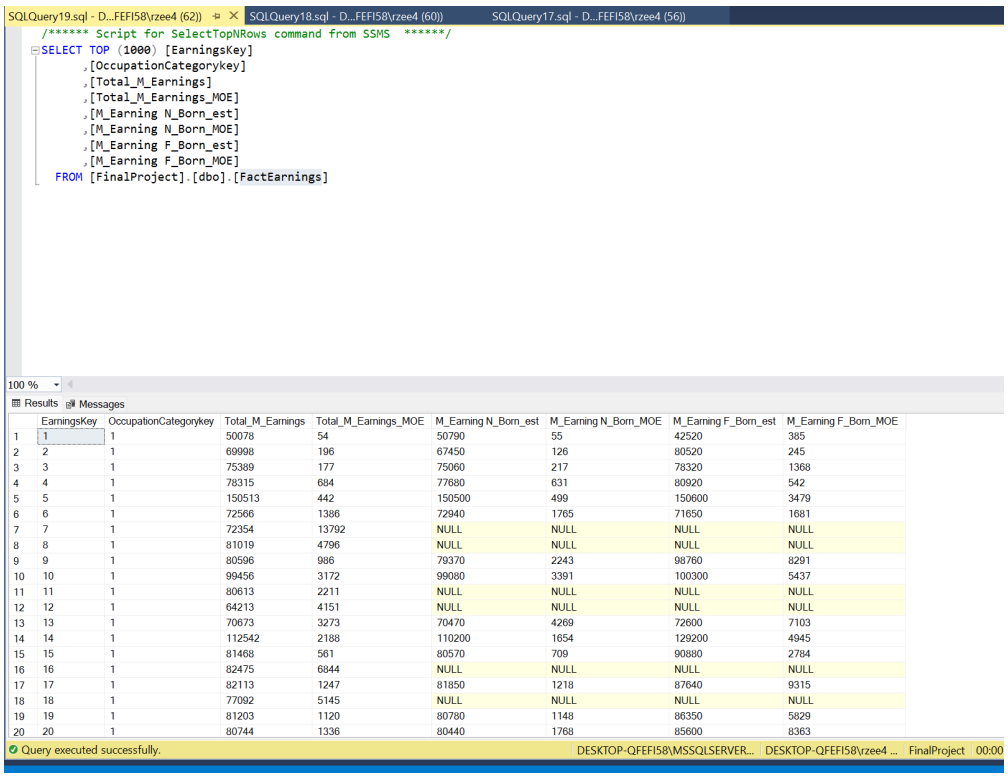


```
/****** Script for SelectTopNRows command from SSMS  ******/
SELECT TOP (1000) [OccupationKey]
      ,[OccupationCategorykey]
      ,[FT_Occupation_N_Born_est]
      ,[FT_Occupation_N_Born_Percentage]
      ,[FT_Occupation_N_Born_Percentage_MOE]
      ,[FT_Occupation_F_Born_est]
      ,[FT_Occupation_F_Born_Percentage_MOE]
      ,[FT_Occupation_N_Born_Percentage3]
  FROM [FinalProject].[dbo].[FactOccupation]
```

| | OccupationKey | OccupationCategorykey | FT_Occupation_N_Born_est | FT_Occupation_N_Born_Percentage | FT_Occupation_N_Born_Percentage_MOE | FT_Occupation_F_Born_est | FT_Occupation_F_Born_Percentage_MOE | FT_Occupation_N_Born_Percentage3 |
|---|---|---|---|---|---|---|---|---|
| 1 | 1 | 1 | 93240000 | 81.9 | 0.1 | 20670000 | 104200 | 18.1 |
| 2 | 2 | 1 | 41920000 | 84.6 | 0.1 | 7654000 | 49420 | 15.4 |
| 3 | 3 | 1 | 18940000 | 86.1 | 0.1 | 3062000 | 30240 | 13.9 |
| 4 | 4 | 1 | 12780000 | 86 | 0.2 | 2086000 | 26820 | 14 |
| 5 | 5 | 1 | 1083000 | 85.4 | 0.6 | 184700 | 8566 | 14.6 |
| 6 | 6 | 1 | 912800 | 88.9 | 0.6 | 114000 | 6495 | 11.1 |
| 7 | 7 | 1 | NULL | NULL | NULL | NULL | NULL | NULL |
| 8 | 8 | 1 | NULL | NULL | NULL | NULL | NULL | NULL |
| 9 | 9 | 1 | 407100 | 88 | 0.8 | 55760 | 4024 | 12 |
| 10 | 10 | 1 | 450900 | 91.1 | 0.7 | 43820 | 3436 | 8.9 |
| 11 | 11 | 1 | NULL | NULL | NULL | NULL | NULL | NULL |
| 12 | 12 | 1 | NULL | NULL | NULL | NULL | NULL | NULL |
| 13 | 13 | 1 | 97380 | 89.3 | 1.7 | 11670 | 1890 | 10.7 |
| 14 | 14 | 1 | 484700 | 78.9 | 0.9 | 129500 | 6161 | 21.1 |
| 15 | 15 | 1 | 1027000 | 85 | 0.6 | 180700 | 7537 | 15 |
| 16 | 16 | 1 | NULL | NULL | NULL | NULL | NULL | NULL |
| 17 | 17 | 1 | 213400 | 88.9 | 1.1 | 26560 | 2976 | 11.1 |
| 18 | 18 | 1 | NULL | NULL | NULL | NULL | NULL | NULL |
| 19 | 19 | 1 | 220800 | 86.5 | 1.4 | 34600 | 3929 | 13.5 |
| 20 | 20 | 1 | 178400 | 89.6 | 1.2 | 20770 | 2649 | 10.4 |

**FactEarning:**

*Figure 25*

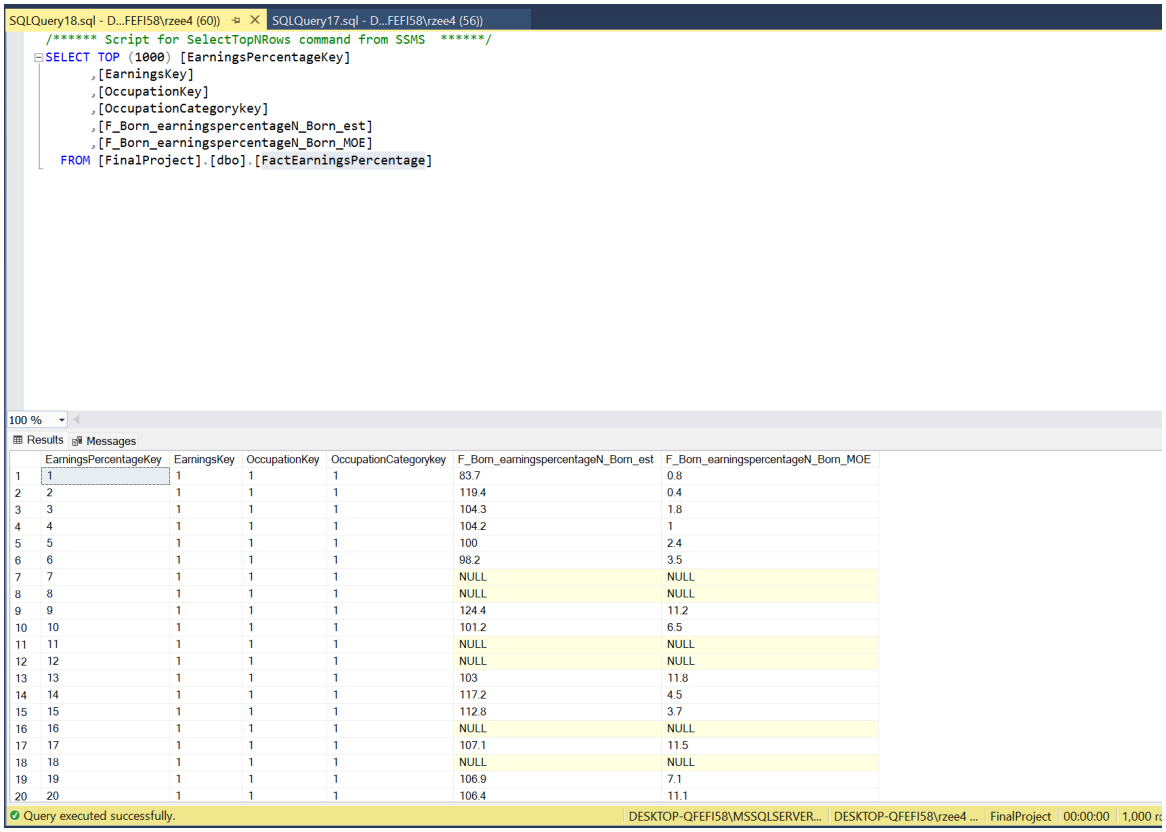


```
/****** Script for SelectTopNRows command from SSMS  ******/
SELECT TOP (1000) [EarningsKey]
      ,[OccupationCategorykey]
      ,[Total_M_Earnings]
      ,[Total_M_Earnings_MOE]
      ,[M_Earning N_Born_est]
      ,[M_Earning N_Born_MOE]
      ,[M_Earning F_Born_est]
      ,[M_Earning F_Born_MOE]
  FROM [FinalProject].[dbo].[FactEarnings]
```

| | EarningsKey | OccupationCategorykey | Total_M_Earnings | Total_M_Earnings_MOE | M_Earning N_Born_est | M_Earning N_Born_MOE | M_Earning F_Born_est | M_Earning F_Born_MOE |
|---|---|---|---|---|---|---|---|---|
| 1 | 1 | 1 | 50078 | 54 | 50790 | 55 | 42520 | 385 |
| 2 | 2 | 1 | 69998 | 196 | 67450 | 126 | 80520 | 245 |
| 3 | 3 | 1 | 75389 | 177 | 75060 | 217 | 78320 | 1368 |
| 4 | 4 | 1 | 78315 | 684 | 77680 | 631 | 80920 | 542 |
| 5 | 5 | 1 | 150513 | 442 | 150500 | 499 | 150600 | 3479 |
| 6 | 6 | 1 | 72566 | 1386 | 72940 | 1765 | 71650 | 1681 |
| 7 | 7 | 1 | 72354 | 13792 | NULL | NULL | NULL | NULL |
| 8 | 8 | 1 | 81019 | 4796 | NULL | NULL | NULL | NULL |
| 9 | 9 | 1 | 80596 | 986 | 79370 | 2243 | 98760 | 8291 |
| 10 | 10 | 1 | 99456 | 3172 | 99080 | 3391 | 100300 | 5437 |
| 11 | 11 | 1 | 80613 | 2211 | NULL | NULL | NULL | NULL |
| 12 | 12 | 1 | 64213 | 4151 | NULL | NULL | NULL | NULL |
| 13 | 13 | 1 | 70673 | 3273 | 70470 | 4269 | 72600 | 7103 |
| 14 | 14 | 1 | 112542 | 2188 | 110200 | 1654 | 129200 | 4945 |
| 15 | 15 | 1 | 81468 | 561 | 80570 | 709 | 90880 | 2784 |
| 16 | 16 | 1 | 82475 | 6844 | NULL | NULL | NULL | NULL |
| 17 | 17 | 1 | 82113 | 1247 | 81850 | 1218 | 87640 | 9315 |
| 18 | 18 | 1 | 77092 | 5145 | NULL | NULL | NULL | NULL |
| 19 | 19 | 1 | 81203 | 1120 | 80780 | 1148 | 86350 | 5829 |
| 20 | 20 | 1 | 80744 | 1336 | 80440 | 1768 | 85600 | 8363 |

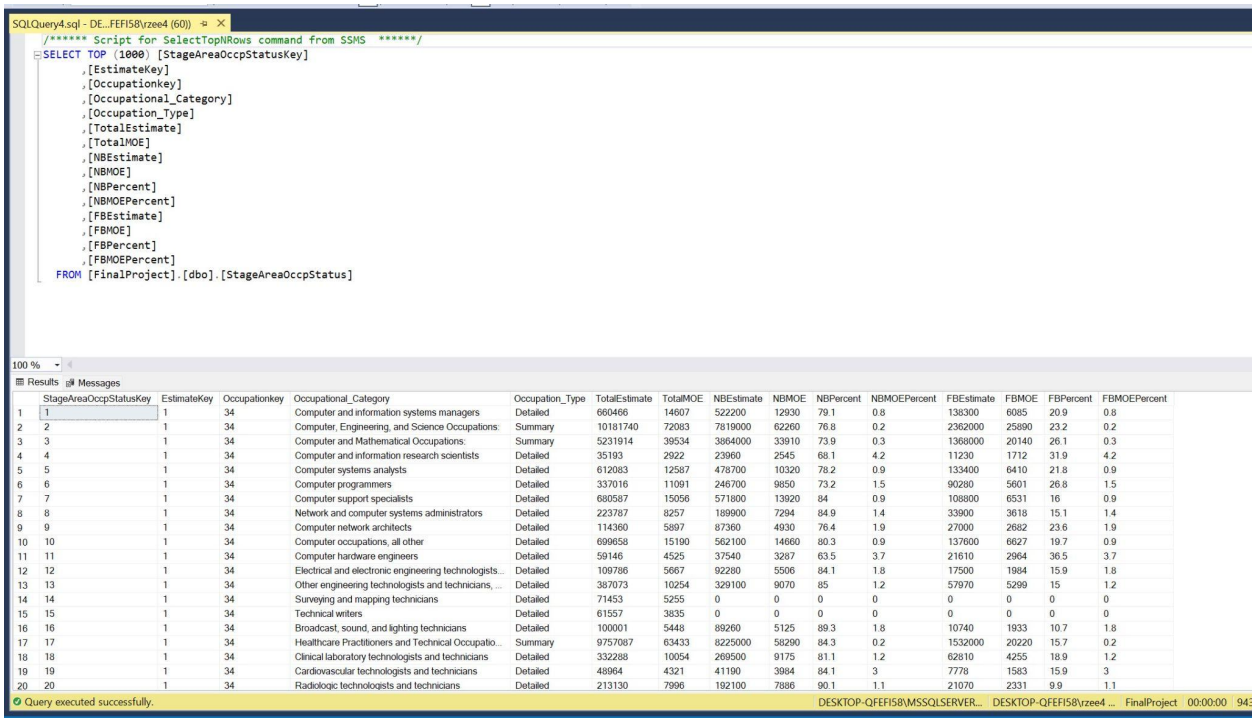
➔ **FactEarningsPercentage:**

*Figure 26*




- **Staging Area Occupation Status:**

*Figure 27*



SQLQuery4.sql - DE...FEFI58\vzee4 (60))

```
/****** Script for SelectTopNRows command from SSMS  ******/
SELECT TOP (1000) [StageAreaOccpStatusKey]
      ,[EstimateKey]
      ,[Occupationkey]
      ,[Occupational_Category]
      ,[Occupation_Type]
      ,[TotalEstimate]
      ,[TotalMOE]
      ,[NBEstimate]
      ,[NBMOE]
      ,[NBPercent]
      ,[NBMOEPercent]
      ,[FBEstimate]
      ,[FBMOE]
      ,[FBPercent]
      ,[FBMOEPercent]
  FROM [FinalProject].[dbo].[StageAreaOccpStatus]
```

100 %

Results | Messages

| | StageAreaOccpStatusKey | EstimateKey | Occupationkey | Occupational_Category | Occupation_Type | TotalEstimate | TotalMOE | NBEstimate | NBMOE | NBPercent | NBMOEPercent | FBEstimate | FBMOE | FBPercent | FBMOEPercent |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1 | 1 | 34 | Computer and information systems managers | Detailed | 660466 | 14607 | 522200 | 12930 | 79.1 | 0.8 | 138300 | 6085 | 20.9 | 0.8 |
| 2 | 2 | 1 | 34 | Computer, Engineering, and Science Occupations: | Summary | 10181740 | 72083 | 7819000 | 62260 | 76.8 | 0.2 | 2362000 | 25890 | 23.2 | 0.2 |
| 3 | 3 | 1 | 34 | Computer and Mathematical Occupations: | Summary | 5231914 | 39534 | 3864000 | 33910 | 73.9 | 0.3 | 1368000 | 20140 | 26.1 | 0.3 |
| 4 | 4 | 1 | 34 | Computer and information research scientists | Detailed | 35193 | 2922 | 23960 | 2545 | 68.1 | 4.2 | 11230 | 1712 | 31.9 | 4.2 |
| 5 | 5 | 1 | 34 | Computer systems analysts | Detailed | 612083 | 12587 | 478700 | 10320 | 78.2 | 0.9 | 133400 | 6410 | 21.8 | 0.9 |
| 6 | 6 | 1 | 34 | Computer programmers | Detailed | 337016 | 11091 | 246700 | 9850 | 73.2 | 1.5 | 90280 | 5601 | 26.8 | 1.5 |
| 7 | 7 | 1 | 34 | Computer support specialists | Detailed | 680587 | 15056 | 571800 | 13920 | 84 | 0.9 | 108800 | 6531 | 16 | 0.9 |
| 8 | 8 | 1 | 34 | Network and computer systems administrators | Detailed | 223787 | 8257 | 189900 | 7294 | 84.9 | 1.4 | 33900 | 3618 | 15.1 | 1.4 |
| 9 | 9 | 1 | 34 | Computer network architects | Detailed | 114360 | 5897 | 87360 | 4930 | 76.4 | 1.9 | 27000 | 2682 | 23.6 | 1.9 |
| 10 | 10 | 1 | 34 | Computer occupations, all other | Detailed | 699658 | 15190 | 562100 | 14660 | 80.3 | 0.9 | 137600 | 6627 | 19.7 | 0.9 |
| 11 | 11 | 1 | 34 | Computer hardware engineers | Detailed | 59146 | 4525 | 37540 | 3287 | 63.5 | 3.7 | 21610 | 2964 | 36.5 | 3.7 |
| 12 | 12 | 1 | 34 | Electrical and electronic engineering technologists... | Detailed | 109786 | 5667 | 92280 | 5506 | 84.1 | 1.8 | 17500 | 1984 | 15.9 | 1.8 |
| 13 | 13 | 1 | 34 | Other engineering technologists and technicians, ... | Detailed | 387073 | 10254 | 329100 | 9070 | 85 | 1.2 | 57970 | 5299 | 15 | 1.2 |
| 14 | 14 | 1 | 34 | Surveying and mapping technicians | Detailed | 71453 | 5255 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 15 | 15 | 1 | 34 | Technical writers | Detailed | 61557 | 3835 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 16 | 16 | 1 | 34 | Broadcast, sound, and lighting technicians | Detailed | 100001 | 5448 | 89260 | 5125 | 89.3 | 1.8 | 10740 | 1933 | 10.7 | 1.8 |
| 17 | 17 | 1 | 34 | Healthcare Practitioners and Technical Occupatio... | Summary | 9757087 | 63433 | 8225000 | 58290 | 84.3 | 0.2 | 1532000 | 20220 | 15.7 | 0.2 |
| 18 | 18 | 1 | 34 | Clinical laboratory technologists and technicians | Detailed | 332288 | 10054 | 269500 | 9175 | 81.1 | 1.2 | 62810 | 4255 | 18.9 | 1.2 |
| 19 | 19 | 1 | 34 | Cardiovascular technologists and technicians | Detailed | 48964 | 4321 | 41190 | 3984 | 84.1 | 3 | 7778 | 1583 | 15.9 | 3 |
| 20 | 20 | 1 | 34 | Radiologic technologists and technicians | Detailed | 213130 | 7996 | 192100 | 7886 | 90.1 | 1.1 | 21070 | 2331 | 9.9 | 1.1 |

Query executed successfully. DESKTOP-QFEFI58\MSSQLSERVER... DESKTOP-QFEFI58\vzee4 ... FinalProject 00:00:00

➔ **DimOccupation:**

*Figure 28*

SQLQuery7.sql - DE...FEFI58\rzee4 (59))

```
/****** Script for SelectTopNRows command from SSMS  ******/
SELECT TOP (1000) [Occupationkey]
      ,[Occupational_Category]
      ,[Occupation_Type]
  FROM [FinalProject].[dbo].[dimOccupation]
```

100 %

Results Messages

| | Occupationkey | Occupational_Category | Occupation_Type |
|---|---|---|---|
| 1 | 1 | Computer and information systems managers | Detailed |
| 2 | 2 | Computer, Engineering, and Science Occupations: | Summary |
| 3 | 3 | Computer and Mathematical Occupations: | Summary |
| 4 | 4 | Computer and information research scientists | Detailed |
| 5 | 5 | Computer systems analysts | Detailed |
| 6 | 6 | Computer programmers | Detailed |
| 7 | 7 | Computer support specialists | Detailed |
| 8 | 8 | Network and computer systems administrators | Detailed |
| 9 | 9 | Computer network architects | Detailed |
| 10 | 10 | Computer occupations, all other | Detailed |
| 11 | 11 | Computer hardware engineers | Detailed |
| 12 | 12 | Electrical and electronic engineering technologists... | Detailed |
| 13 | 13 | Other engineering technologists and technicians, ... | Detailed |
| 14 | 14 | Surveying and mapping technicians | Detailed |
| 15 | 15 | Technical writers | Detailed |
| 16 | 16 | Broadcast, sound, and lighting technicians | Detailed |
| 17 | 17 | Healthcare Practitioners and Technical Occupatio... | Summary |
| 18 | 18 | Clinical laboratory technologists and technicians | Detailed |
| 19 | 19 | Cardiovascular technologists and technicians | Detailed |
| 20 | 20 | Radiologic technologists and technicians | Detailed |

Query executed successfully. DESKTOP-QFEFI58\MSSQLSERVER... DESKTOP-QFEFI58\rzee4 ... FinalPr

➔ **FactEstimate:**

*Figure 29*

SQLQuery11.sql - D...FEFI58\rzee4 (56))

```
/****** Script for SelectTopNRows command from SSMS  ******/
SELECT TOP (1000) [EstimateKey]
      ,[Occupationkey]
      ,[TotalEstimate]
      ,[TotalMOE]
      ,[NBEstimate]
      ,[NBMOE]
      ,[NBPercent]
      ,[NBMOEPercent]
      ,[FBEstimate]
      ,[FBMOE]
      ,[FBMOEPercent]
  FROM [FinalProject].[dbo].[FactEstimates]
```

100 %

Results | Messages

| | EstimateKey | Occupationkey | TotalEstimate | TotalMOE | NBEstimate | NBMOE | NBPercent | NBMOEPercent | FBEstimate | FBMOE | FBMOEPercent |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1 | 34 | 660466 | 14607 | 522200 | 12930 | 79.1 | 0.8 | 138300 | 6085 | 0.8 |
| 2 | 2 | 34 | 10181740 | 72083 | 7819000 | 62260 | 76.8 | 0.2 | 2362000 | 25890 | 0.2 |
| 3 | 3 | 34 | 5231914 | 39534 | 3864000 | 33910 | 73.9 | 0.3 | 1368000 | 20140 | 0.3 |
| 4 | 4 | 34 | 35193 | 2922 | 23960 | 2545 | 68.1 | 4.2 | 11230 | 1712 | 4.2 |
| 5 | 5 | 34 | 612083 | 12587 | 478700 | 10320 | 78.2 | 0.9 | 133400 | 6410 | 0.9 |
| 6 | 6 | 34 | 337016 | 11091 | 246700 | 9850 | 73.2 | 1.5 | 90280 | 5601 | 1.5 |
| 7 | 7 | 34 | 680587 | 15056 | 571800 | 13920 | 84 | 0.9 | 108800 | 6531 | 0.9 |
| 8 | 8 | 34 | 223787 | 8257 | 189900 | 7294 | 84.9 | 1.4 | 33900 | 3618 | 1.4 |
| 9 | 9 | 34 | 114360 | 5897 | 87360 | 4930 | 76.4 | 1.9 | 27000 | 2682 | 1.9 |
| 10 | 10 | 34 | 699658 | 15190 | 562100 | 14660 | 80.3 | 0.9 | 137600 | 6627 | 0.9 |
| 11 | 11 | 34 | 59146 | 4525 | 37540 | 3287 | 63.5 | 3.7 | 21610 | 2964 | 3.7 |
| 12 | 12 | 34 | 109786 | 5667 | 92280 | 5506 | 84.1 | 1.8 | 17500 | 1984 | 1.8 |
| 13 | 13 | 34 | 387073 | 10254 | 329100 | 9070 | 85 | 1.2 | 57970 | 5299 | 1.2 |
| 14 | 14 | 34 | 71453 | 5255 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 15 | 15 | 34 | 61557 | 3835 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 16 | 16 | 34 | 100001 | 5448 | 89260 | 5125 | 89.3 | 1.8 | 10740 | 1933 | 1.8 |
| 17 | 17 | 34 | 9757087 | 63433 | 8225000 | 58290 | 84.3 | 0.2 | 1532000 | 20220 | 0.2 |
| 18 | 18 | 34 | 332288 | 10054 | 269500 | 9175 | 81.1 | 1.2 | 62810 | 4255 | 1.2 |
| 19 | 19 | 34 | 48964 | 4321 | 41190 | 3984 | 84.1 | 3 | 7778 | 1583 | 3 |
| 20 | 20 | 34 | 213130 | 7996 | 192100 | 7886 | 90.1 | 1.1 | 21070 | 2331 | 1.1 |

Query executed successfully. DESKTOP-QFEFI58\MSSQLSERVER... DESKTOP-QFEFI58\rzee4 ... FinalProjec

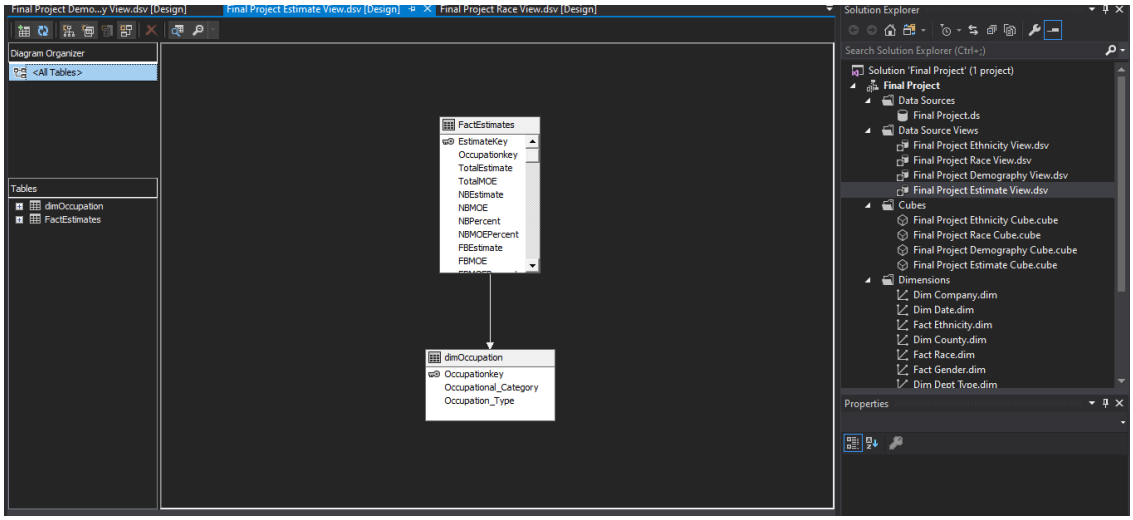
## SSAS Design

SQL Server Analysis Services (SSAS) is an analytical tool that allows one to create a view and a cube for their data. Which will allow one to analyze information across their entire databases using the data from one's own data warehouse to allow for faster data analysis. In the following examples one can see the data view and cubes that comes from the SQL database:

## Analysis

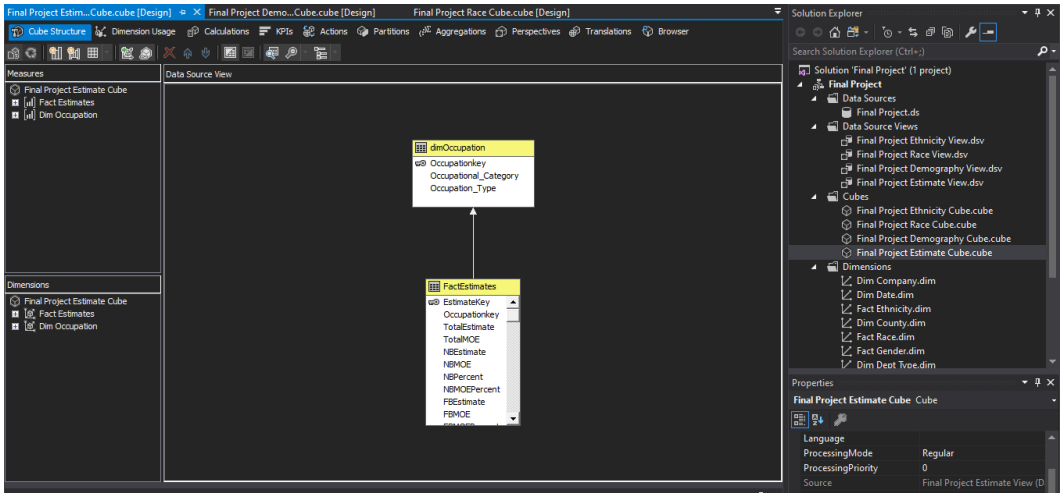
### Ethnicity View:

*Figure 30*



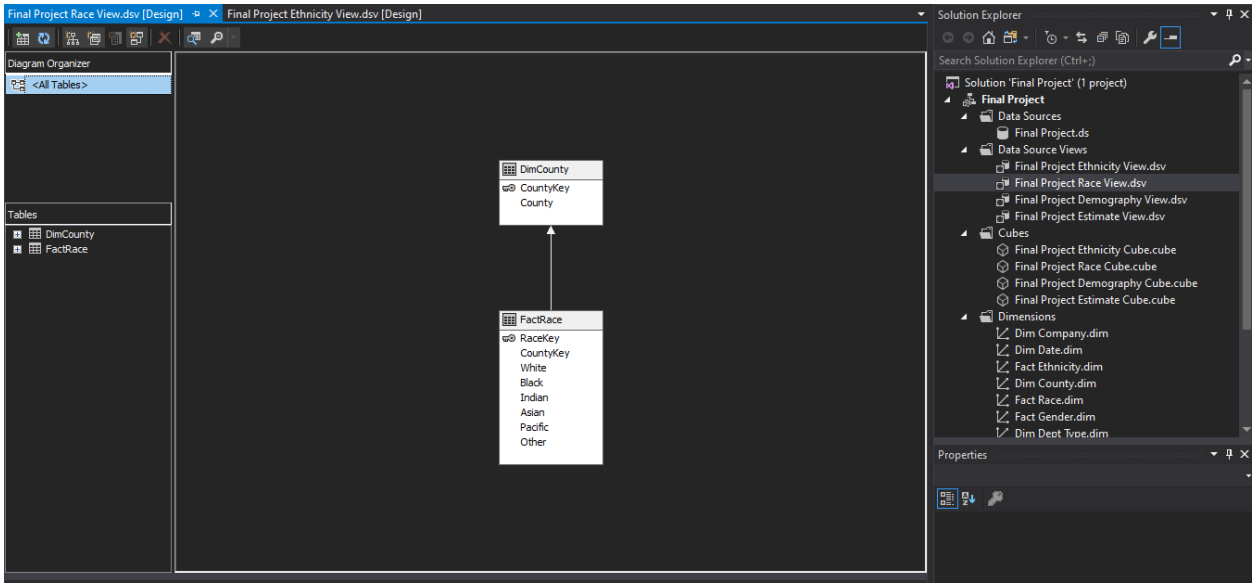
## Ethnicity Cube:

*Figure 31*



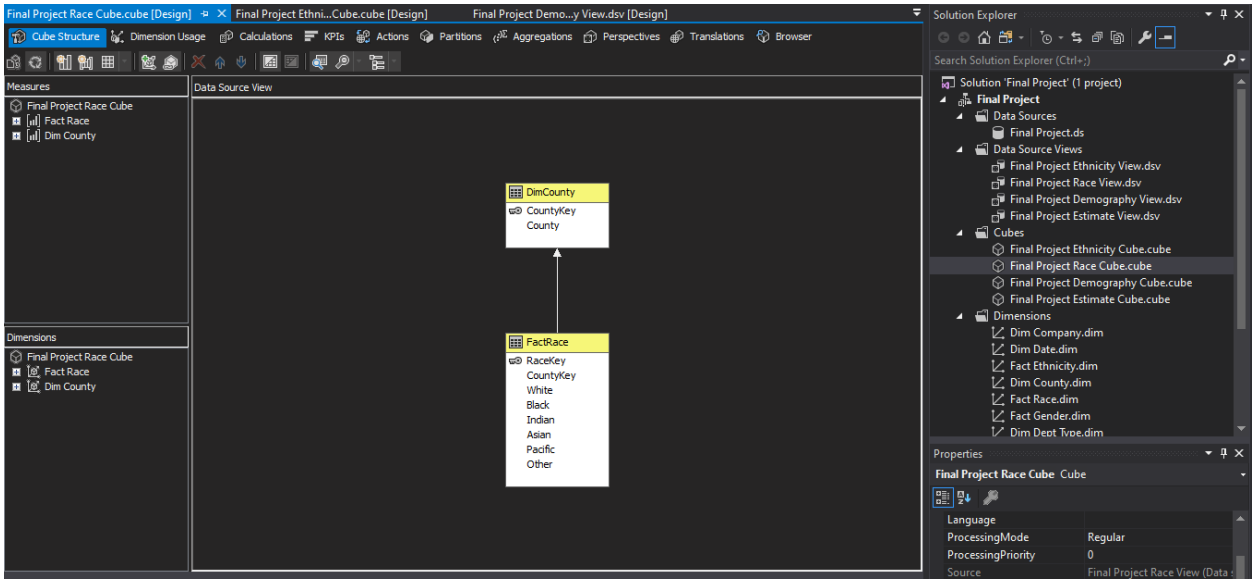

## Race View:

*Figure 32*



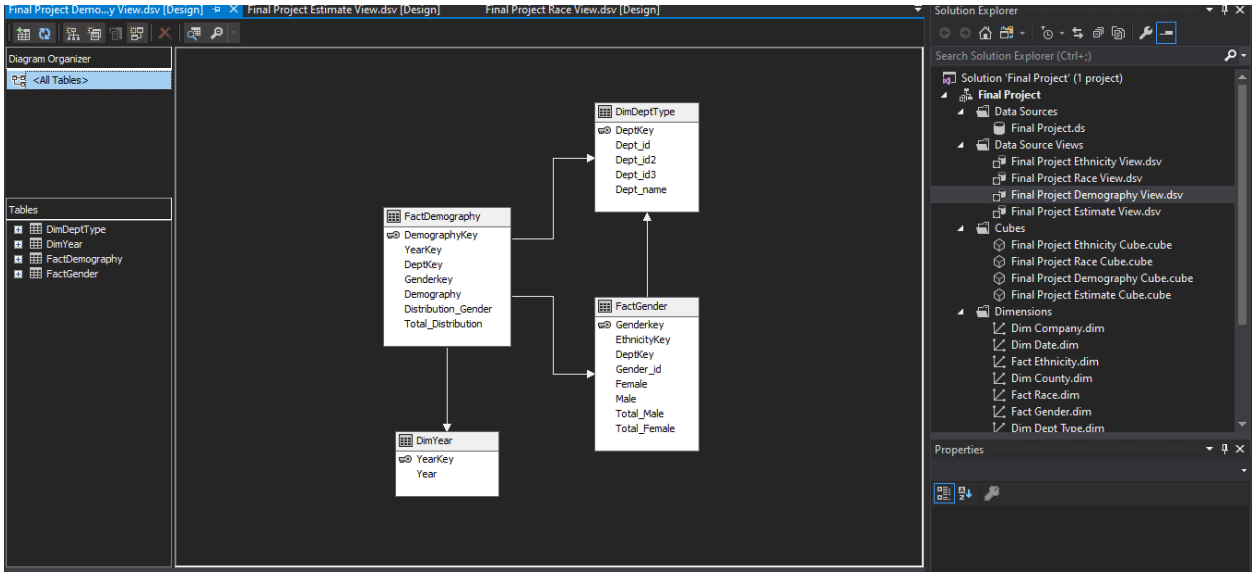
## Race Cube:

*Figure 33*



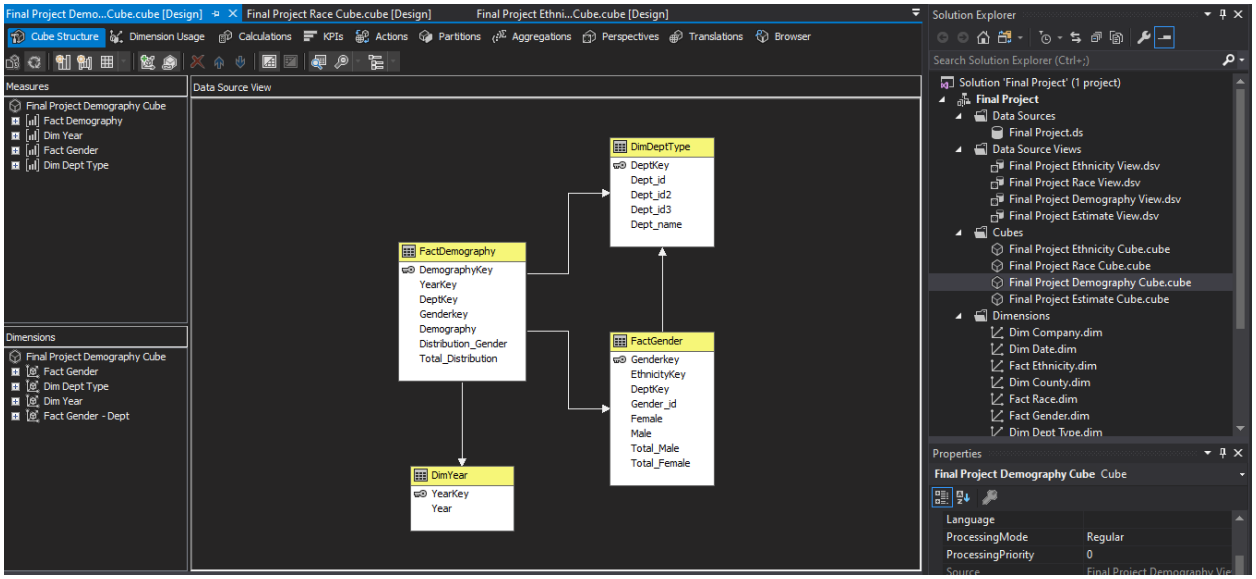

## Demography View:

*Figure 34*



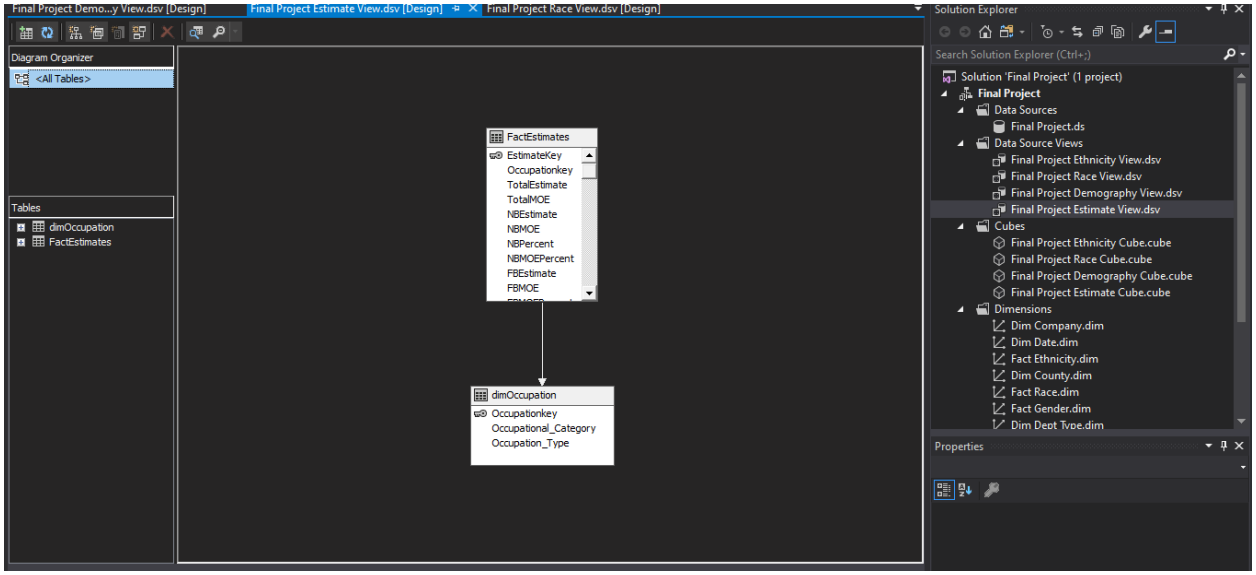
## Demography Cube:

*Figure 35*



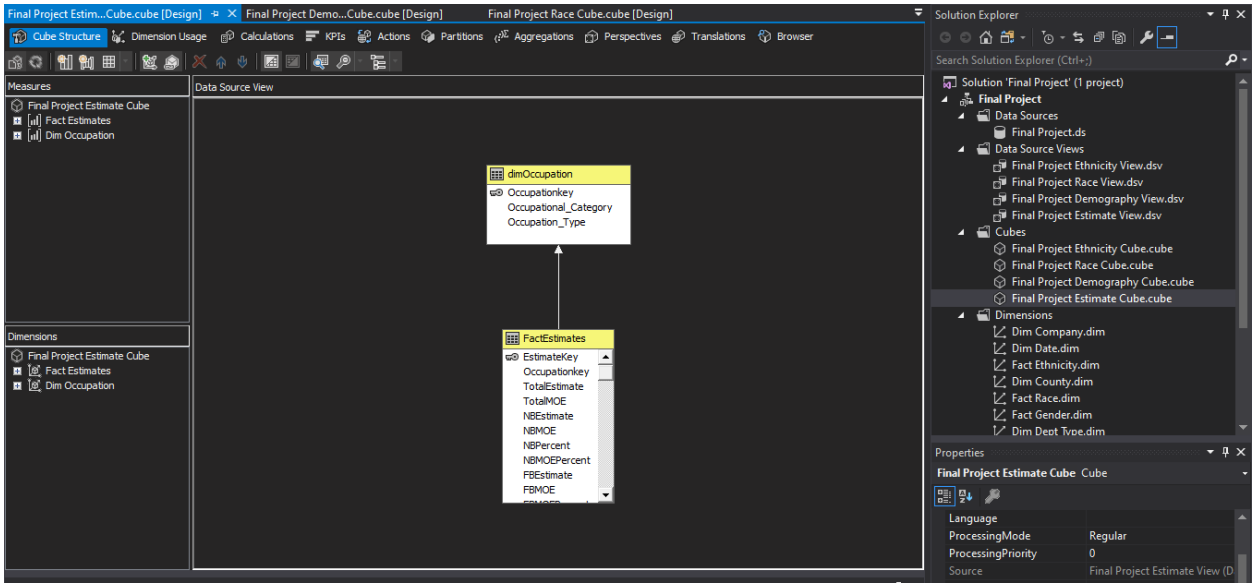

## Estimate View:

*Figure 36*



**Estimate Cube:**

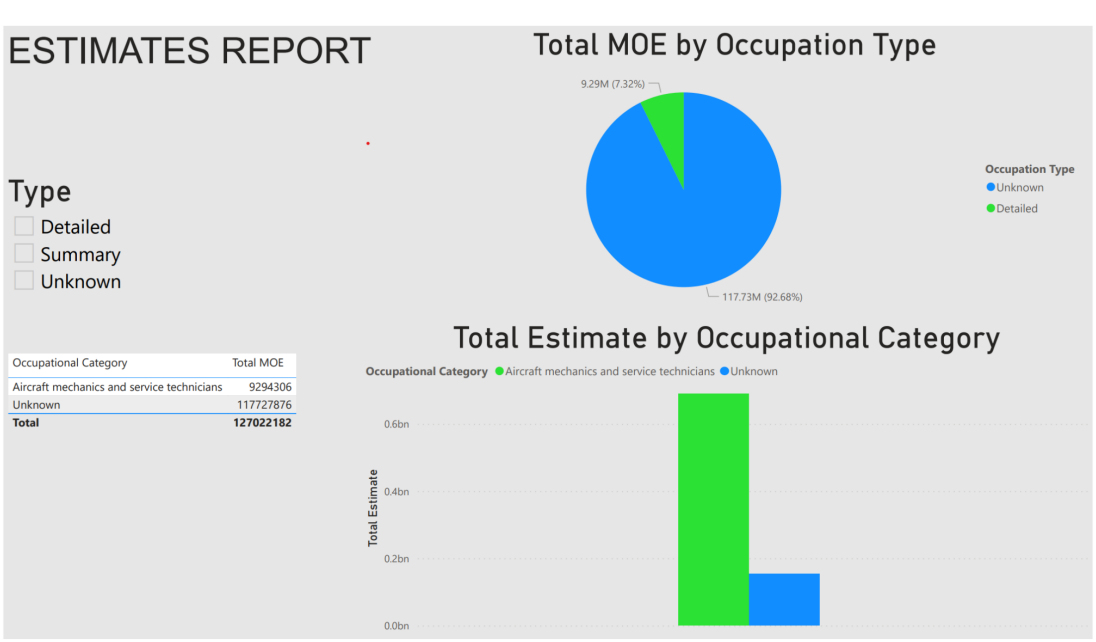
*Figure 37*




## Report

In the following report one can see the total estimated amount by occupational category, Total MOE by occupation as well as the total MOE for Aircraft mechanic and service technician category.

*Figure 38*


ESTIMATES REPORT
Total MOE by Occupation Type
9.29M (7.32%)
117.73M (92.68%)
Occupation Type
Unknown
Detailed
Type
Detailed
Summary
Unknown
Occupational Category
Total MOE
Aircraft mechanics and service technicians
9294306
Unknown
117727876
Total
127022182
Total Estimate by Occupational Category
Occupational Category
Aircraft mechanics and service technicians
Unknown
Total Estimate
0.6bn
0.4bn
0.2bn
0.0bn

## SSRS Design

The SQL Server Reporting Services (SSRS) is Microsoft's server-based report generating software. It uses it to build custom reports from data sources such as SQL databases and other external sources. In the following examples implanting in the project, all the data comes from SQL databases; the examples have four different custom reports; each report has its data source and is coming from the same database, they have different visualization in each report such as Pie chart, Pyramid chart, column chart, and others. The reports are:

### Ethnicity SSRS Report

The following report contains information about the number of ethnic employees by the company. It's filtered and sorted by company AirBnB and has two tables (figure) connected by an inner join with their primary and foreign key. The query is below:

```
SELECT        FactEthnicity.Male, FactEthnicity.Female, FactEthnicity.Asian,
FactEthnicity.Latino, FactEthnicity.Black, DimCompany.Company
FROM          DimCompany INNER JOIN
                  FactEthnicity ON DimCompany.CompKey = FactEthnicity.CompKey
WHERE         (DimCompany.Company = N'AirBnB')
ORDER BY DimCompany.Company
```

*Figure 39*

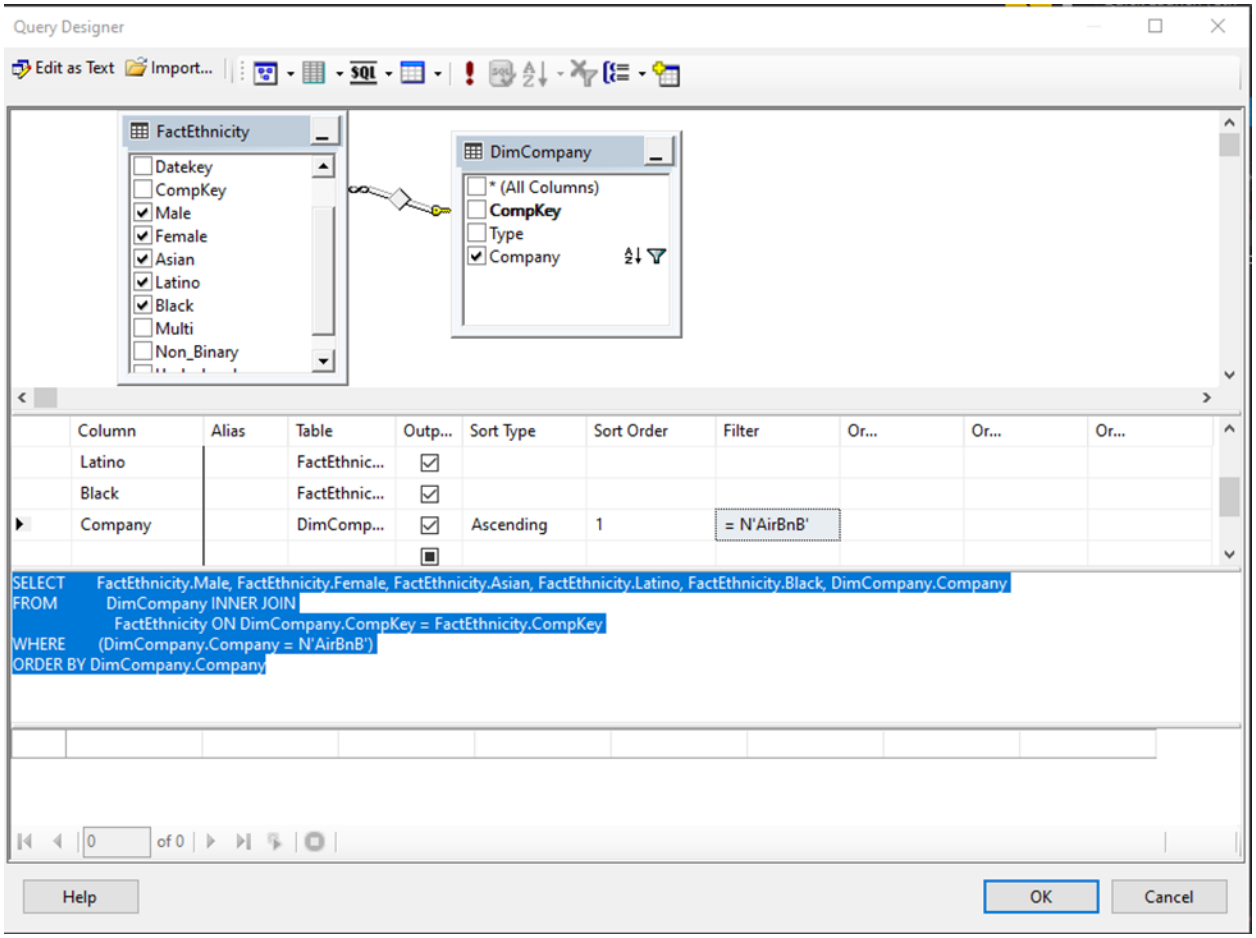



*Figure 40*

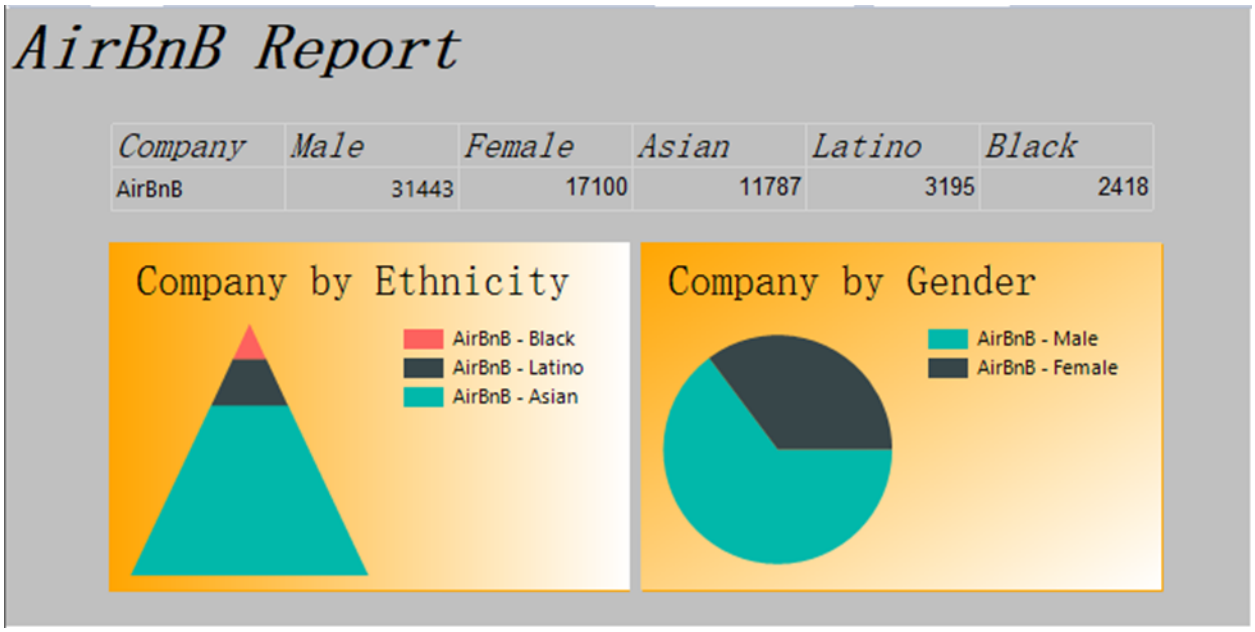



*Figure 41*

**Demography SSRS Report**

The following report contains information about the number of populations by department's geography. It's sorted and filtered by a single department Non-Tech and has two tables (figure) connected by an inner join with their primary and foreign key. The query is below:

```
SELECT      FactDemography.Total_Distribution, DimDeptType.Dept_name
FROM        FactDemography INNER JOIN
            DimDeptType ON FactDemography.DeptKey = DimDeptType.DeptKey
WHERE       (DimDeptType.Dept_name = N'Non-tech')
ORDER BY FactDemography.Total_Distribution
```

*Figure 42*

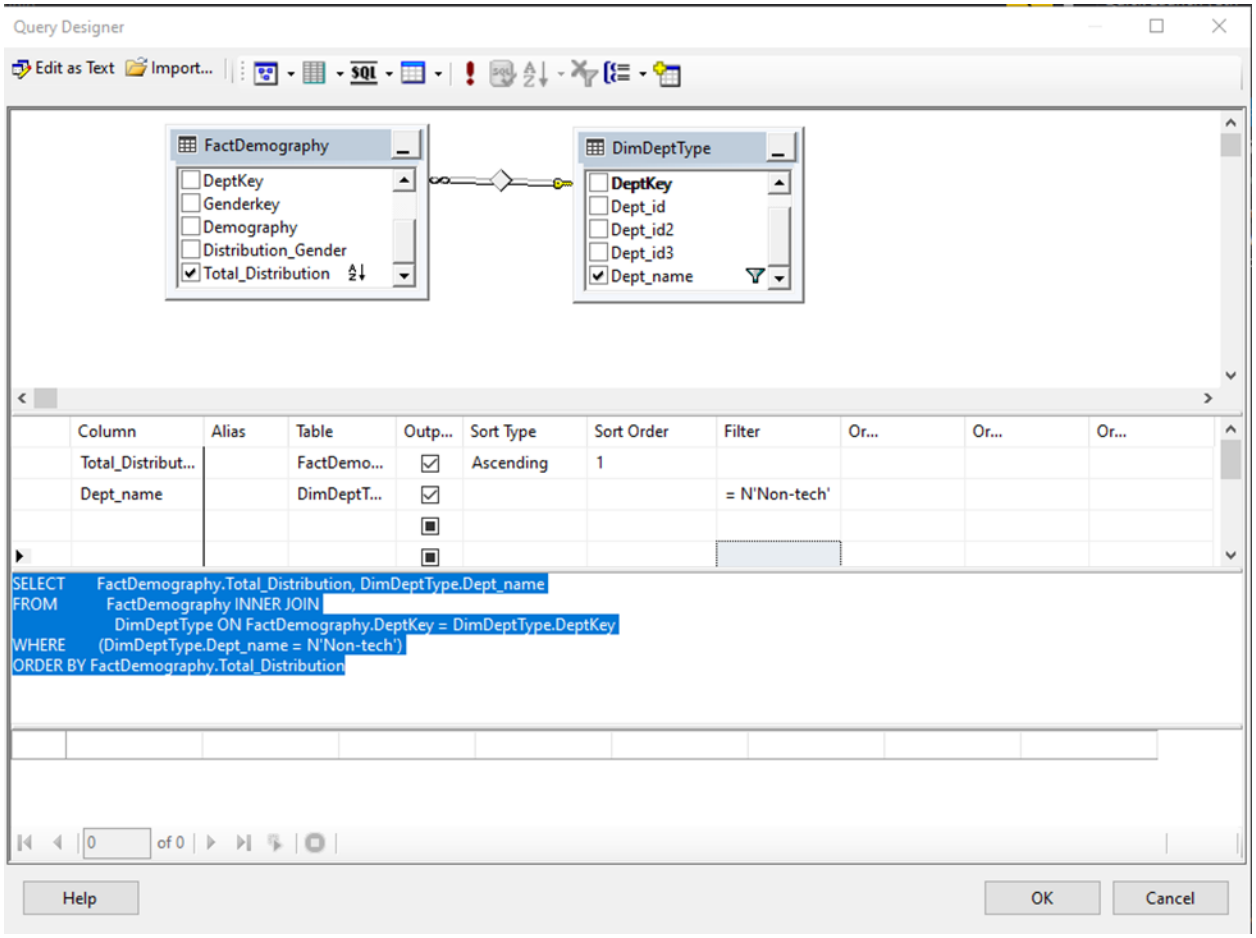
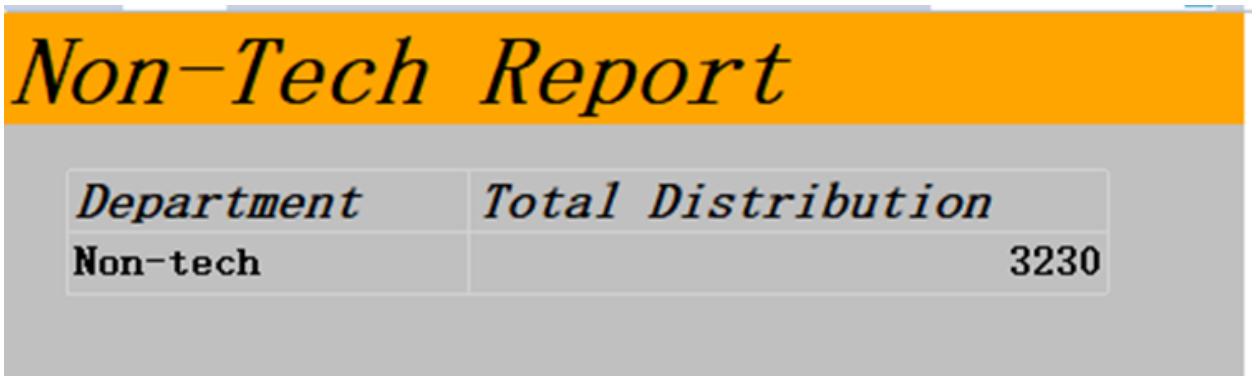

Query Designer
Edit as Text
Import...
FactDemography
DeptKey
Genderkey
Demography
Distribution_Gender
Total_Distribution
DimDeptType
DeptKey
Dept_id
Dept_id2
Dept_id3
Dept_name
Column
Alias
Table
Outp...
Sort Type
Sort Order
Filter
Or...
Or...
Or...
Total_Distribut...
FactDemo...
Ascending
1
Dept_name
DimDeptT...
= N'Non-tech'
SELECT FactDemography.Total_Distribution, DimDeptType.Dept_name
FROM FactDemography INNER JOIN
DimDeptType ON FactDemography.DeptKey = DimDeptType.DeptKey
WHERE (DimDeptType.Dept_name = N'Non-tech')
ORDER BY FactDemography.Total_Distribution
0
of 0
Help
OK
Cancel

*Figure 43*


Non-Tech Report
Department
Total Distribution
Non-tech
3230

**Occupation SSRS Report**

The following report contains information about the earnings of populations occupation. A single occupation filters it, Civilian employed age 16 and occupation category equal to over and has two tables (figure) connected by an inner join with their primary and foreign key. The query is below:

```
SELECT        FactEarnings.Total_M_Earnings, FactEarnings.Total_M_Earnings_MOE,
FactEarnings.[M_Earning N_Born_est], FactEarnings.[M_Earning N_Born_MOE],
FactEarnings.[M_Earning F_Born_est],

                  FactEarnings.[M_Earning F_Born_MOE],
DimOccupationCategory.Occupation_Category

FROM          FactEarnings INNER JOIN

                  DimOccupationCategory ON FactEarnings.OccupationCategorykey =
DimOccupationCategory.OccupationCategorykey

WHERE       (DimOccupationCategory.Occupation_Category = N'Civilian employed age 16'
AND DimOccupationCategory.Occupation_Category = N'over')
```

*Figure 44*

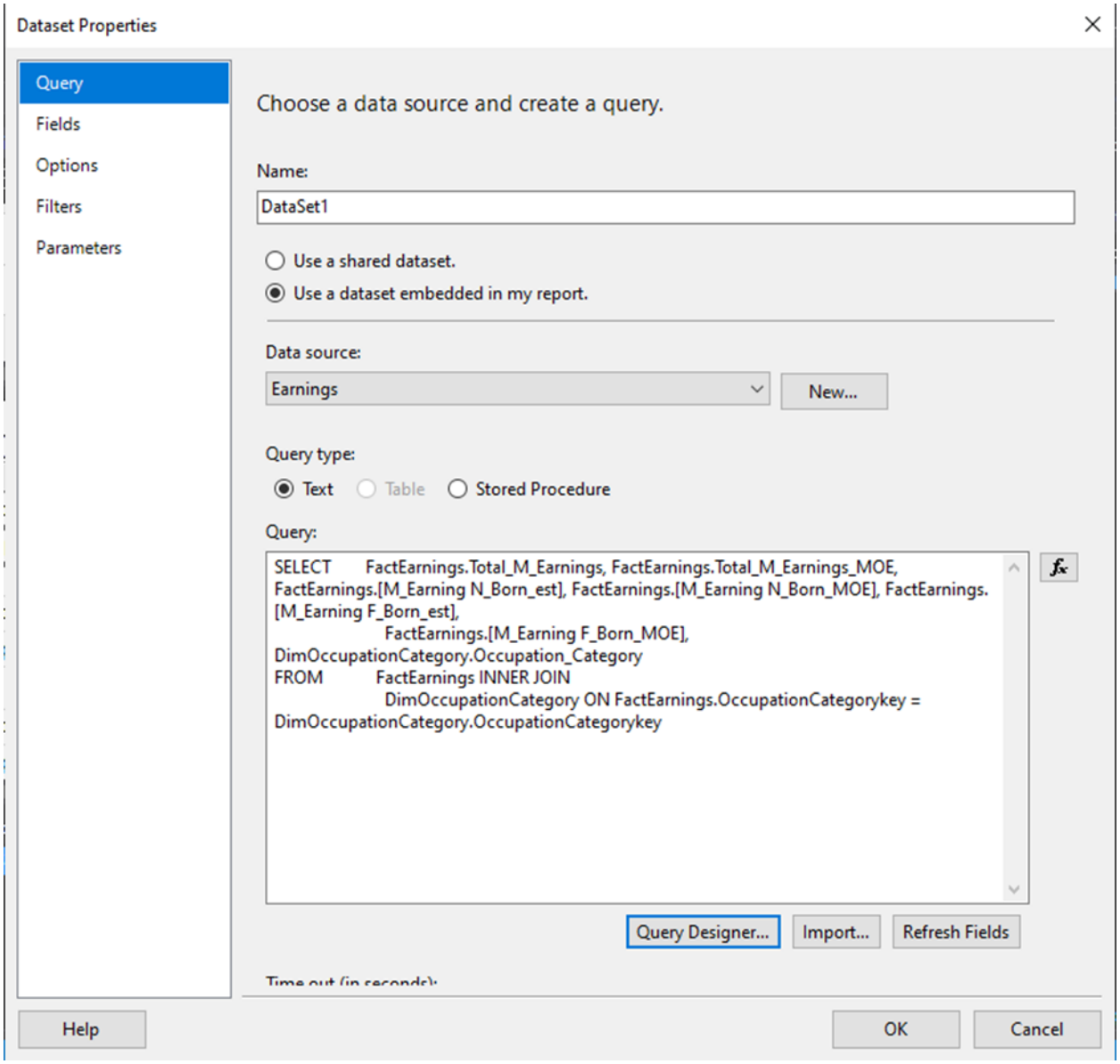
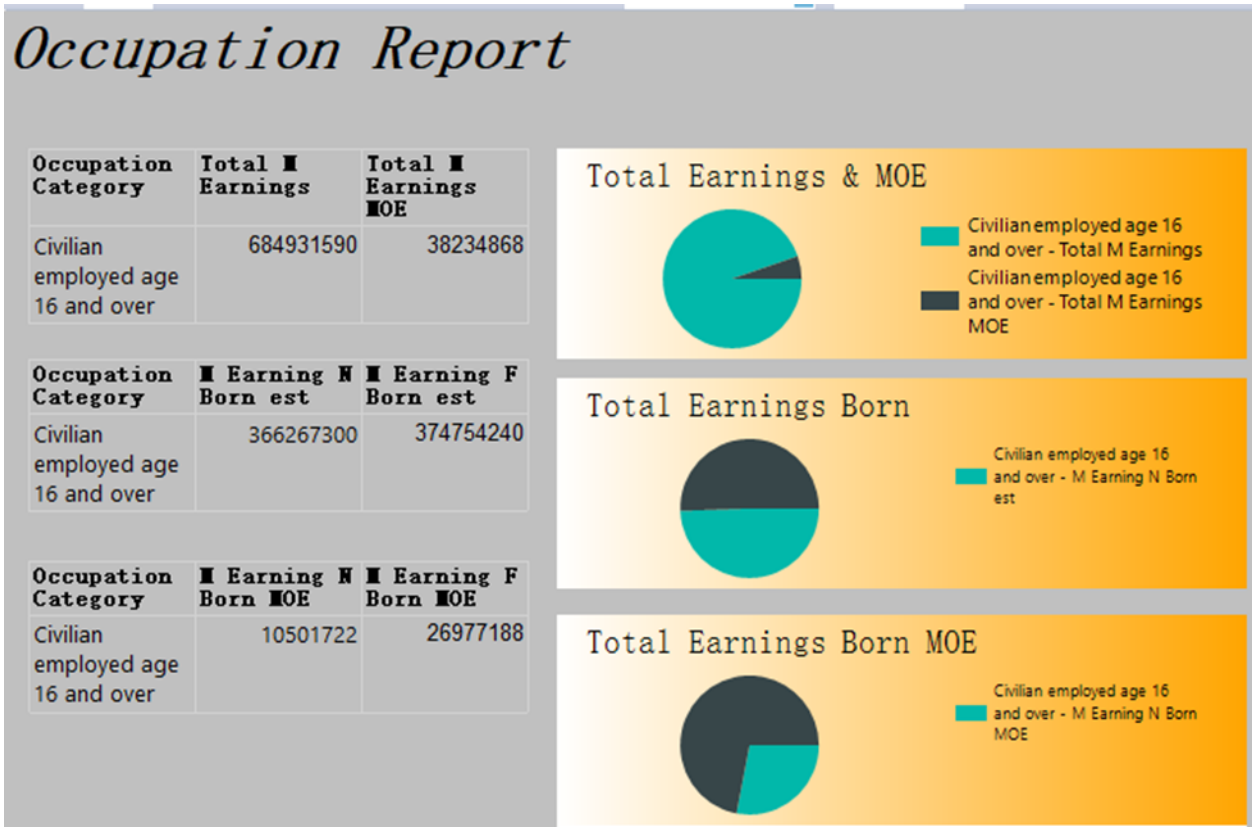

Dataset Properties
Query
Fields
Options
Filters
Parameters
Choose a data source and create a query.
Name:
DataSet1
Use a shared dataset.
Use a dataset embedded in my report.
Data source:
Earnings
New...
Query type:
Text
Table
Stored Procedure
Query:
SELECT FactEarnings.Total_M_Earnings, FactEarnings.Total_M_Earnings_MOE, FactEarnings.[M_Earning N_Born_est], FactEarnings.[M_Earning N_Born_MOE], FactEarnings.[M_Earning F_Born_est], FactEarnings.[M_Earning F_Born_MOE], DimOccupationCategory.Occupation_Category FROM FactEarnings INNER JOIN DimOccupationCategory ON FactEarnings.OccupationCategorykey = DimOccupationCategory.OccupationCategorykey
Query Designer...
Import...
Refresh Fields
Help
OK
Cancel

*Figure 45*




**Estimates SSRS Report**

The following report contains information about estimates of populations in occupation. It's filtered by a single occupation equal to Aircraft mechanism and service technicians and has two tables (figure) connected by an inner join with their primary and foreign key. The query is below:

```
SELECT      FactEstimates.TotalEstimate, FactEstimates.TotalMOE,
Convert(int,FactEstimates.NBMOE) NBMOE, CONVERT(int,FactEstimates.NBEstimate)
NBEstimate, dimOccupation.Occupational_Category

FROM        FactEstimates INNER JOIN
```

```
                dimOccupation ON FactEstimates.Occupationkey =
dimOccupation.Occupationkey
```

*Figure 46*

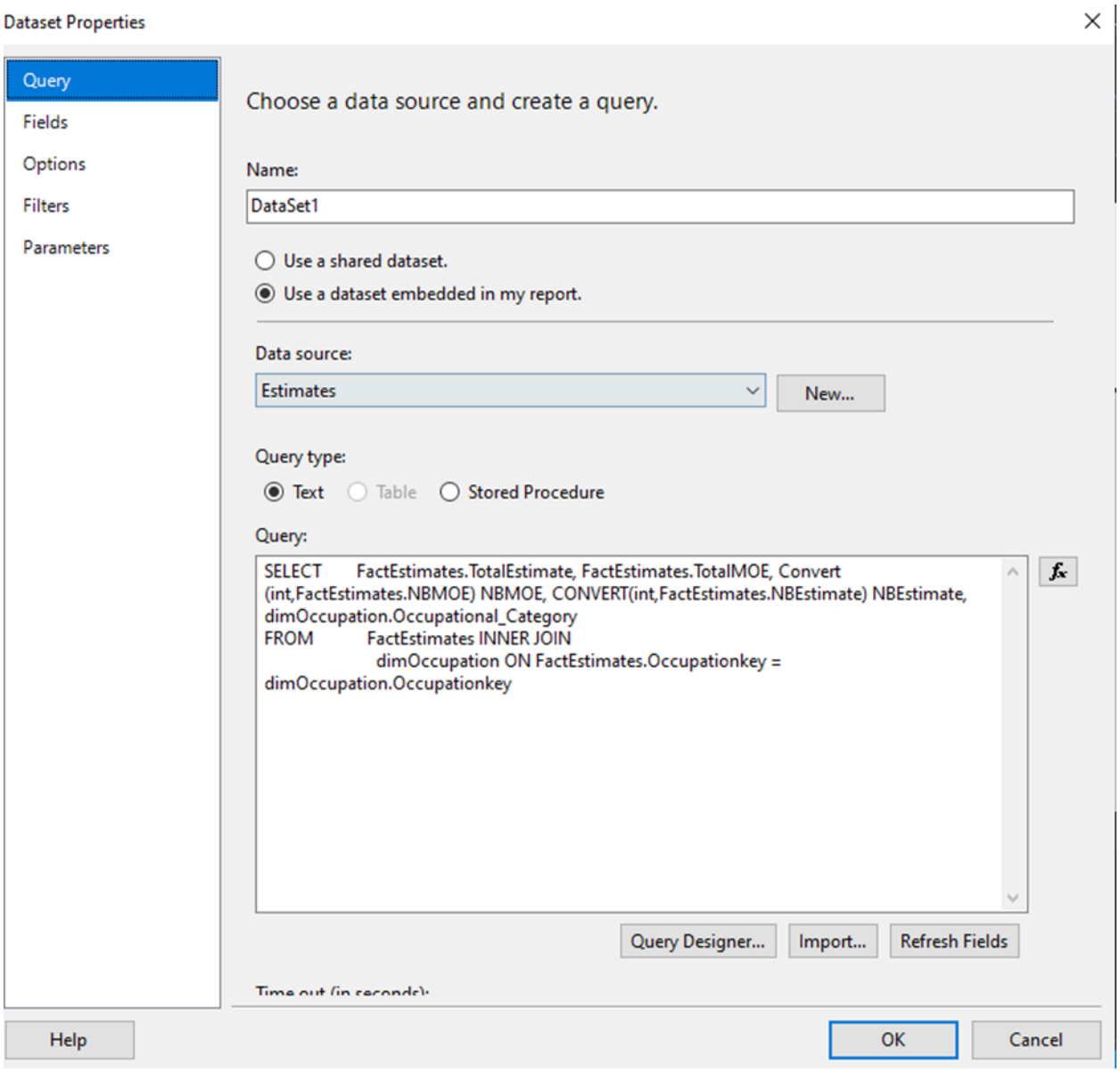
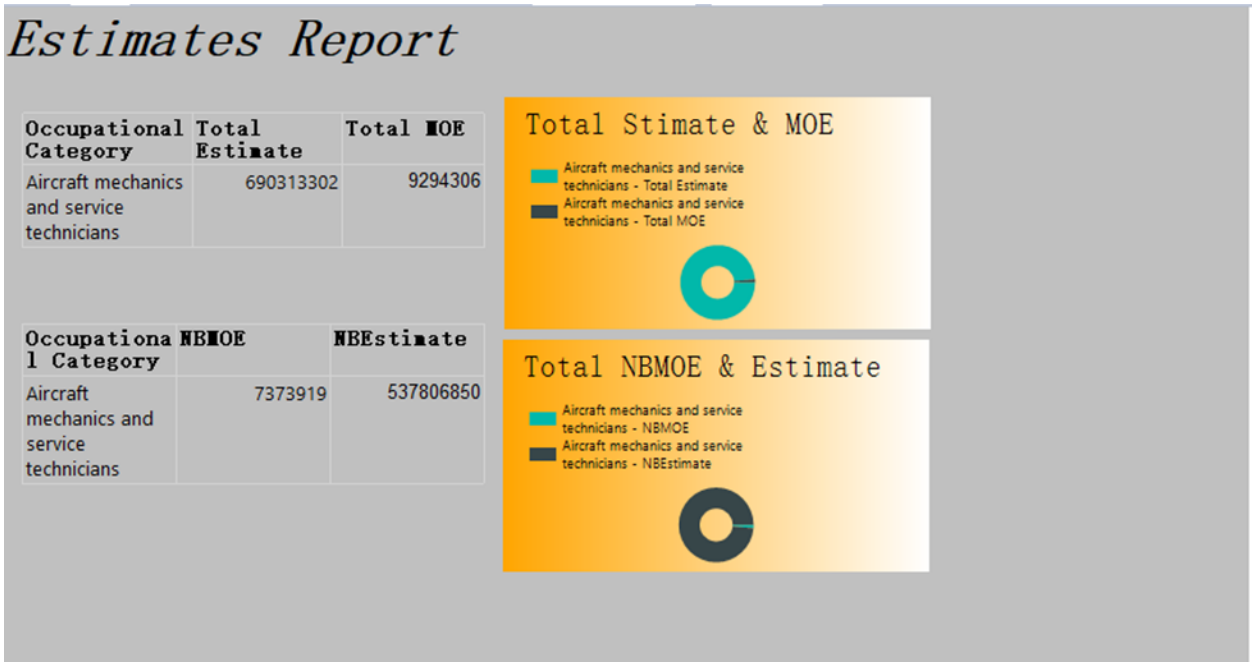



*Figure 47*




## Power BI Reporting

Power BI connects and visualizes data into coherent, visually immersive, and interactive insights. It has a collection of software services, apps, and connectors that connect data sources, visualize them and share it with anyone. The following report allows analyzing different tables on the same page, creating a Dashboard with the tables below. Each tables is connected with their own specific Fact and Dim table with their primary and foreign key. The report has four parts in the same page; the left upper side report is Gender by department, the right upper side Ethnicity by date, in the left lower side Race by county, and the left lower side Demography by gender distribution. The data is coming from SQL Server, and it can be scheduled automatically daily in case the user needs the report updated. Below are the reports' steps with the relations, tables, and visualizations.

*Figure 48*

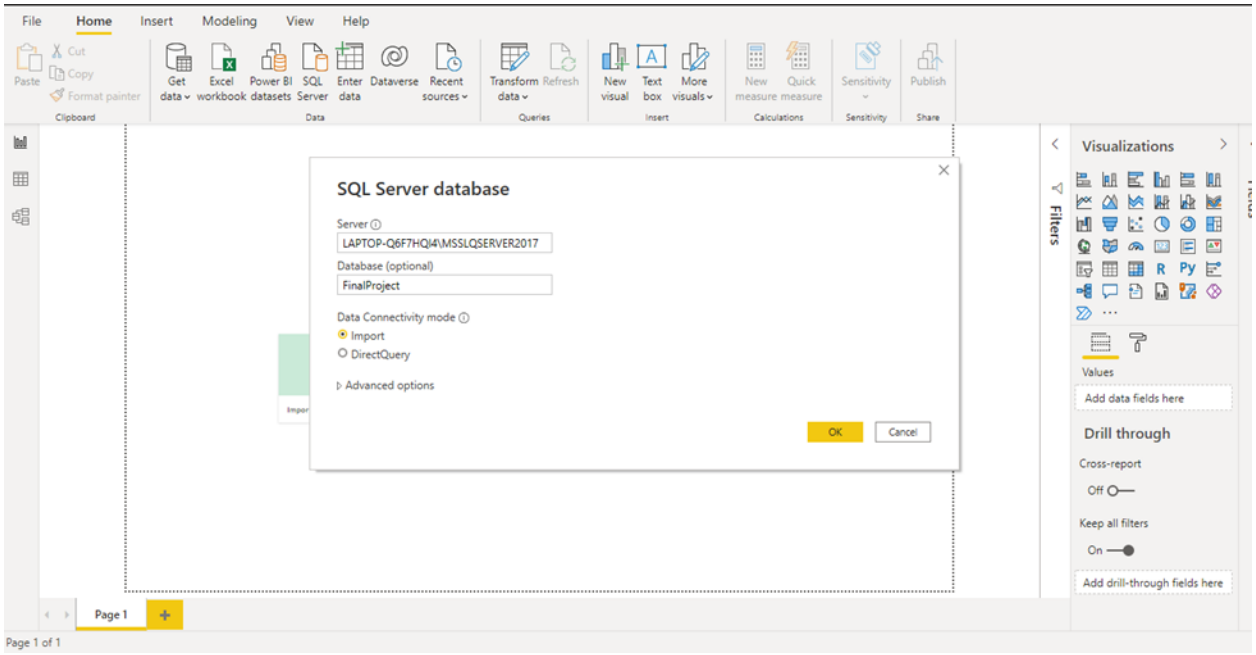



*Figure 49*

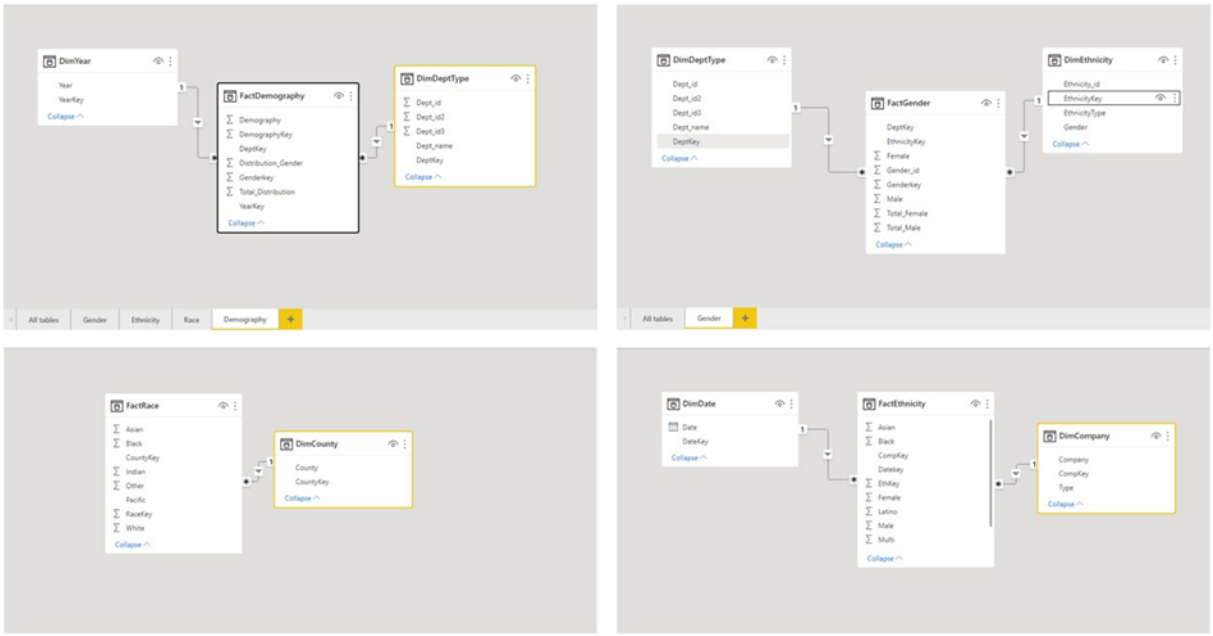
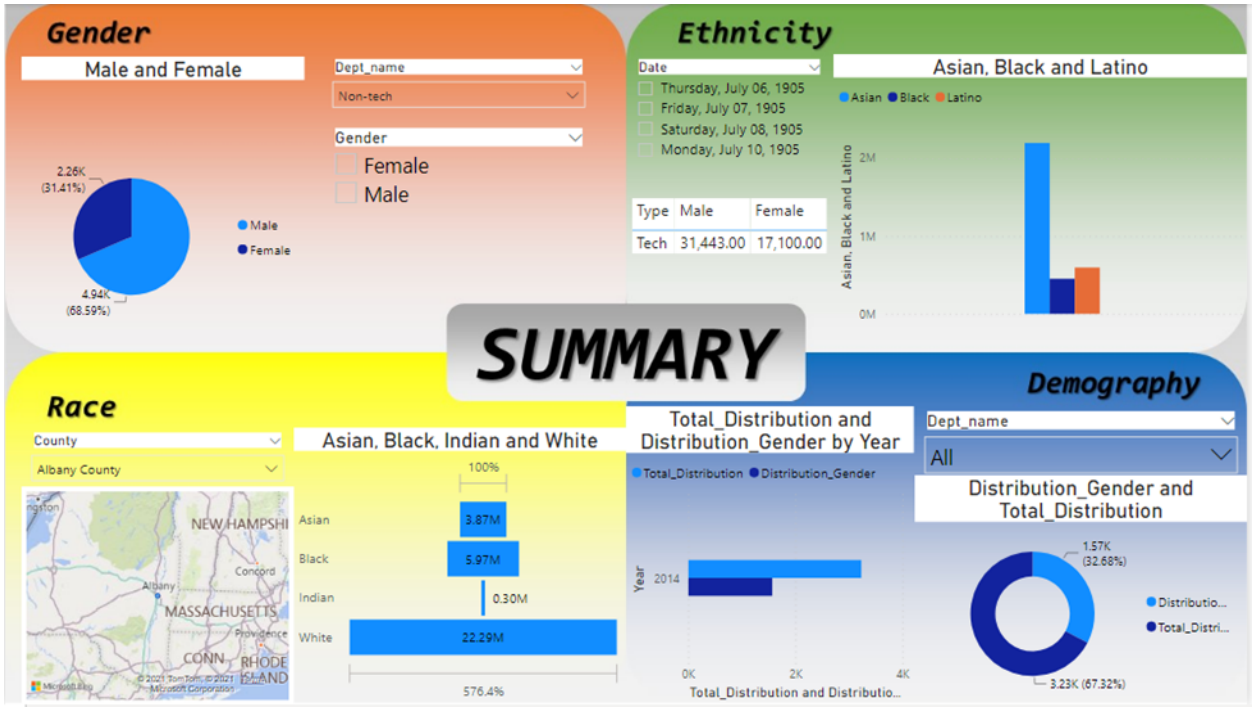


*Figure 50*


Gender
Male and Female
Dept_name
Non-tech
Gender
Female
Male
2.26K (31.41%)
4.94K (68.59%)
Male
Female
Ethnicity
Date
Thursday, July 06, 1905
Friday, July 07, 1905
Saturday, July 08, 1905
Monday, July 10, 1905
Asian, Black and Latino
Asian Black Latino
Asian, Black and Latino
2M
1M
0M
Type Male Female
Tech 31,443.00 17,100.00
SUMMARY
Race
County
Albany County
Asian, Black, Indian and White
100%
Asian 3.87M
Black 5.97M
Indian 0.30M
White 22.29M
576.4%
NEW HAMPSHI
Concord
Albany
MASSACHUSETTS
Providence
CONN
RHODE ISLAND
Demography
Total_Distribution and Distribution_Gender by Year
Total_Distribution Distribution_Gender
Year
2014
0K
2K
4K
Total_Distribution and Distributio...
Dept_name
All
Distribution_Gender and Total_Distribution
1.57K (32.68%)
3.23K (67.32%)
Distributio...
Total_Distri...

## Conclusion

In conclusion, this project has found the future trends in employment in the areas of technology by implementing the census data on employment in technology of New York from 2014 - 2020.

This data was implemented through creating the ETL SSAS, SSIS, SSRS data warehouse reports and designs. After analyzing the designs and reports for this project's purpose to find the future trends in employment in the areas of technology in New York,

It is suggested for data analysts from entry level to advanced level of knowledge to continue this database warehouse analysis for the next census in employment areas of technology in New York.

This suggestion will help provide accurate analysis in the future trends of which minorities in age, ethnicity, and gender will be employed in technology areas in New York. This will also help find out which age, gender, and ethnicity in New York will maximize the opportunity to be employed in the areas of technology in New York. This project can be continued and new databases from the census in technology in New York can always be added onto the ETL SSAS, SSIS, SSRS designs and reports. Therefore this project can always use extra time implementing more data from the census years to make this objective more supportive for the next future generations of employment in technology in New York.

## References


- Microsoft (Ed.). (n.d.). *What is SQL Server Reporting Services - SQL Server Reporting Services (SSRS)*. What is SQL Server Reporting Services - SQL Server Reporting Services (SSRS) | Microsoft Docs. Retrieved December 14, 2021, from https://docs.microsoft.com/en-us/sql/reporting-services/create-deploy-and-manage-mobile-and-paginated-reports?view=sql-server-ver15.
- Mihart. (n.d.). *What is Power Bi? - power bi*. Power BI | Microsoft Docs. Retrieved December 14, 2021, from https://docs.microsoft.com/en-us/power-bi/fundamentals/power-bi-overview
- Jaiswal, Sonoo. *Data Warehouse Architecture*. JavaPoint, from https://www.javatpoint.com/data-warehouse-architecture
- Employment Census Data . *Explore census data. (n.d.).* Retrieved December 17, 2021, from https://data.census.gov/cedsci/all?q=employment


**Softwares:**

- Microsoft SQL Server Management Studio 2018
- Visual Studio 2017 (SSDT)
- Microsoft Power BI
- Excel

***Figures title:***

*Figure 1*

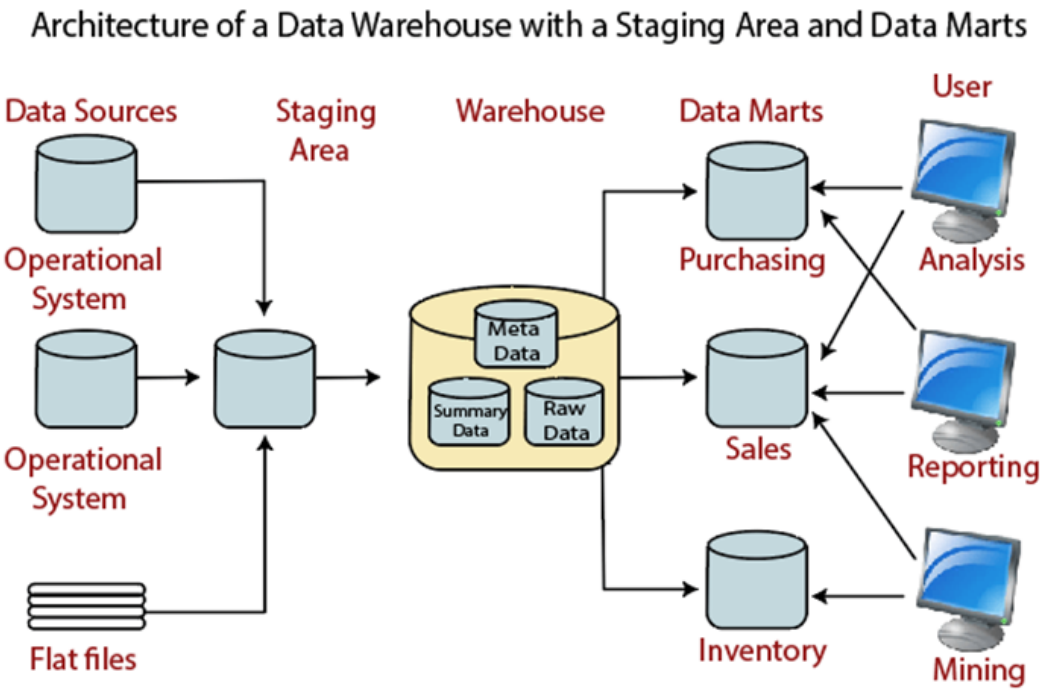



*Figure 2*

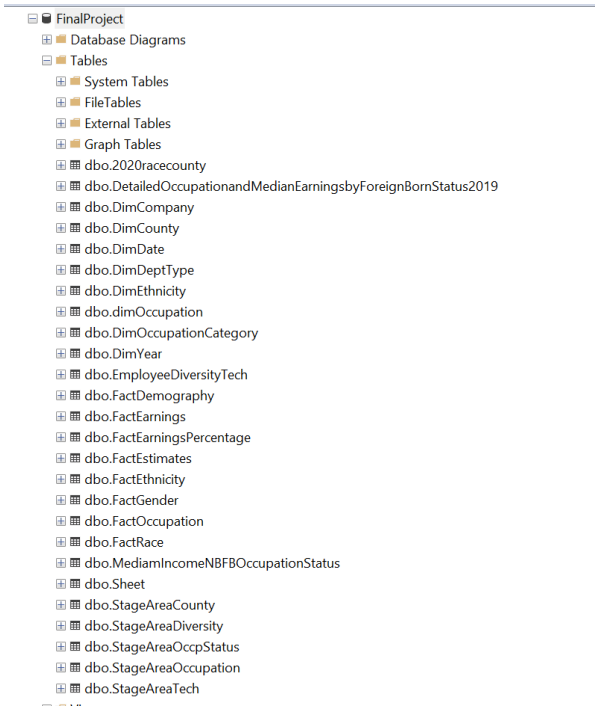

FinalProject
Database Diagrams
Tables
System Tables
FileTables
External Tables
Graph Tables
dbo.2020racecounty
dbo.DetailedOccupationandMedianEarningsbyForeignBornStatus2019
dbo.DimCompany
dbo.DimCounty
dbo.DimDate
dbo.DimDeptType
dbo.DimEthnicity
dbo.dimOccupation
dbo.DimOccupationCategory
dbo.DimYear
dbo.EmployeeDiversityTech
dbo.FactDemography
dbo.FactEarnings
dbo.FactEarningsPercentage
dbo.FactEstimates
dbo.FactEthnicity
dbo.FactGender
dbo.FactOccupation
dbo.FactRace
dbo.MediamIncomeNBFBOccupationStatus
dbo.Sheet
dbo.StageAreaCounty
dbo.StageAreaDiversity
dbo.StageAreaOccpStatus
dbo.StageAreaOccupation
dbo.StageAreaTech

*Figure 3*

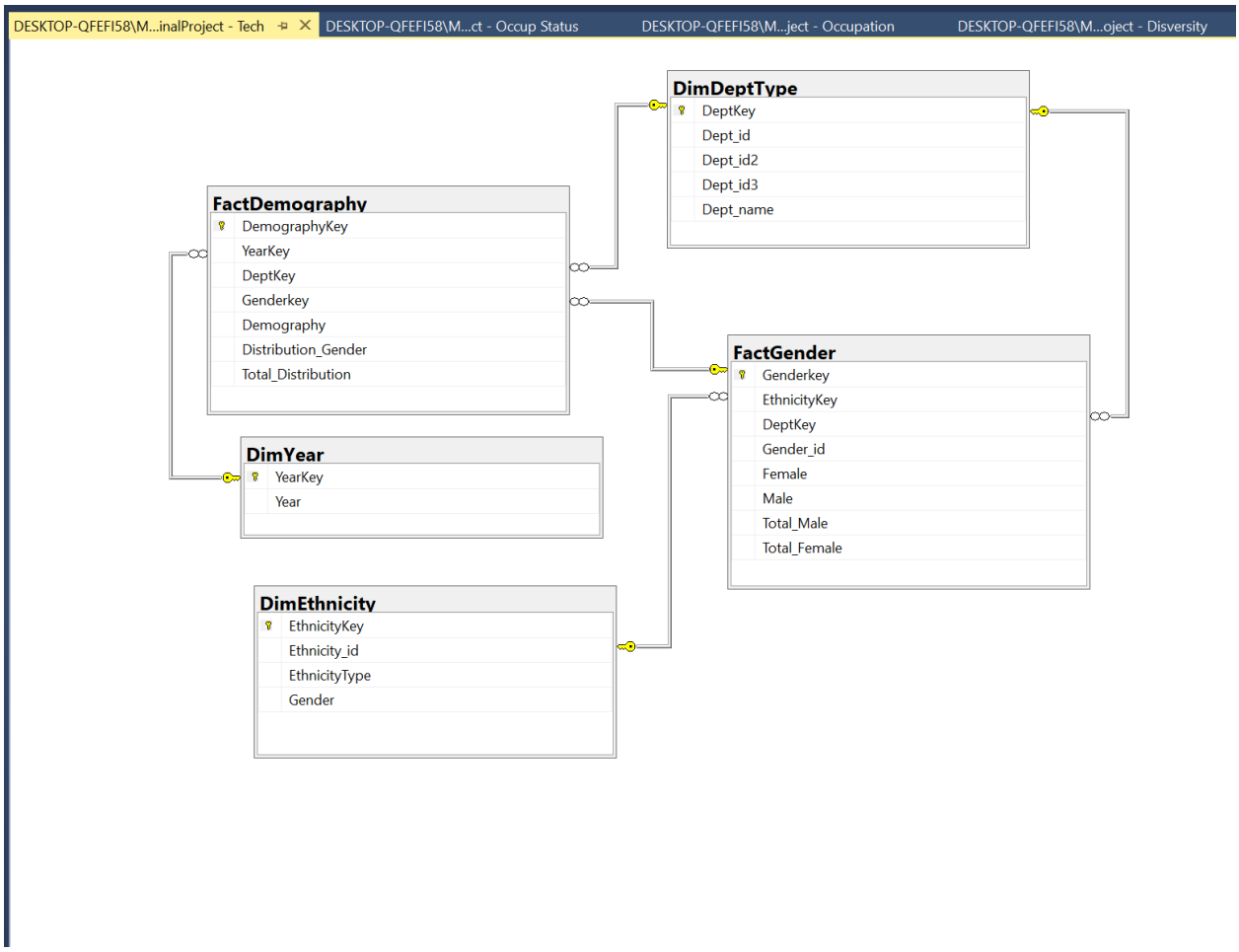



*Figure 4*

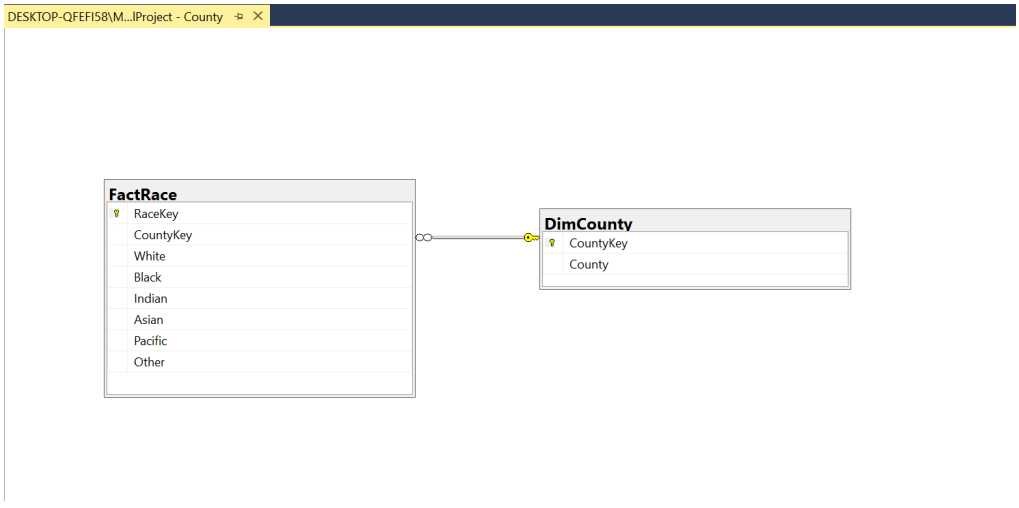



*Figure 5*

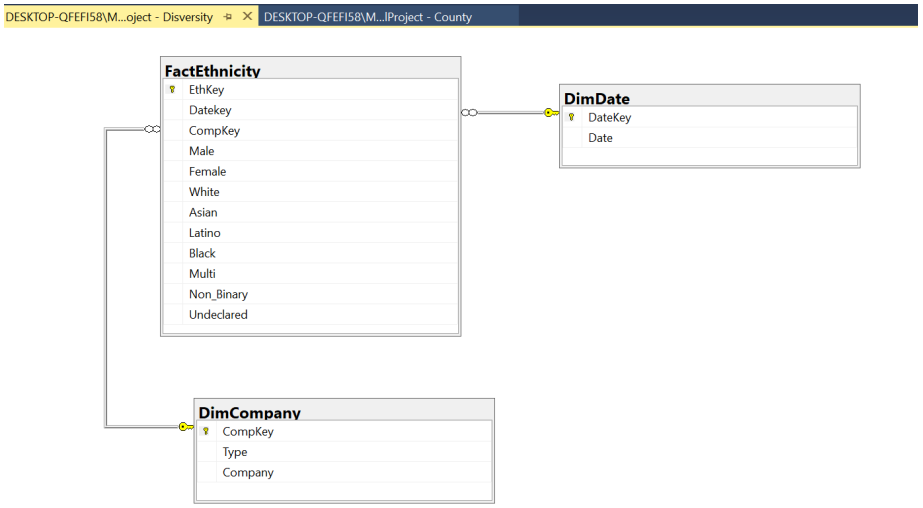



*Figure 6*

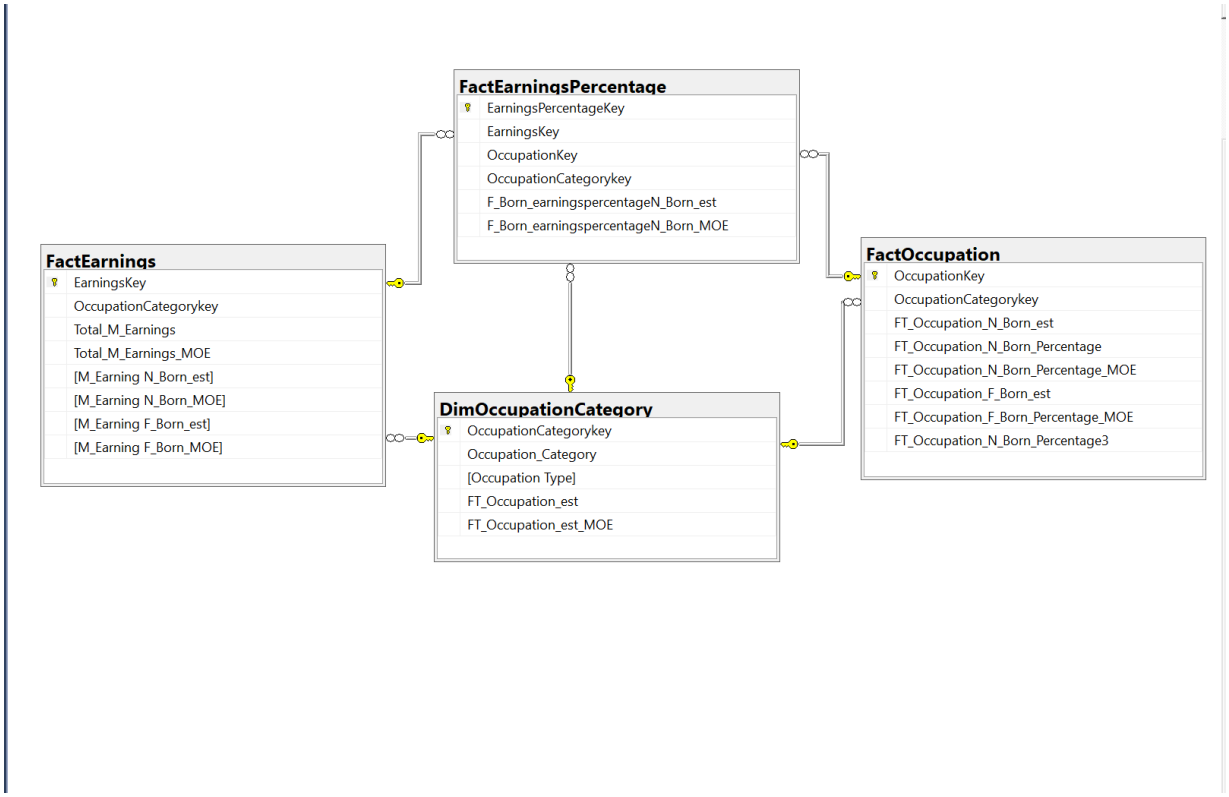



*Figure 7*

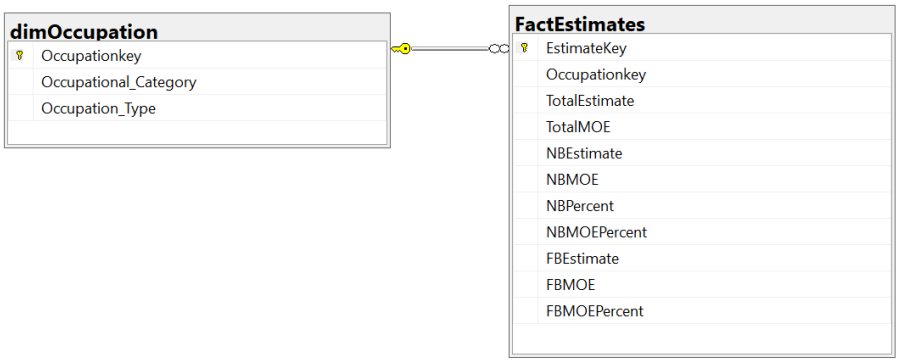



*Figure 8*

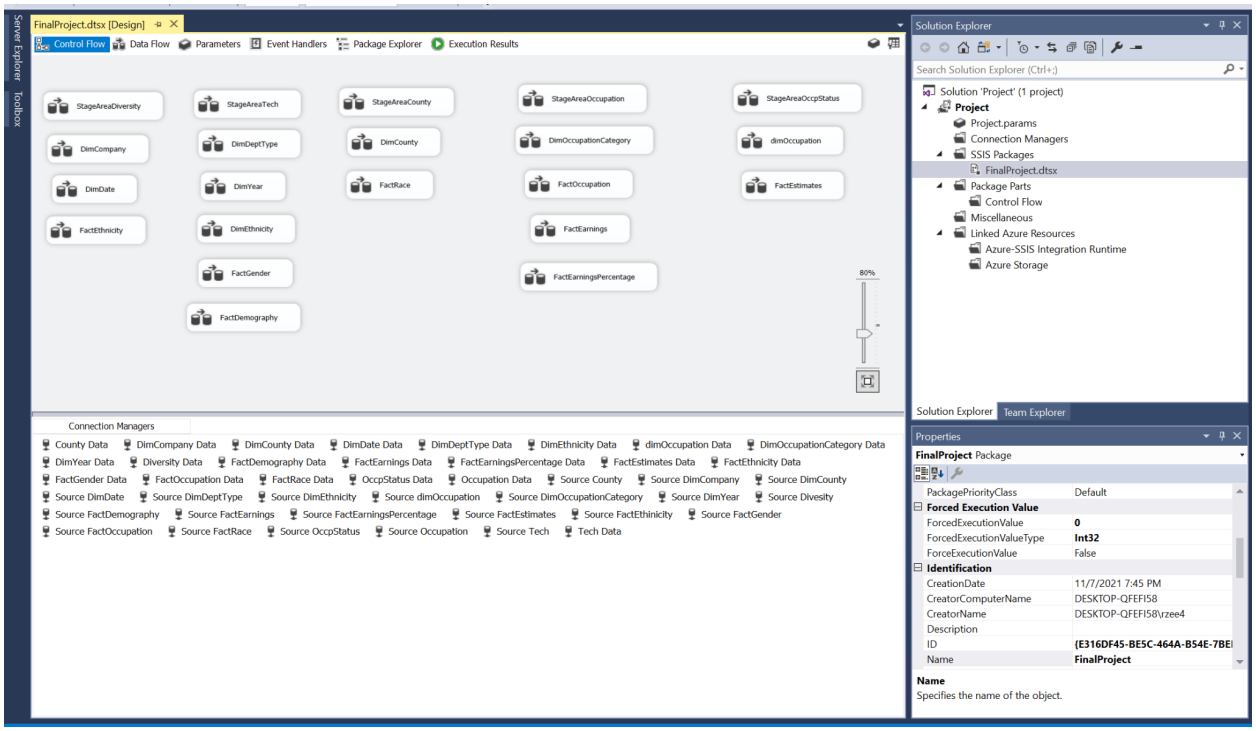
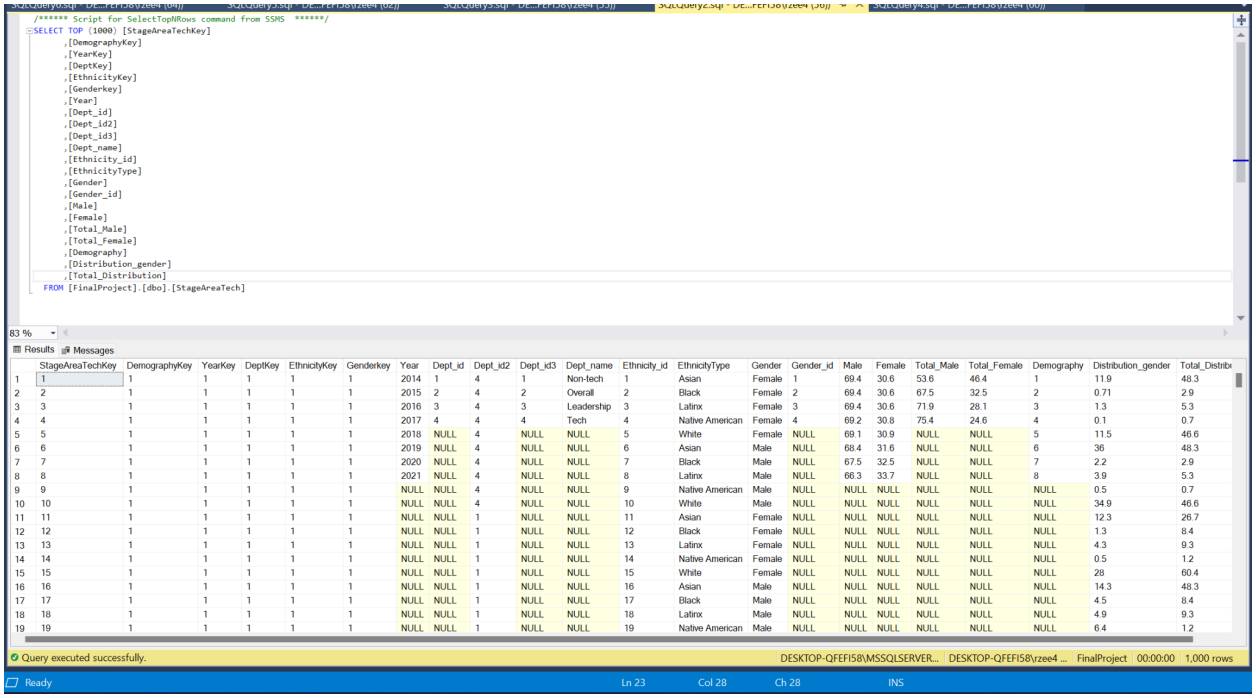



*Figure 9*



```
/****** Script for SelectTopNRows command from SSMS  ******/
SELECT TOP (1000) [StageAreaTechKey]
      ,[DemographyKey]
      ,[YearKey]
      ,[DeptKey]
      ,[EthnicityKey]
      ,[Genderkey]
      ,[Year]
      ,[Dept_id]
      ,[Dept_id2]
      ,[Dept_id3]
      ,[Dept_name]
      ,[Ethnicity_id]
      ,[EthnicityType]
      ,[Gender]
      ,[Gender_id]
      ,[Male]
      ,[Female]
      ,[Total_Male]
      ,[Total_Female]
      ,[Demography]
      ,[Distribution_gender]
      ,[Total_Distribution]
  FROM [FinalProject].[dbo].[StageAreaTech]
```

83 %

Results | Messages

| | StageAreaTechKey | DemographyKey | YearKey | DeptKey | EthnicityKey | Genderkey | Year | Dept_id | Dept_id2 | Dept_id3 | Dept_name | Ethnicity_id | EthnicityType | Gender | Gender_id | Male | Female | Total_Male | Total_Female | Demography | Distribution_gender | Total_Distribu |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2014 | 1 | 4 | 1 | Non-tech | 1 | Asian | Female | 1 | 69.4 | 30.6 | 53.6 | 46.4 | 1 | 11.9 | 48.3 |
| 2 | 2 | 1 | 1 | 1 | 1 | 1 | 2015 | 2 | 4 | 2 | Overall | 2 | Black | Female | 2 | 69.4 | 30.6 | 67.5 | 32.5 | 2 | 0.71 | 2.9 |
| 3 | 3 | 1 | 1 | 1 | 1 | 1 | 2016 | 3 | 4 | 3 | Leadership | 3 | Latinx | Female | 3 | 69.4 | 30.6 | 71.9 | 28.1 | 3 | 1.3 | 5.3 |
| 4 | 4 | 1 | 1 | 1 | 1 | 1 | 2017 | 4 | 4 | 4 | Tech | 4 | Native American | Female | 4 | 69.2 | 30.8 | 75.4 | 24.6 | 4 | 0.1 | 0.7 |
| 5 | 5 | 1 | 1 | 1 | 1 | 1 | 2018 | NULL | 4 | NULL | NULL | 5 | White | Female | NULL | 69.1 | 30.9 | NULL | NULL | 5 | 11.5 | 46.6 |
| 6 | 6 | 1 | 1 | 1 | 1 | 1 | 2019 | NULL | 4 | NULL | NULL | 6 | Asian | Male | NULL | 68.4 | 31.6 | NULL | NULL | 6 | 36 | 48.3 |
| 7 | 7 | 1 | 1 | 1 | 1 | 1 | 2020 | NULL | 4 | NULL | NULL | 7 | Black | Male | NULL | 67.5 | 32.5 | NULL | NULL | 7 | 2.2 | 2.9 |
| 8 | 8 | 1 | 1 | 1 | 1 | 1 | 2021 | NULL | 4 | NULL | NULL | 8 | Latinx | Male | NULL | 66.3 | 33.7 | NULL | NULL | 8 | 3.9 | 5.3 |
| 9 | 9 | 1 | 1 | 1 | 1 | 1 | NULL | NULL | 4 | NULL | NULL | 9 | Native American | Male | NULL | NULL | NULL | NULL | NULL | NULL | 0.5 | 0.7 |
| 10 | 10 | 1 | 1 | 1 | 1 | 1 | NULL | NULL | 4 | NULL | NULL | 10 | White | Male | NULL | NULL | NULL | NULL | NULL | NULL | 34.9 | 46.6 |
| 11 | 11 | 1 | 1 | 1 | 1 | 1 | NULL | NULL | 1 | NULL | NULL | 11 | Asian | Female | NULL | NULL | NULL | NULL | NULL | NULL | 12.3 | 26.7 |
| 12 | 12 | 1 | 1 | 1 | 1 | 1 | NULL | NULL | 1 | NULL | NULL | 12 | Black | Female | NULL | NULL | NULL | NULL | NULL | NULL | 1.3 | 8.4 |
| 13 | 13 | 1 | 1 | 1 | 1 | 1 | NULL | NULL | 1 | NULL | NULL | 13 | Latinx | Female | NULL | NULL | NULL | NULL | NULL | NULL | 4.3 | 9.3 |
| 14 | 14 | 1 | 1 | 1 | 1 | 1 | NULL | NULL | 1 | NULL | NULL | 14 | Native American | Female | NULL | NULL | NULL | NULL | NULL | NULL | 0.5 | 1.2 |
| 15 | 15 | 1 | 1 | 1 | 1 | 1 | NULL | NULL | 1 | NULL | NULL | 15 | White | Female | NULL | NULL | NULL | NULL | NULL | NULL | 28 | 60.4 |
| 16 | 16 | 1 | 1 | 1 | 1 | 1 | NULL | NULL | 1 | NULL | NULL | 16 | Asian | Male | NULL | NULL | NULL | NULL | NULL | NULL | 14.3 | 48.3 |
| 17 | 17 | 1 | 1 | 1 | 1 | 1 | NULL | NULL | 1 | NULL | NULL | 17 | Black | Male | NULL | NULL | NULL | NULL | NULL | NULL | 4.5 | 8.4 |
| 18 | 18 | 1 | 1 | 1 | 1 | 1 | NULL | NULL | 1 | NULL | NULL | 18 | Latinx | Male | NULL | NULL | NULL | NULL | NULL | NULL | 4.9 | 9.3 |
| 19 | 19 | 1 | 1 | 1 | 1 | 1 | NULL | NULL | 1 | NULL | NULL | 19 | Native American | Male | NULL | NULL | NULL | NULL | NULL | NULL | 6.4 | 1.2 |

Query executed successfully. DESKTOP-QFEFI58\MSSQLSERVER... | DESKTOP-QFEFI58\rzee4 ... | FinalProject | 00:00:00 | 1,000 rows

Ready Ln 23 Col 28 Ch 28 INS

*Figure 10*

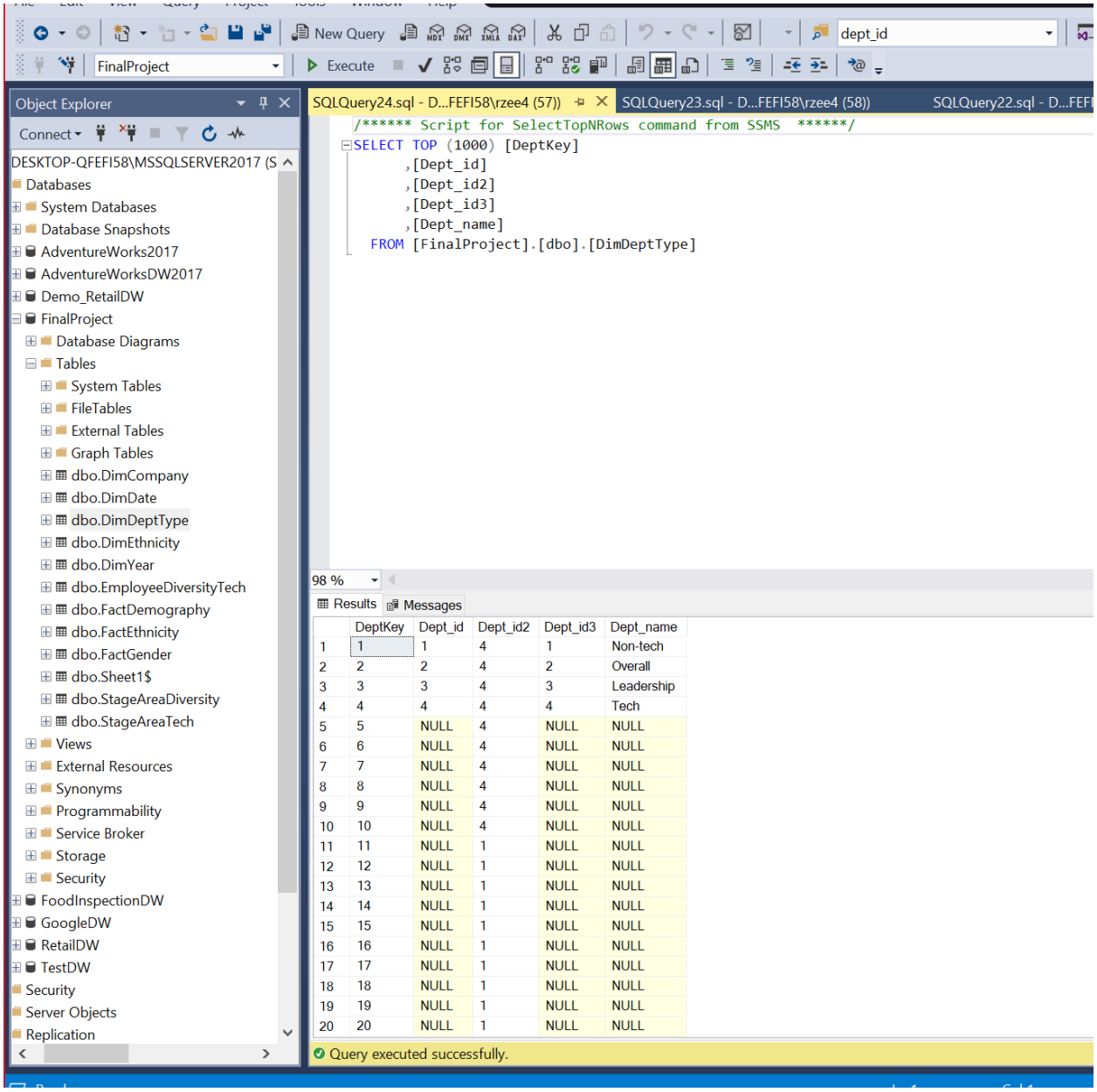
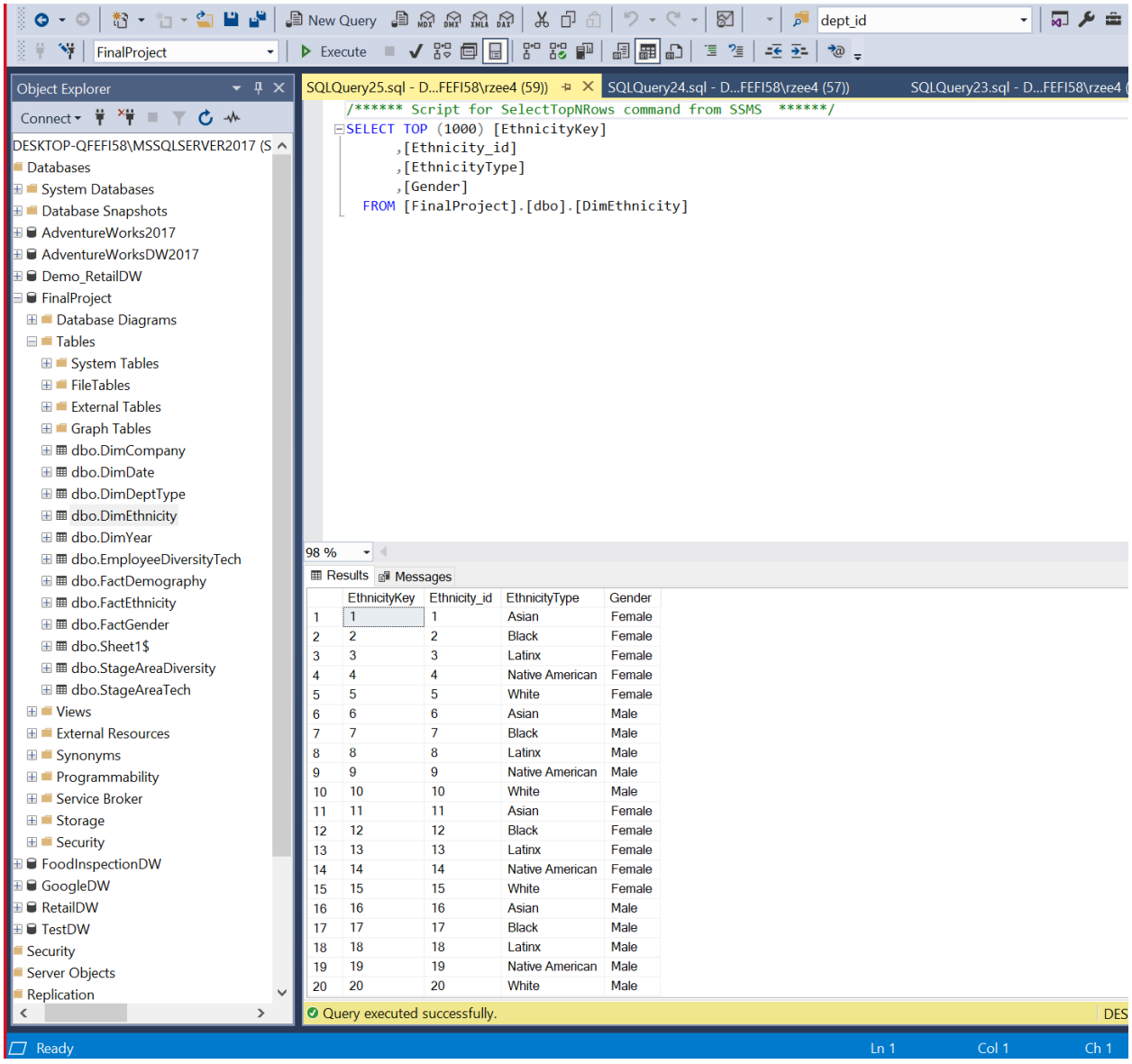
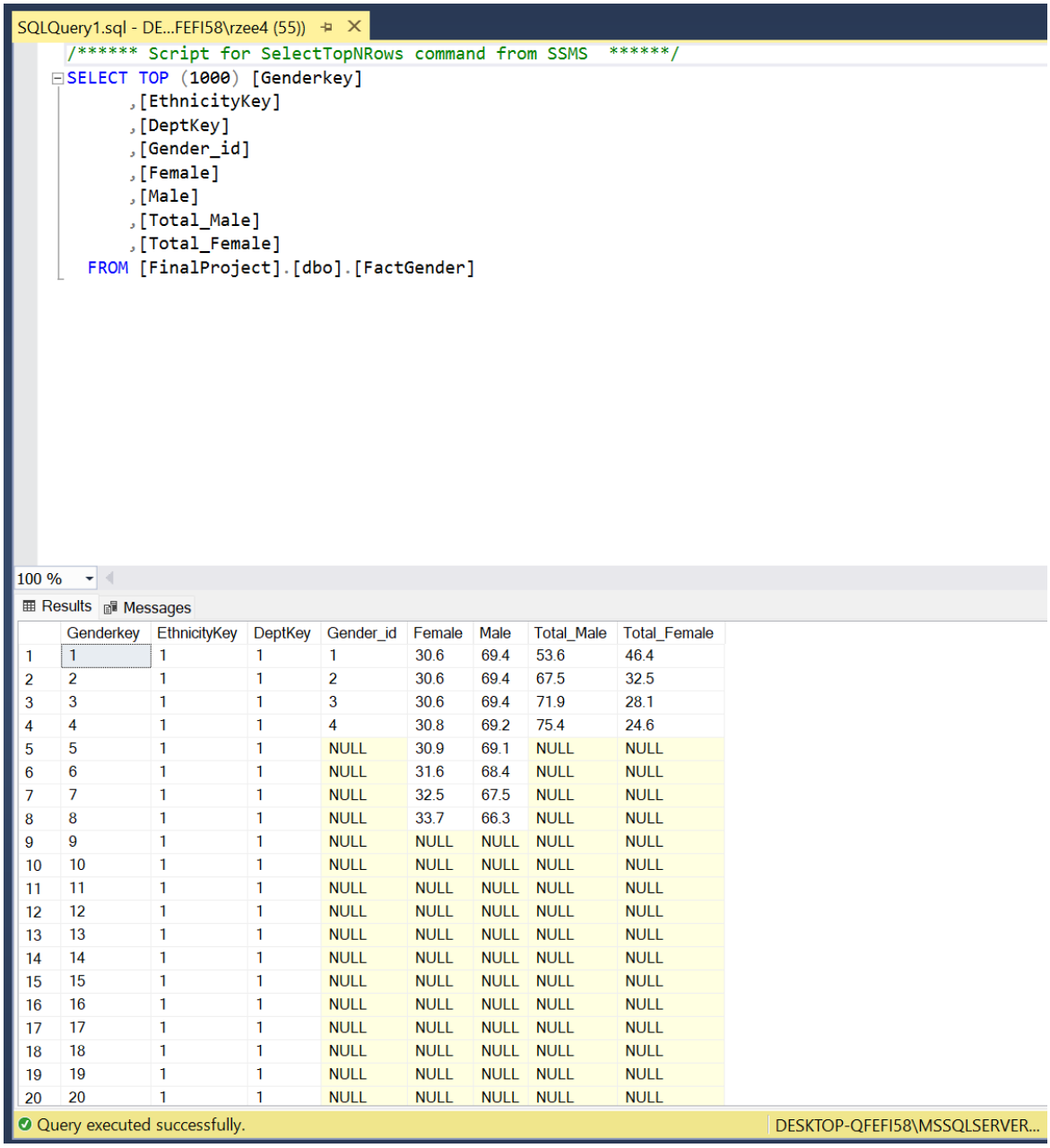

New Query
dept_id
FinalProject
Execute
Object Explorer
Connect
DESKTOP-QFEFI58\MSSQLSERVER2017 (S
Databases
System Databases
Database Snapshots
AdventureWorks2017
AdventureWorksDW2017
Demo_RetailDW
FinalProject
Database Diagrams
Tables
System Tables
FileTables
External Tables
Graph Tables
dbo.DimCompany
dbo.DimDate
dbo.DimDeptType
dbo.DimEthnicity
dbo.DimYear
dbo.EmployeeDiversityTech
dbo.FactDemography
dbo.FactEthnicity
dbo.FactGender
dbo.Sheet1$
dbo.StageAreaDiversity
dbo.StageAreaTech
Views
External Resources
Synonyms
Programmability
Service Broker
Storage
Security
FoodInspectionDW
GoogleDW
RetailDW
TestDW
Security
Server Objects
Replication
SQLQuery24.sql - D...FEFI58\rzee4 (57))
SQLQuery23.sql - D...FEFI58\rzee4 (58))
SQLQuery22.sql - D...FEFI
/****** Script for SelectTopNRows command from SSMS ******/
SELECT TOP (1000) [DeptKey]
,[Dept_id]
,[Dept_id2]
,[Dept_id3]
,[Dept_name]
FROM [FinalProject].[dbo].[DimDeptType]
98 %
Results
Messages
DeptKey Dept_id Dept_id2 Dept_id3 Dept_name
1 1 1 4 1 Non-tech
2 2 2 4 2 Overall
3 3 3 4 3 Leadership
4 4 4 4 4 Tech
5 5 NULL 4 NULL NULL
6 6 NULL 4 NULL NULL
7 7 NULL 4 NULL NULL
8 8 NULL 4 NULL NULL
9 9 NULL 4 NULL NULL
10 10 NULL 4 NULL NULL
11 11 NULL 1 NULL NULL
12 12 NULL 1 NULL NULL
13 13 NULL 1 NULL NULL
14 14 NULL 1 NULL NULL
15 15 NULL 1 NULL NULL
16 16 NULL 1 NULL NULL
17 17 NULL 1 NULL NULL
18 18 NULL 1 NULL NULL
19 19 NULL 1 NULL NULL
20 20 NULL 1 NULL NULL
Query executed successfully.

*Figure 11*



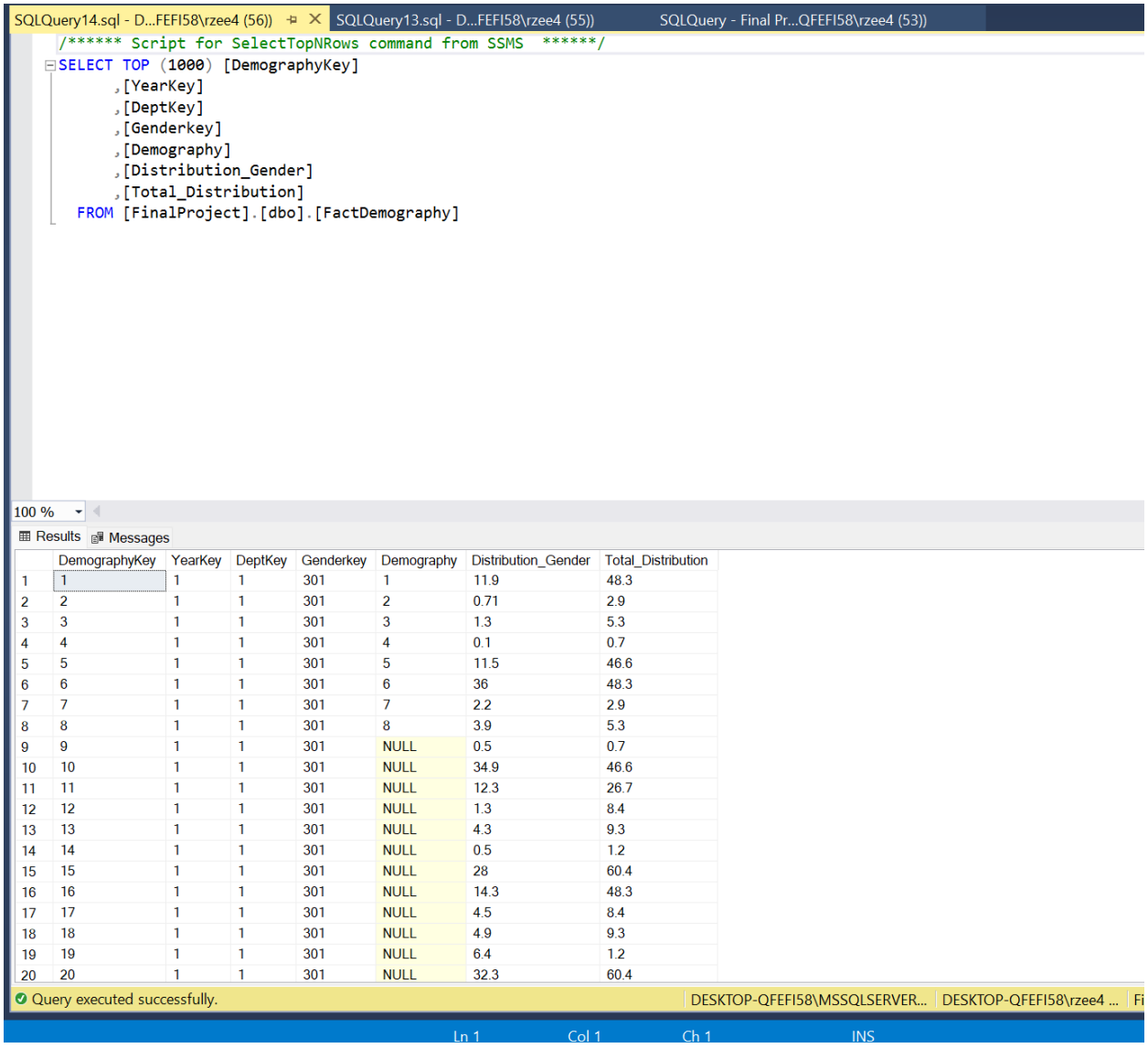

| | EthnicityKey | Ethnicity_id | EthnicityType | Gender |
|---|---|---|---|---|
| 1 | 1 | 1 | Asian | Female |
| 2 | 2 | 2 | Black | Female |
| 3 | 3 | 3 | Latinx | Female |
| 4 | 4 | 4 | Native American | Female |
| 5 | 5 | 5 | White | Female |
| 6 | 6 | 6 | Asian | Male |
| 7 | 7 | 7 | Black | Male |
| 8 | 8 | 8 | Latinx | Male |
| 9 | 9 | 9 | Native American | Male |
| 10 | 10 | 10 | White | Male |
| 11 | 11 | 11 | Asian | Female |
| 12 | 12 | 12 | Black | Female |
| 13 | 13 | 13 | Latinx | Female |
| 14 | 14 | 14 | Native American | Female |
| 15 | 15 | 15 | White | Female |
| 16 | 16 | 16 | Asian | Male |
| 17 | 17 | 17 | Black | Male |
| 18 | 18 | 18 | Latinx | Male |
| 19 | 19 | 19 | Native American | Male |
| 20 | 20 | 20 | White | Male |

*Figure 12*



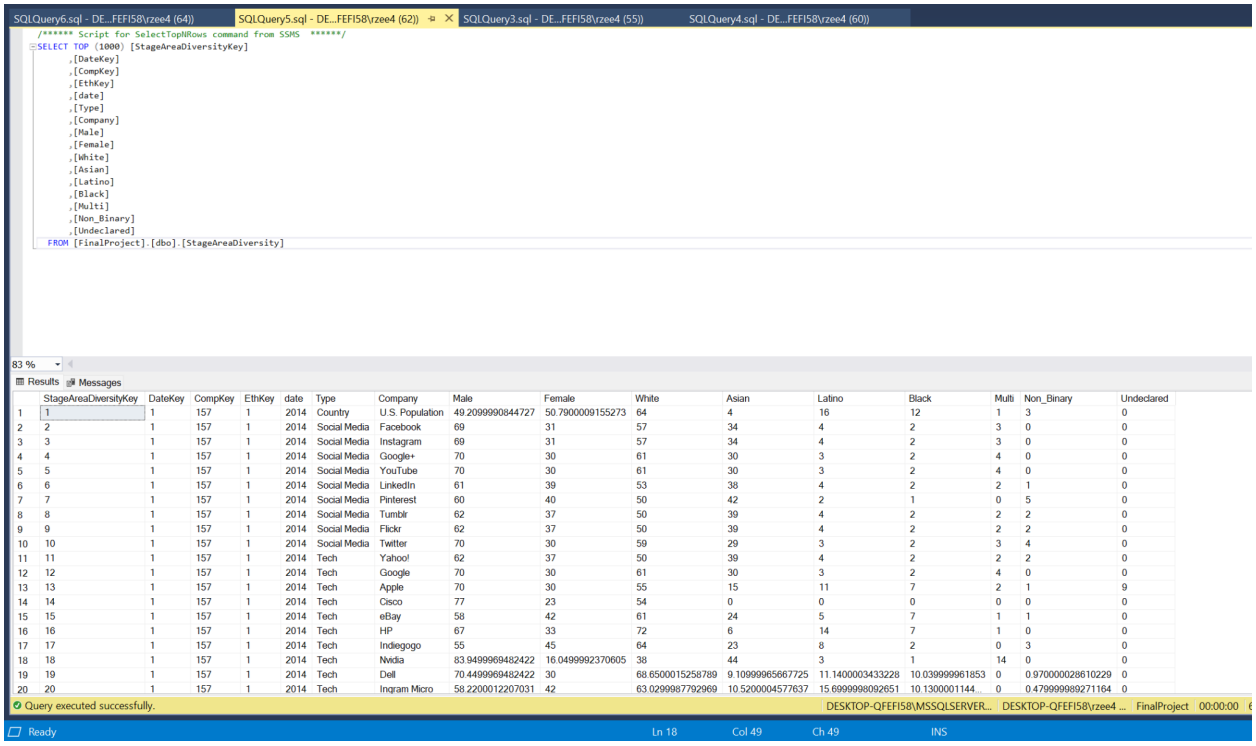

| | Genderkey | EthnicityKey | DeptKey | Gender_id | Female | Male | Total_Male | Total_Female |
|---|---|---|---|---|---|---|---|---|
| 1 | 1 | 1 | 1 | 1 | 30.6 | 69.4 | 53.6 | 46.4 |
| 2 | 2 | 1 | 1 | 2 | 30.6 | 69.4 | 67.5 | 32.5 |
| 3 | 3 | 1 | 1 | 3 | 30.6 | 69.4 | 71.9 | 28.1 |
| 4 | 4 | 1 | 1 | 4 | 30.8 | 69.2 | 75.4 | 24.6 |
| 5 | 5 | 1 | 1 | NULL | 30.9 | 69.1 | NULL | NULL |
| 6 | 6 | 1 | 1 | NULL | 31.6 | 68.4 | NULL | NULL |
| 7 | 7 | 1 | 1 | NULL | 32.5 | 67.5 | NULL | NULL |
| 8 | 8 | 1 | 1 | NULL | 33.7 | 66.3 | NULL | NULL |
| 9 | 9 | 1 | 1 | NULL | NULL | NULL | NULL | NULL |
| 10 | 10 | 1 | 1 | NULL | NULL | NULL | NULL | NULL |
| 11 | 11 | 1 | 1 | NULL | NULL | NULL | NULL | NULL |
| 12 | 12 | 1 | 1 | NULL | NULL | NULL | NULL | NULL |
| 13 | 13 | 1 | 1 | NULL | NULL | NULL | NULL | NULL |
| 14 | 14 | 1 | 1 | NULL | NULL | NULL | NULL | NULL |
| 15 | 15 | 1 | 1 | NULL | NULL | NULL | NULL | NULL |
| 16 | 16 | 1 | 1 | NULL | NULL | NULL | NULL | NULL |
| 17 | 17 | 1 | 1 | NULL | NULL | NULL | NULL | NULL |
| 18 | 18 | 1 | 1 | NULL | NULL | NULL | NULL | NULL |
| 19 | 19 | 1 | 1 | NULL | NULL | NULL | NULL | NULL |
| 20 | 20 | 1 | 1 | NULL | NULL | NULL | NULL | NULL |

*Figure 13*




| | DemographyKey | YearKey | DeptKey | Genderkey | Demography | Distribution_Gender | Total_Distribution |
|---|---|---|---|---|---|---|---|
| 1 | 1 | 1 | 1 | 301 | 1 | 11.9 | 48.3 |
| 2 | 2 | 1 | 1 | 301 | 2 | 0.71 | 2.9 |
| 3 | 3 | 1 | 1 | 301 | 3 | 1.3 | 5.3 |
| 4 | 4 | 1 | 1 | 301 | 4 | 0.1 | 0.7 |
| 5 | 5 | 1 | 1 | 301 | 5 | 11.5 | 46.6 |
| 6 | 6 | 1 | 1 | 301 | 6 | 36 | 48.3 |
| 7 | 7 | 1 | 1 | 301 | 7 | 2.2 | 2.9 |
| 8 | 8 | 1 | 1 | 301 | 8 | 3.9 | 5.3 |
| 9 | 9 | 1 | 1 | 301 | NULL | 0.5 | 0.7 |
| 10 | 10 | 1 | 1 | 301 | NULL | 34.9 | 46.6 |
| 11 | 11 | 1 | 1 | 301 | NULL | 12.3 | 26.7 |
| 12 | 12 | 1 | 1 | 301 | NULL | 1.3 | 8.4 |
| 13 | 13 | 1 | 1 | 301 | NULL | 4.3 | 9.3 |
| 14 | 14 | 1 | 1 | 301 | NULL | 0.5 | 1.2 |
| 15 | 15 | 1 | 1 | 301 | NULL | 28 | 60.4 |
| 16 | 16 | 1 | 1 | 301 | NULL | 14.3 | 48.3 |
| 17 | 17 | 1 | 1 | 301 | NULL | 4.5 | 8.4 |
| 18 | 18 | 1 | 1 | 301 | NULL | 4.9 | 9.3 |
| 19 | 19 | 1 | 1 | 301 | NULL | 6.4 | 1.2 |
| 20 | 20 | 1 | 1 | 301 | NULL | 32.3 | 60.4 |

*Figure 14*



SQLQuery6.sql - DE...FEFI58\rzee4 (64)) | SQLQuery5.sql - DE...FEFI58\rzee4 (62)) | SQLQuery3.sql - DE...FEFI58\rzee4 (55)) | SQLQuery4.sql - DE...FEFI58\rzee4 (60))

```
/****** Script for SelectTopNRows command from SSMS  ******/
SELECT TOP (1000) [StageAreaDiversityKey]
      ,[DateKey]
      ,[CompKey]
      ,[EthKey]
      ,[date]
      ,[Type]
      ,[Company]
      ,[Male]
      ,[Female]
      ,[White]
      ,[Asian]
      ,[Latino]
      ,[Black]
      ,[Multi]
      ,[Non_Binary]
      ,[Undeclared]
  FROM [FinalProject].[dbo].[StageAreaDiversity]
```

83 %

Results | Messages

| | StageAreaDiversityKey | DateKey | CompKey | EthKey | date | Type | Company | Male | Female | White | Asian | Latino | Black | Multi | Non_Binary | Undeclared |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1 | 1 | 157 | 1 | 2014 | Country | U.S. Population | 49.2099990844727 | 50.7900009155273 | 64 | 4 | 16 | 12 | 1 | 3 | 0 |
| 2 | 2 | 1 | 157 | 1 | 2014 | Social Media | Facebook | 69 | 31 | 57 | 34 | 4 | 2 | 3 | 0 | 0 |
| 3 | 3 | 1 | 157 | 1 | 2014 | Social Media | Instagram | 69 | 31 | 57 | 34 | 4 | 2 | 3 | 0 | 0 |
| 4 | 4 | 1 | 157 | 1 | 2014 | Social Media | Google+ | 70 | 30 | 61 | 30 | 3 | 2 | 4 | 0 | 0 |
| 5 | 5 | 1 | 157 | 1 | 2014 | Social Media | YouTube | 70 | 30 | 61 | 30 | 3 | 2 | 4 | 0 | 0 |
| 6 | 6 | 1 | 157 | 1 | 2014 | Social Media | LinkedIn | 61 | 39 | 53 | 38 | 4 | 2 | 2 | 1 | 0 |
| 7 | 7 | 1 | 157 | 1 | 2014 | Social Media | Pinterest | 60 | 40 | 50 | 42 | 2 | 1 | 0 | 5 | 0 |
| 8 | 8 | 1 | 157 | 1 | 2014 | Social Media | Tumblr | 62 | 37 | 50 | 39 | 4 | 2 | 2 | 2 | 0 |
| 9 | 9 | 1 | 157 | 1 | 2014 | Social Media | Flickr | 62 | 37 | 50 | 39 | 4 | 2 | 2 | 2 | 0 |
| 10 | 10 | 1 | 157 | 1 | 2014 | Social Media | Twitter | 70 | 30 | 59 | 29 | 3 | 2 | 3 | 4 | 0 |
| 11 | 11 | 1 | 157 | 1 | 2014 | Tech | Yahoo! | 62 | 37 | 50 | 39 | 4 | 2 | 2 | 2 | 0 |
| 12 | 12 | 1 | 157 | 1 | 2014 | Tech | Google | 70 | 30 | 61 | 30 | 3 | 2 | 4 | 0 | 0 |
| 13 | 13 | 1 | 157 | 1 | 2014 | Tech | Apple | 70 | 30 | 55 | 15 | 11 | 7 | 2 | 1 | 9 |
| 14 | 14 | 1 | 157 | 1 | 2014 | Tech | Cisco | 77 | 23 | 54 | 0 | 0 | 0 | 0 | 0 | 0 |
| 15 | 15 | 1 | 157 | 1 | 2014 | Tech | eBay | 58 | 42 | 61 | 24 | 5 | 7 | 1 | 1 | 0 |
| 16 | 16 | 1 | 157 | 1 | 2014 | Tech | HP | 67 | 33 | 72 | 6 | 14 | 7 | 1 | 0 | 0 |
| 17 | 17 | 1 | 157 | 1 | 2014 | Tech | Indiegogo | 55 | 45 | 64 | 23 | 8 | 2 | 0 | 3 | 0 |
| 18 | 18 | 1 | 157 | 1 | 2014 | Tech | Nvidia | 83.9499969482422 | 16.0499992370605 | 38 | 44 | 3 | 1 | 14 | 0 | 0 |
| 19 | 19 | 1 | 157 | 1 | 2014 | Tech | Dell | 70.4499969482422 | 30 | 68.6500015258789 | 9.10999965667725 | 11.1400003433228 | 10.039999961853 | 0 | 0.970000028610229 | 0 |
| 20 | 20 | 1 | 157 | 1 | 2014 | Tech | Ingram Micro | 58.2200012207031 | 42 | 63.0299987792969 | 10.5200004577637 | 15.6999998092651 | 10.1300001144... | 0 | 0.479999989271164 | 0 |

Query executed successfully. | DESKTOP-QFEFI58\MSSQLSERVER... | DESKTOP-QFEFI58\rzee4 ... | FinalProject | 00:00:00

Ready | Ln 18 | Col 49 | Ch 49 | INS

*Figure 15*

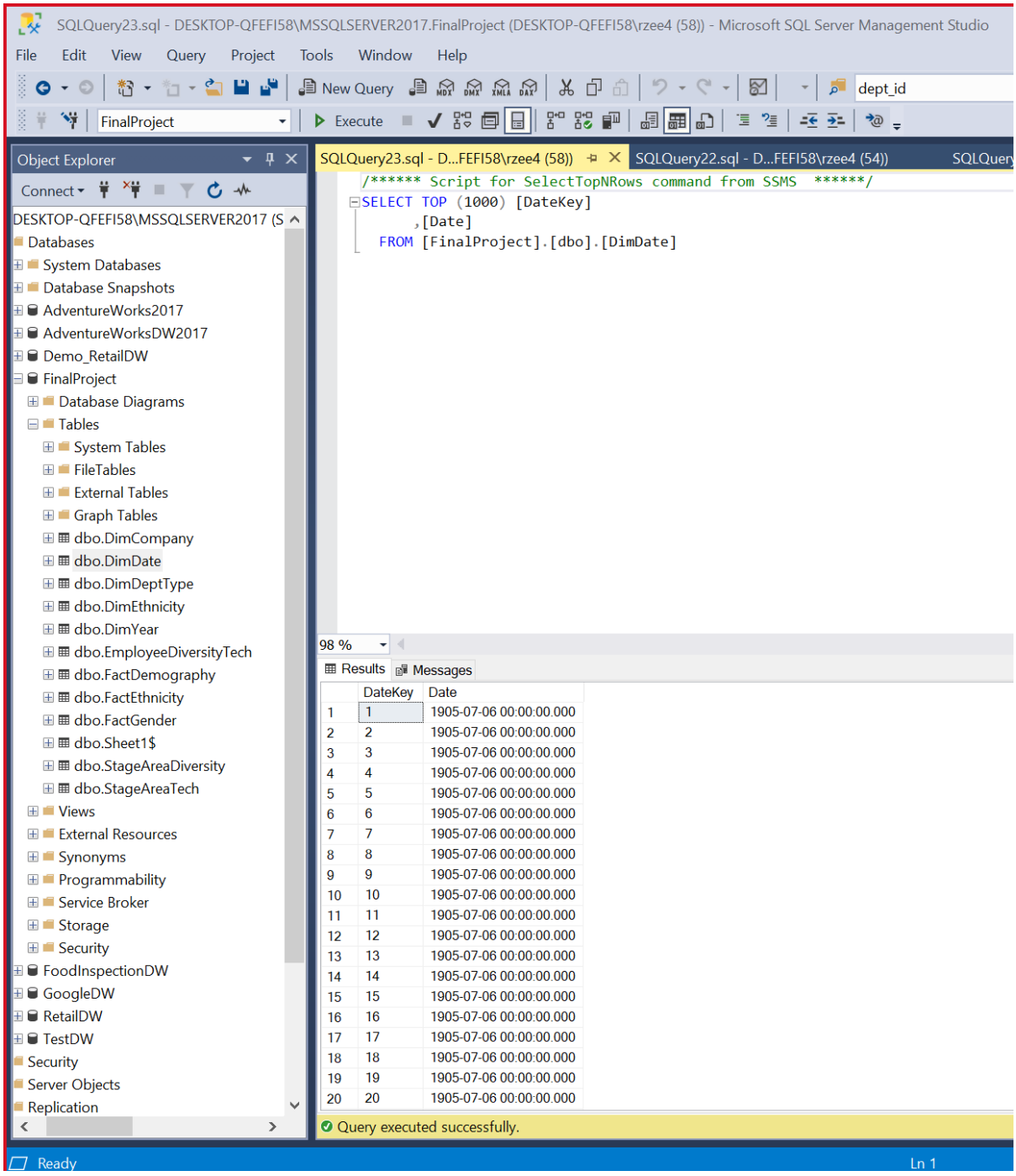

SQLQuery23.sql - DESKTOP-QFEFI58\MSSQLSERVER2017.FinalProject (DESKTOP-QFEFI58\rzee4 (58)) - Microsoft SQL Server Management Studio
File Edit View Query Project Tools Window Help
New Query
dept_id
FinalProject
Execute
Object Explorer
Connect
DESKTOP-QFEFI58\MSSQLSERVER2017 (S
Databases
System Databases
Database Snapshots
AdventureWorks2017
AdventureWorksDW2017
Demo_RetailDW
FinalProject
Database Diagrams
Tables
System Tables
FileTables
External Tables
Graph Tables
dbo.DimCompany
dbo.DimDate
dbo.DimDeptType
dbo.DimEthnicity
dbo.DimYear
dbo.EmployeeDiversityTech
dbo.FactDemography
dbo.FactEthnicity
dbo.FactGender
dbo.Sheet1$
dbo.StageAreaDiversity
dbo.StageAreaTech
Views
External Resources
Synonyms
Programmability
Service Broker
Storage
Security
FoodInspectionDW
GoogleDW
RetailDW
TestDW
Security
Server Objects
Replication
SQLQuery23.sql - D...FEFI58\rzee4 (58))
SQLQuery22.sql - D...FEFI58\rzee4 (54))
/****** Script for SelectTopNRows command from SSMS ******/
SELECT TOP (1000) [DateKey]
,[Date]
FROM [FinalProject].[dbo].[DimDate]
98 %
Results
Messages
DateKey
Date
1 1 1905-07-06 00:00:00.000
2 2 1905-07-06 00:00:00.000
3 3 1905-07-06 00:00:00.000
4 4 1905-07-06 00:00:00.000
5 5 1905-07-06 00:00:00.000
6 6 1905-07-06 00:00:00.000
7 7 1905-07-06 00:00:00.000
8 8 1905-07-06 00:00:00.000
9 9 1905-07-06 00:00:00.000
10 10 1905-07-06 00:00:00.000
11 11 1905-07-06 00:00:00.000
12 12 1905-07-06 00:00:00.000
13 13 1905-07-06 00:00:00.000
14 14 1905-07-06 00:00:00.000
15 15 1905-07-06 00:00:00.000
16 16 1905-07-06 00:00:00.000
17 17 1905-07-06 00:00:00.000
18 18 1905-07-06 00:00:00.000
19 19 1905-07-06 00:00:00.000
20 20 1905-07-06 00:00:00.000
Query executed successfully.
Ready
Ln 1

*Figure 16*

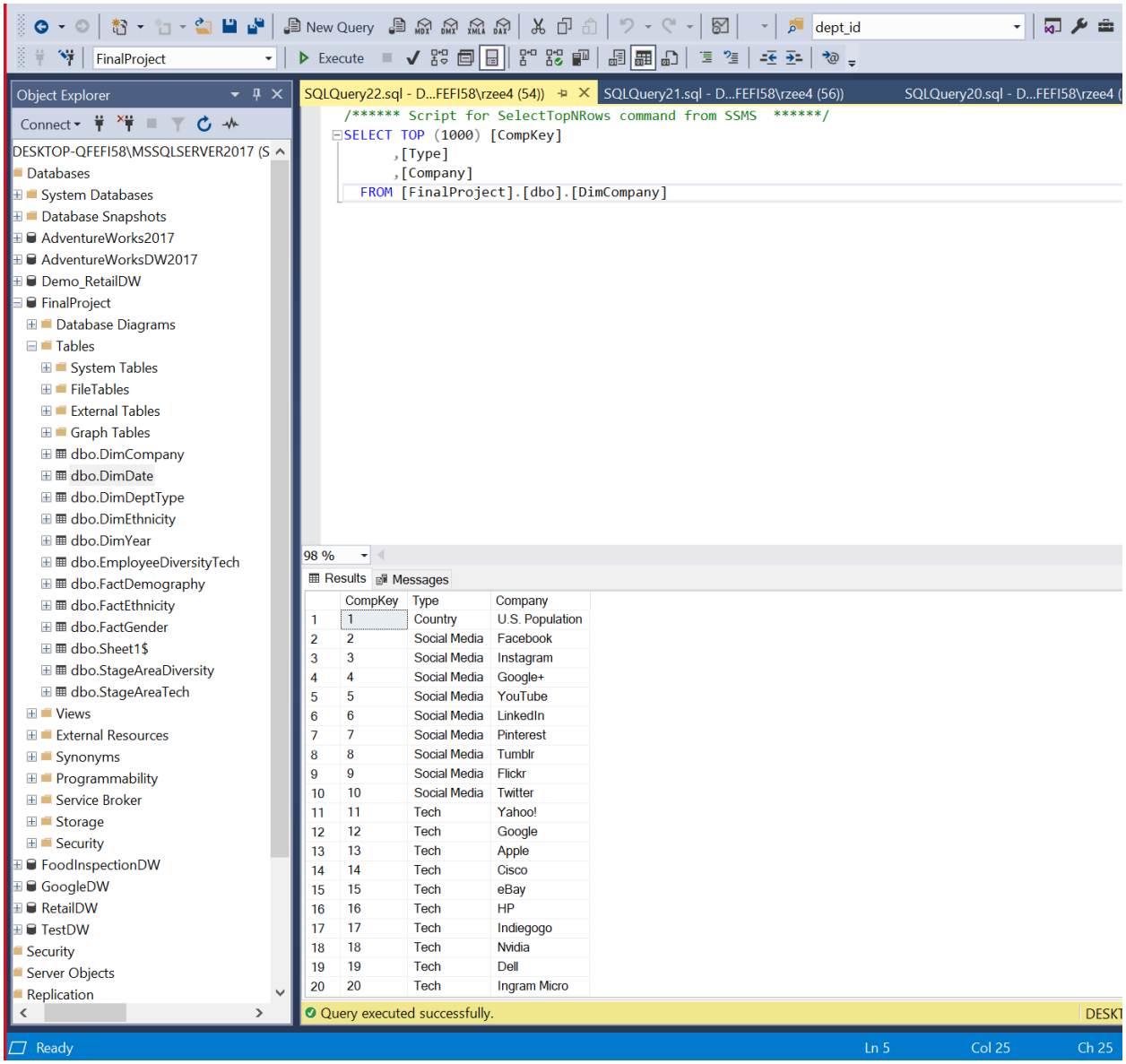
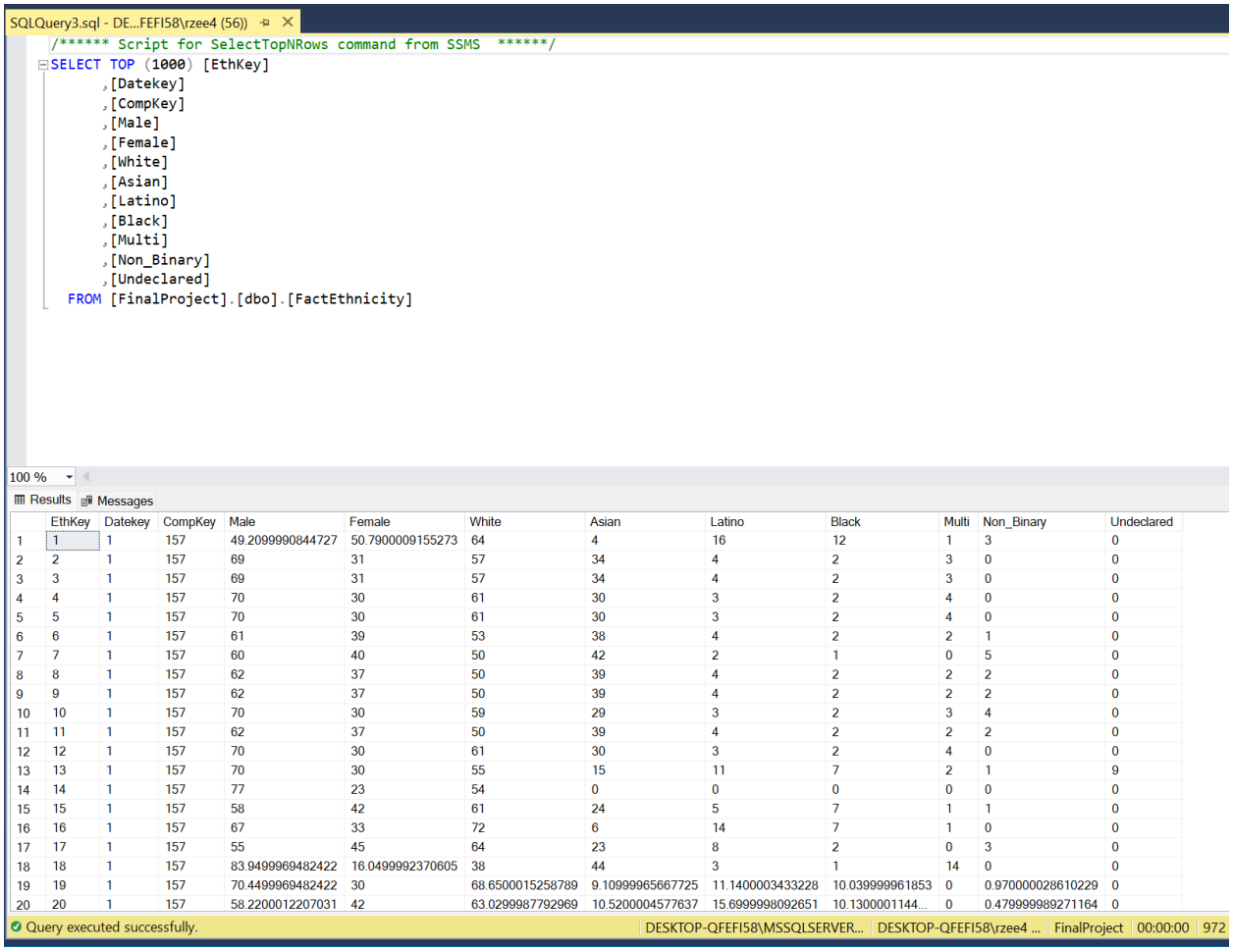

New Query
dept_id
FinalProject
Execute
Object Explorer
Connect
DESKTOP-QFEFI58\MSSQLSERVER2017 (S
Databases
System Databases
Database Snapshots
AdventureWorks2017
AdventureWorksDW2017
Demo_RetailDW
FinalProject
Database Diagrams
Tables
System Tables
FileTables
External Tables
Graph Tables
dbo.DimCompany
dbo.DimDate
dbo.DimDeptType
dbo.DimEthnicity
dbo.DimYear
dbo.EmployeeDiversityTech
dbo.FactDemography
dbo.FactEthnicity
dbo.FactGender
dbo.Sheet1$
dbo.StageAreaDiversity
dbo.StageAreaTech
Views
External Resources
Synonyms
Programmability
Service Broker
Storage
Security
FoodInspectionDW
GoogleDW
RetailDW
TestDW
Security
Server Objects
Replication
SQLQuery22.sql - D...FEFI58\rzee4 (54))
SQLQuery21.sql - D...FEFI58\rzee4 (56))
SQLQuery20.sql - D...FEFI58\rzee4
/****** Script for SelectTopNRows command from SSMS ******/
SELECT TOP (1000) [CompKey]
,[Type]
,[Company]
FROM [FinalProject].[dbo].[DimCompany]
98 %
Results
Messages
CompKey Type Company
1 1 Country U.S. Population
2 2 Social Media Facebook
3 3 Social Media Instagram
4 4 Social Media Google+
5 5 Social Media YouTube
6 6 Social Media LinkedIn
7 7 Social Media Pinterest
8 8 Social Media Tumblr
9 9 Social Media Flickr
10 10 Social Media Twitter
11 11 Tech Yahoo!
12 12 Tech Google
13 13 Tech Apple
14 14 Tech Cisco
15 15 Tech eBay
16 16 Tech HP
17 17 Tech Indiegogo
18 18 Tech Nvidia
19 19 Tech Dell
20 20 Tech Ingram Micro
Query executed successfully.
Ready
Ln 5
Col 25
Ch 25

*Figure 17*



SQLQuery3.sql - DE...FEFI58\rzee4 (56))

```
/****** Script for SelectTopNRows command from SSMS  ******/
SELECT TOP (1000) [EthKey]
      ,[Datekey]
      ,[CompKey]
      ,[Male]
      ,[Female]
      ,[White]
      ,[Asian]
      ,[Latino]
      ,[Black]
      ,[Multi]
      ,[Non_Binary]
      ,[Undeclared]
  FROM [FinalProject].[dbo].[FactEthnicity]
```

100 %

Results | Messages

| | EthKey | Datekey | CompKey | Male | Female | White | Asian | Latino | Black | Multi | Non_Binary | Undeclared |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1 | 1 | 157 | 49.2099990844727 | 50.7900009155273 | 64 | 4 | 16 | 12 | 1 | 3 | 0 |
| 2 | 2 | 1 | 157 | 69 | 31 | 57 | 34 | 4 | 2 | 3 | 0 | 0 |
| 3 | 3 | 1 | 157 | 69 | 31 | 57 | 34 | 4 | 2 | 3 | 0 | 0 |
| 4 | 4 | 1 | 157 | 70 | 30 | 61 | 30 | 3 | 2 | 4 | 0 | 0 |
| 5 | 5 | 1 | 157 | 70 | 30 | 61 | 30 | 3 | 2 | 4 | 0 | 0 |
| 6 | 6 | 1 | 157 | 61 | 39 | 53 | 38 | 4 | 2 | 2 | 1 | 0 |
| 7 | 7 | 1 | 157 | 60 | 40 | 50 | 42 | 2 | 1 | 0 | 5 | 0 |
| 8 | 8 | 1 | 157 | 62 | 37 | 50 | 39 | 4 | 2 | 2 | 2 | 0 |
| 9 | 9 | 1 | 157 | 62 | 37 | 50 | 39 | 4 | 2 | 2 | 2 | 0 |
| 10 | 10 | 1 | 157 | 70 | 30 | 59 | 29 | 3 | 2 | 3 | 4 | 0 |
| 11 | 11 | 1 | 157 | 62 | 37 | 50 | 39 | 4 | 2 | 2 | 2 | 0 |
| 12 | 12 | 1 | 157 | 70 | 30 | 61 | 30 | 3 | 2 | 4 | 0 | 0 |
| 13 | 13 | 1 | 157 | 70 | 30 | 55 | 15 | 11 | 7 | 2 | 1 | 9 |
| 14 | 14 | 1 | 157 | 77 | 23 | 54 | 0 | 0 | 0 | 0 | 0 | 0 |
| 15 | 15 | 1 | 157 | 58 | 42 | 61 | 24 | 5 | 7 | 1 | 1 | 0 |
| 16 | 16 | 1 | 157 | 67 | 33 | 72 | 6 | 14 | 7 | 1 | 0 | 0 |
| 17 | 17 | 1 | 157 | 55 | 45 | 64 | 23 | 8 | 2 | 0 | 3 | 0 |
| 18 | 18 | 1 | 157 | 83.9499969482422 | 16.0499992370605 | 38 | 44 | 3 | 1 | 14 | 0 | 0 |
| 19 | 19 | 1 | 157 | 70.4499969482422 | 30 | 68.6500015258789 | 9.10999965667725 | 11.1400003433228 | 10.039999961853 | 0 | 0.970000028610229 | 0 |
| 20 | 20 | 1 | 157 | 58.2200012207031 | 42 | 63.0299987792969 | 10.5200004577637 | 15.6999998092651 | 10.1300001144... | 0 | 0.479999989271164 | 0 |

Query executed successfully. | DESKTOP-QFEFI58\MSSQLSERVER... | DESKTOP-QFEFI58\rzee4 ... | FinalProject | 00:00:00 | 972

*Figure 18*

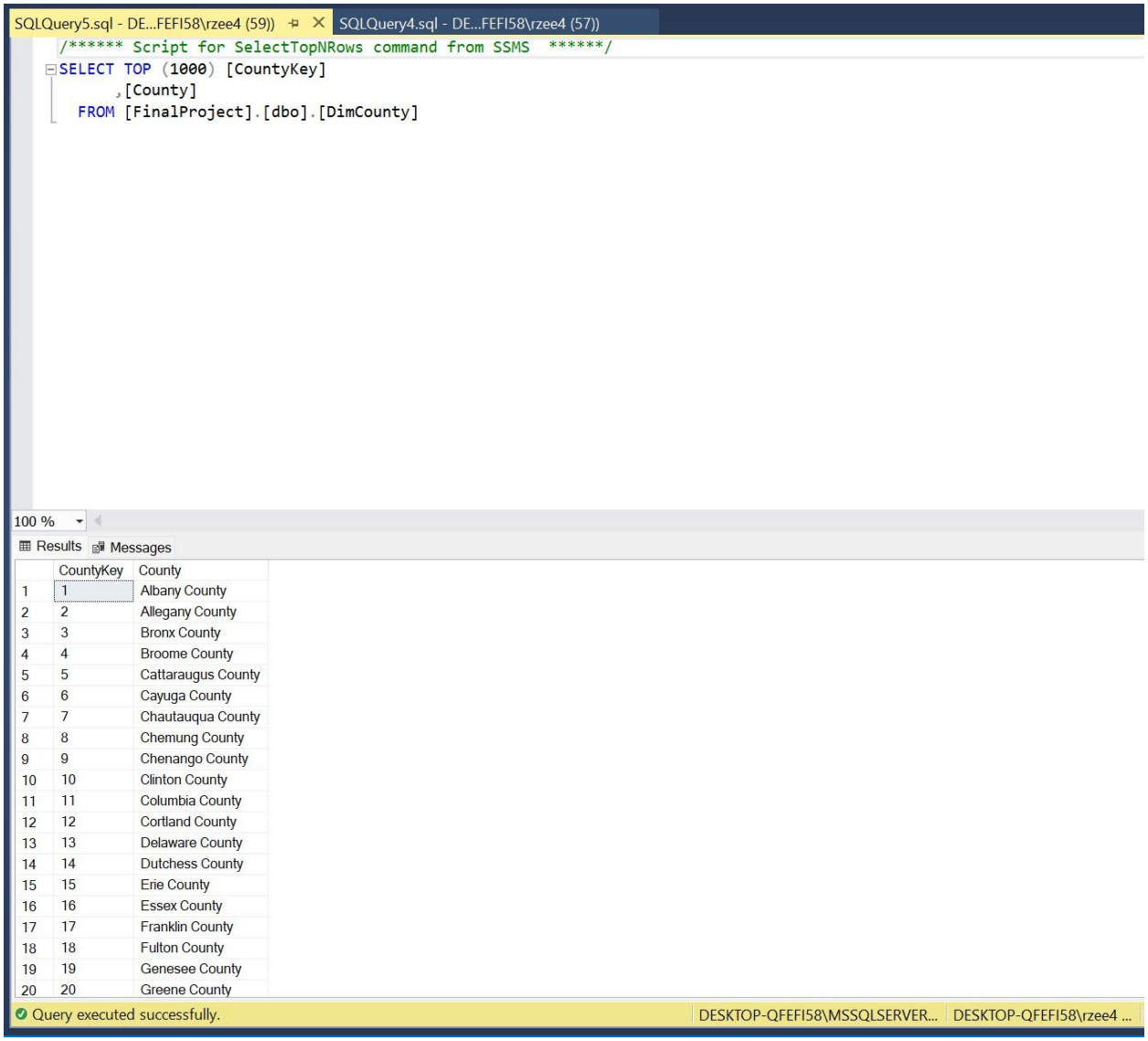
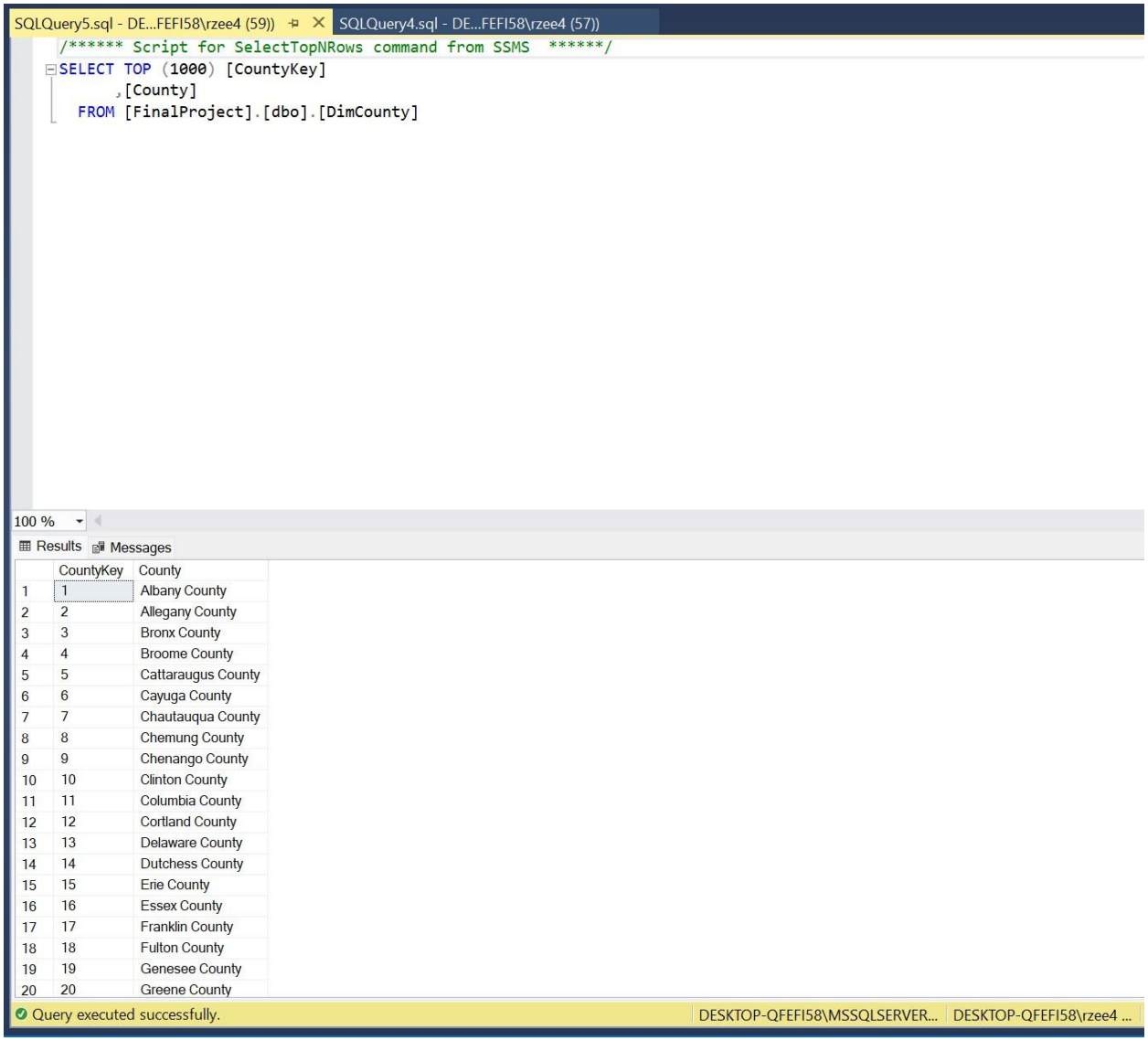
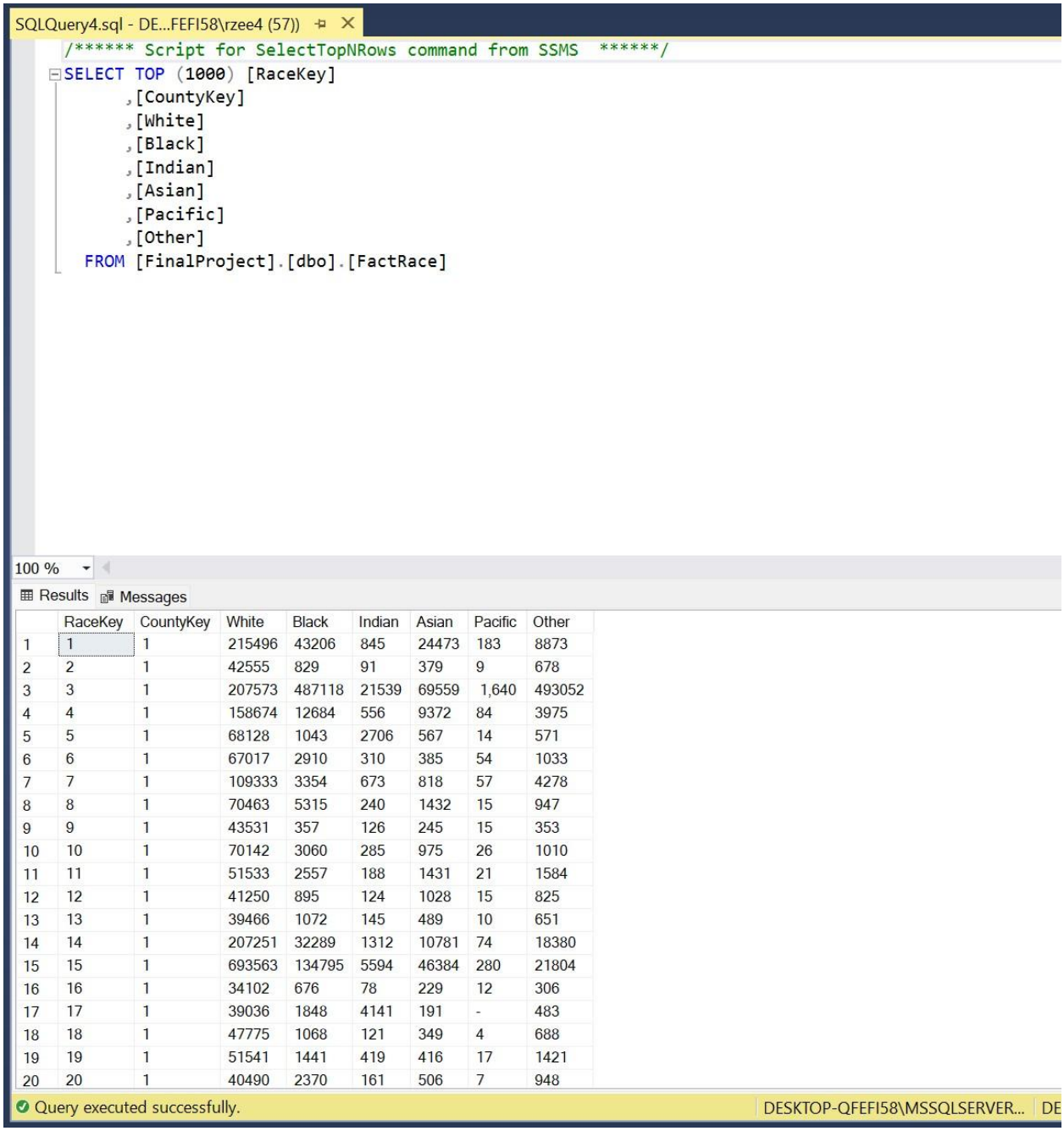

SQLQuery5.sql - DE...FEFI58\rzee4 (59))
SQLQuery4.sql - DE...FEFI58\rzee4 (57))
/****** Script for SelectTopNRows command from SSMS ******/
SELECT TOP (1000) [CountyKey]
,[County]
FROM [FinalProject].[dbo].[DimCounty]
100 %
Results
Messages
CountyKey County
1 1 Albany County
2 2 Allegany County
3 3 Bronx County
4 4 Broome County
5 5 Cattaraugus County
6 6 Cayuga County
7 7 Chautauqua County
8 8 Chemung County
9 9 Chenango County
10 10 Clinton County
11 11 Columbia County
12 12 Cortland County
13 13 Delaware County
14 14 Dutchess County
15 15 Erie County
16 16 Essex County
17 17 Franklin County
18 18 Fulton County
19 19 Genesee County
20 20 Greene County
Query executed successfully.
DESKTOP-QFEFI58\MSSQLSERVER...
DESKTOP-QFEFI58\rzee4 ...

*Figure 19*



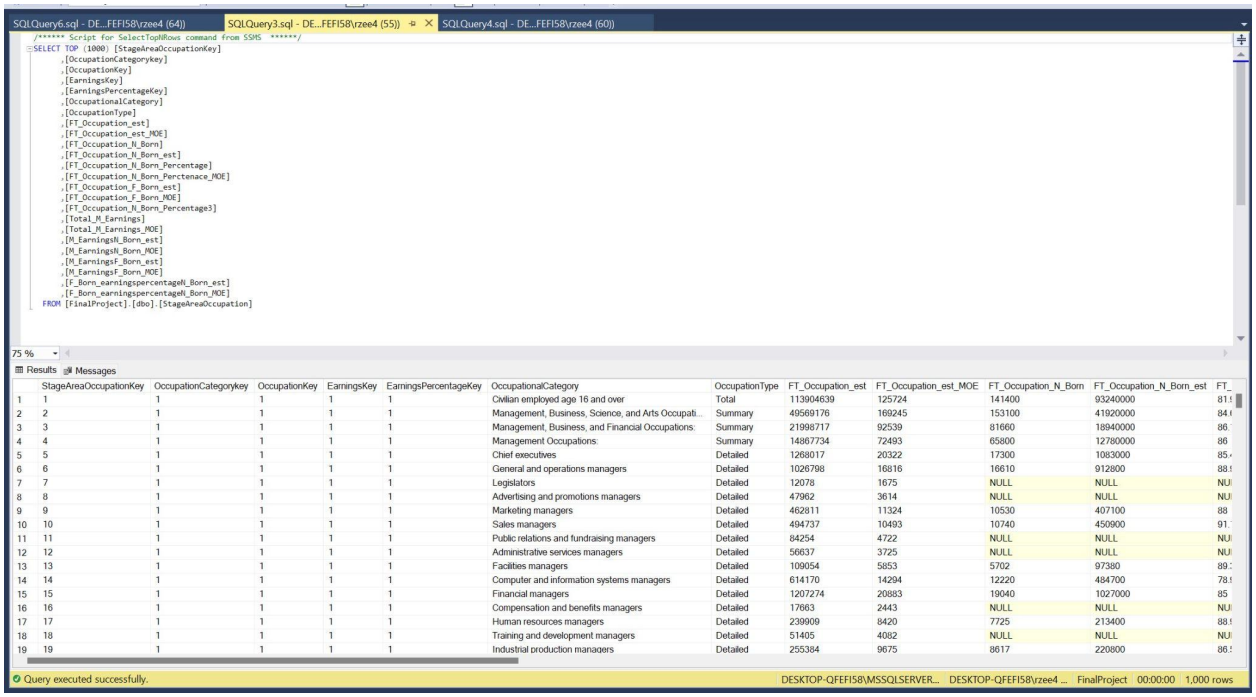

| | CountyKey | County |
|---|---|---|
| 1 | 1 | Albany County |
| 2 | 2 | Allegany County |
| 3 | 3 | Bronx County |
| 4 | 4 | Broome County |
| 5 | 5 | Cattaraugus County |
| 6 | 6 | Cayuga County |
| 7 | 7 | Chautauqua County |
| 8 | 8 | Chemung County |
| 9 | 9 | Chenango County |
| 10 | 10 | Clinton County |
| 11 | 11 | Columbia County |
| 12 | 12 | Cortland County |
| 13 | 13 | Delaware County |
| 14 | 14 | Dutchess County |
| 15 | 15 | Erie County |
| 16 | 16 | Essex County |
| 17 | 17 | Franklin County |
| 18 | 18 | Fulton County |
| 19 | 19 | Genesee County |
| 20 | 20 | Greene County |

*Figure 20*



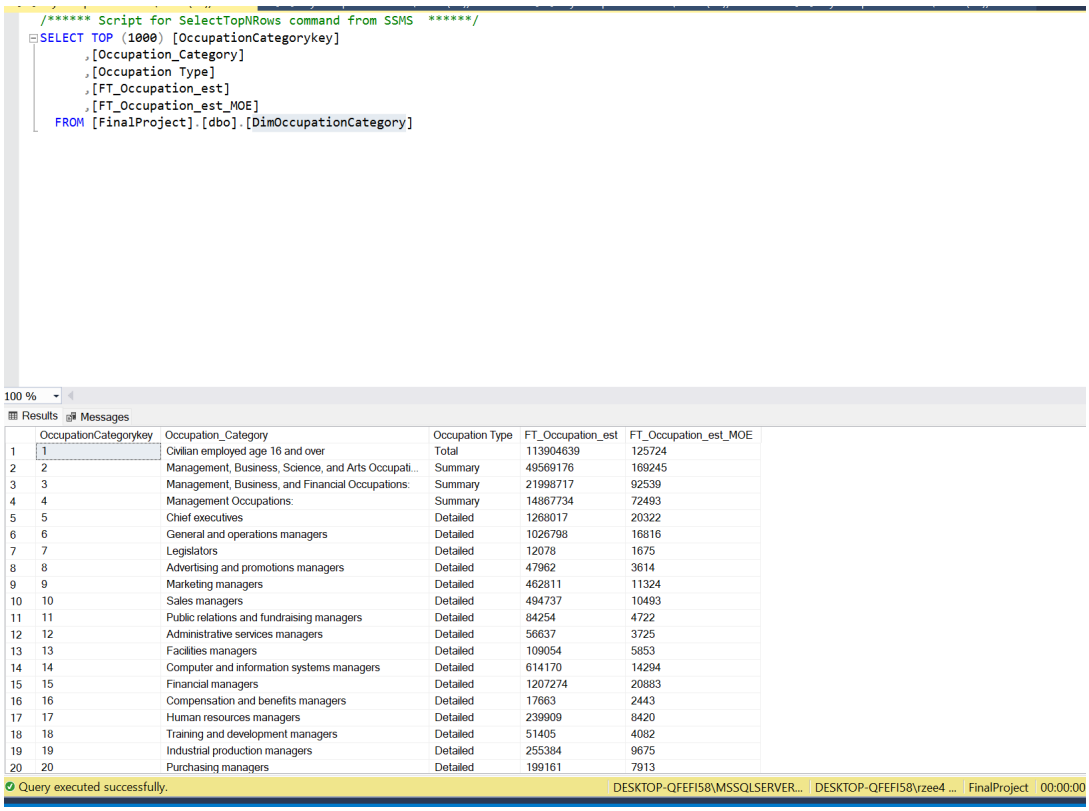

| | RaceKey | CountyKey | White | Black | Indian | Asian | Pacific | Other |
|---|---|---|---|---|---|---|---|---|
| 1 | 1 | 1 | 215496 | 43206 | 845 | 24473 | 183 | 8873 |
| 2 | 2 | 1 | 42555 | 829 | 91 | 379 | 9 | 678 |
| 3 | 3 | 1 | 207573 | 487118 | 21539 | 69559 | 1,640 | 493052 |
| 4 | 4 | 1 | 158674 | 12684 | 556 | 9372 | 84 | 3975 |
| 5 | 5 | 1 | 68128 | 1043 | 2706 | 567 | 14 | 571 |
| 6 | 6 | 1 | 67017 | 2910 | 310 | 385 | 54 | 1033 |
| 7 | 7 | 1 | 109333 | 3354 | 673 | 818 | 57 | 4278 |
| 8 | 8 | 1 | 70463 | 5315 | 240 | 1432 | 15 | 947 |
| 9 | 9 | 1 | 43531 | 357 | 126 | 245 | 15 | 353 |
| 10 | 10 | 1 | 70142 | 3060 | 285 | 975 | 26 | 1010 |
| 11 | 11 | 1 | 51533 | 2557 | 188 | 1431 | 21 | 1584 |
| 12 | 12 | 1 | 41250 | 895 | 124 | 1028 | 15 | 825 |
| 13 | 13 | 1 | 39466 | 1072 | 145 | 489 | 10 | 651 |
| 14 | 14 | 1 | 207251 | 32289 | 1312 | 10781 | 74 | 18380 |
| 15 | 15 | 1 | 693563 | 134795 | 5594 | 46384 | 280 | 21804 |
| 16 | 16 | 1 | 34102 | 676 | 78 | 229 | 12 | 306 |
| 17 | 17 | 1 | 39036 | 1848 | 4141 | 191 | - | 483 |
| 18 | 18 | 1 | 47775 | 1068 | 121 | 349 | 4 | 688 |
| 19 | 19 | 1 | 51541 | 1441 | 419 | 416 | 17 | 1421 |
| 20 | 20 | 1 | 40490 | 2370 | 161 | 506 | 7 | 948 |

*Figure 21*




| | StageAreaOccupationKey | OccupationCategorykey | OccupationKey | EarningsKey | EarningsPercentageKey | OccupationalCategory | OccupationType | FT_Occupation_est | FT_Occupation_est_MOE | FT_Occupation_N_Born | FT_Occupation_N_Born_est | FT_ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1 | 1 | 1 | 1 | 1 | Civilian employed age 16 and over | Total | 113904639 | 125724 | 141400 | 93240000 | 81 |
| 2 | 2 | 1 | 1 | 1 | 1 | Management, Business, Science, and Arts Occupati... | Summary | 49569176 | 169245 | 153100 | 41920000 | 84 |
| 3 | 3 | 1 | 1 | 1 | 1 | Management, Business, and Financial Occupations: | Summary | 21998717 | 92539 | 81660 | 18940000 | 86 |
| 4 | 4 | 1 | 1 | 1 | 1 | Management Occupations: | Summary | 14867734 | 72493 | 65800 | 12780000 | 86 |
| 5 | 5 | 1 | 1 | 1 | 1 | Chief executives | Detailed | 1268017 | 20322 | 17300 | 1083000 | 85 |
| 6 | 6 | 1 | 1 | 1 | 1 | General and operations managers | Detailed | 1026798 | 16816 | 16610 | 912800 | 88 |
| 7 | 7 | 1 | 1 | 1 | 1 | Legislators | Detailed | 12078 | 1675 | NULL | NULL | NU |
| 8 | 8 | 1 | 1 | 1 | 1 | Advertising and promotions managers | Detailed | 47962 | 3614 | NULL | NULL | NU |
| 9 | 9 | 1 | 1 | 1 | 1 | Marketing managers | Detailed | 462811 | 11324 | 10530 | 407100 | 88 |
| 10 | 10 | 1 | 1 | 1 | 1 | Sales managers | Detailed | 494737 | 10493 | 10740 | 450900 | 91 |
| 11 | 11 | 1 | 1 | 1 | 1 | Public relations and fundraising managers | Detailed | 84254 | 4722 | NULL | NULL | NU |
| 12 | 12 | 1 | 1 | 1 | 1 | Administrative services managers | Detailed | 56637 | 3725 | NULL | NULL | NU |
| 13 | 13 | 1 | 1 | 1 | 1 | Facilities managers | Detailed | 109054 | 5853 | 5702 | 97380 | 89 |
| 14 | 14 | 1 | 1 | 1 | 1 | Computer and information systems managers | Detailed | 614170 | 14294 | 12220 | 484700 | 78 |
| 15 | 15 | 1 | 1 | 1 | 1 | Financial managers | Detailed | 1207274 | 20883 | 19040 | 1027000 | 85 |
| 16 | 16 | 1 | 1 | 1 | 1 | Compensation and benefits managers | Detailed | 17663 | 2443 | NULL | NULL | NU |
| 17 | 17 | 1 | 1 | 1 | 1 | Human resources managers | Detailed | 239909 | 8420 | 7725 | 213400 | 88 |
| 18 | 18 | 1 | 1 | 1 | 1 | Training and development managers | Detailed | 51405 | 4082 | NULL | NULL | NU |
| 19 | 19 | 1 | 1 | 1 | 1 | Industrial production managers | Detailed | 255384 | 9675 | 8617 | 220800 | 86 |

*Figure 22*




| | OccupationCategorykey | Occupation_Category | Occupation Type | FT_Occupation_est | FT_Occupation_est_MOE |
|---|---|---|---|---|---|
| 1 | 1 | Civilian employed age 16 and over | Total | 113904639 | 125724 |
| 2 | 2 | Management, Business, Science, and Arts Occupati... | Summary | 49569176 | 169245 |
| 3 | 3 | Management, Business, and Financial Occupations: | Summary | 21998717 | 92539 |
| 4 | 4 | Management Occupations: | Summary | 14867734 | 72493 |
| 5 | 5 | Chief executives | Detailed | 1268017 | 20322 |
| 6 | 6 | General and operations managers | Detailed | 1026798 | 16816 |
| 7 | 7 | Legislators | Detailed | 12078 | 1675 |
| 8 | 8 | Advertising and promotions managers | Detailed | 47962 | 3614 |
| 9 | 9 | Marketing managers | Detailed | 462811 | 11324 |
| 10 | 10 | Sales managers | Detailed | 494737 | 10493 |
| 11 | 11 | Public relations and fundraising managers | Detailed | 84254 | 4722 |
| 12 | 12 | Administrative services managers | Detailed | 56637 | 3725 |
| 13 | 13 | Facilities managers | Detailed | 109054 | 5853 |
| 14 | 14 | Computer and information systems managers | Detailed | 614170 | 14294 |
| 15 | 15 | Financial managers | Detailed | 1207274 | 20883 |
| 16 | 16 | Compensation and benefits managers | Detailed | 17663 | 2443 |
| 17 | 17 | Human resources managers | Detailed | 239909 | 8420 |
| 18 | 18 | Training and development managers | Detailed | 51405 | 4082 |
| 19 | 19 | Industrial production managers | Detailed | 255384 | 9675 |
| 20 | 20 | Purchasing managers | Detailed | 199161 | 7913 |

*Figure 23*

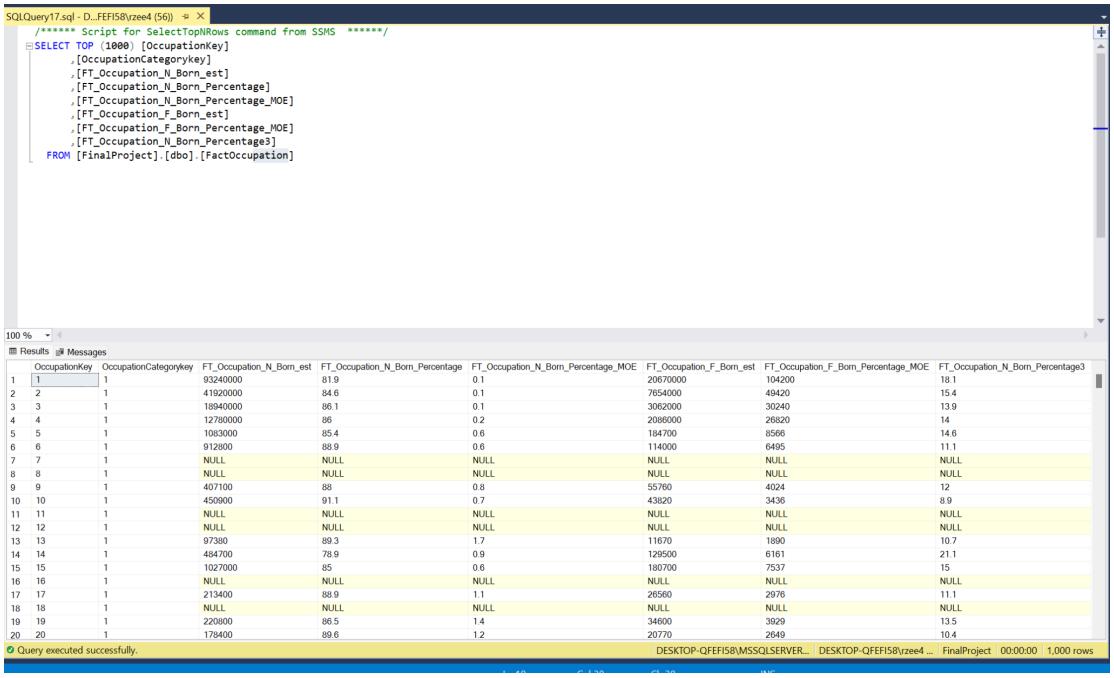



*Figure 24*

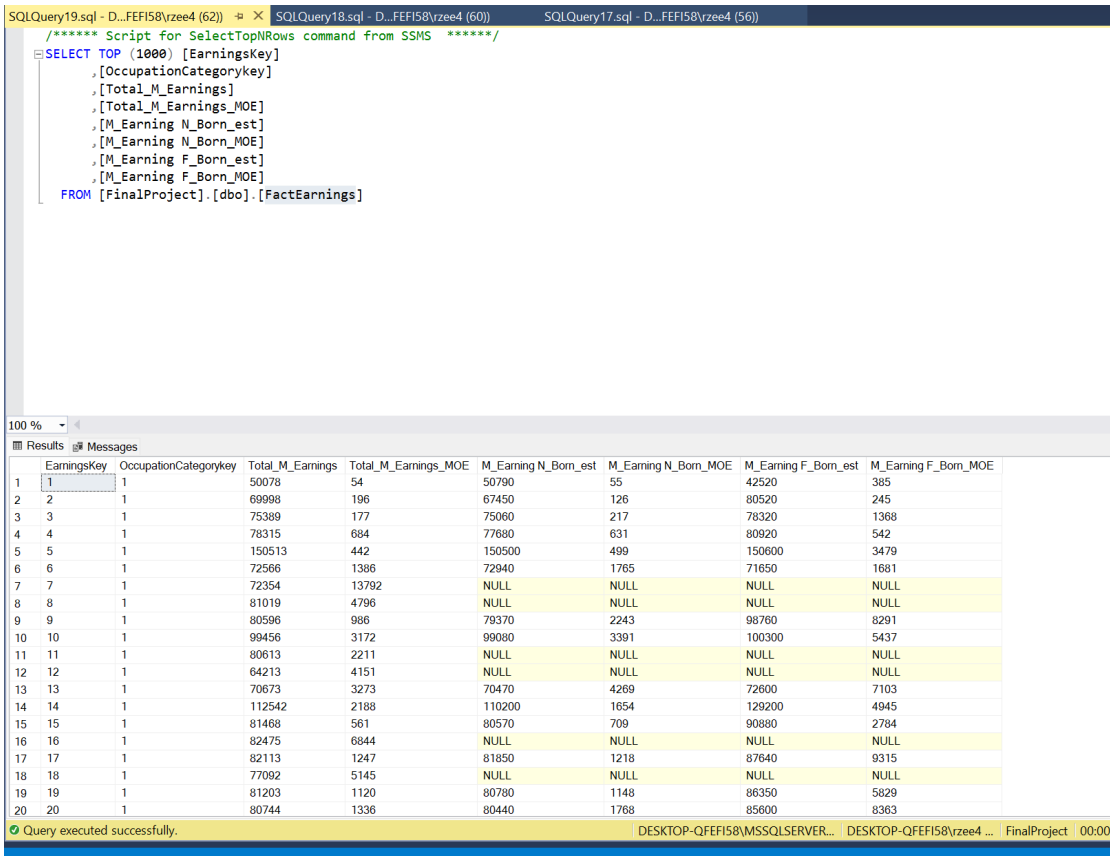
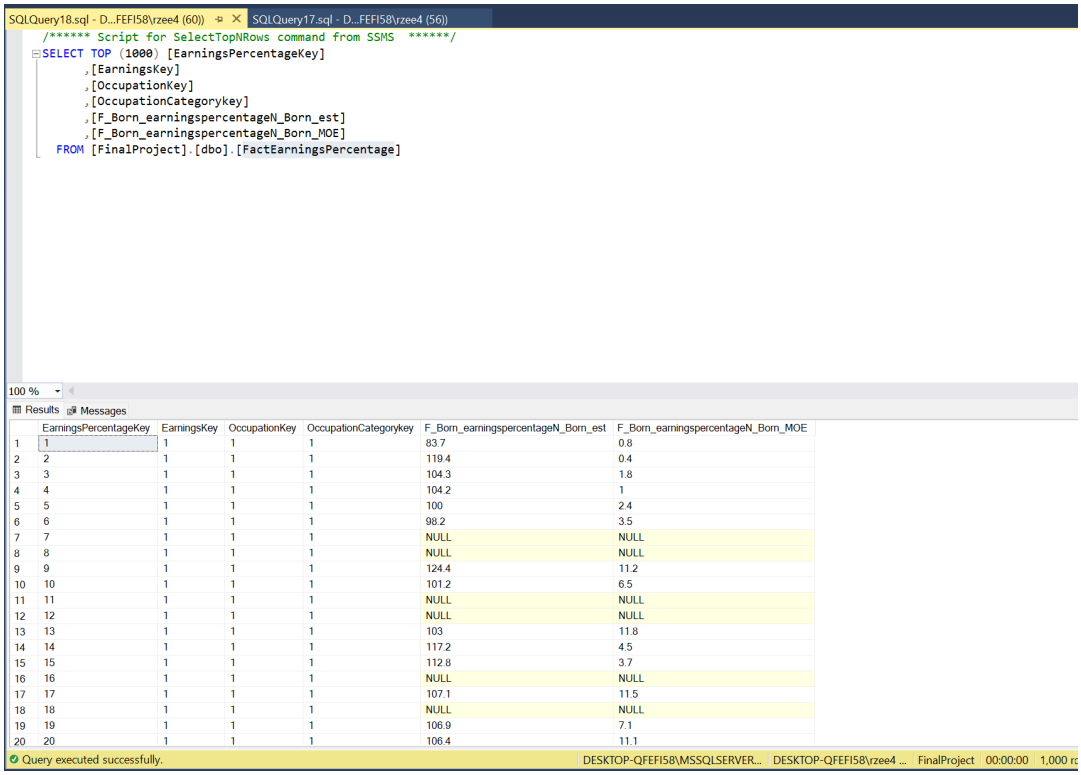
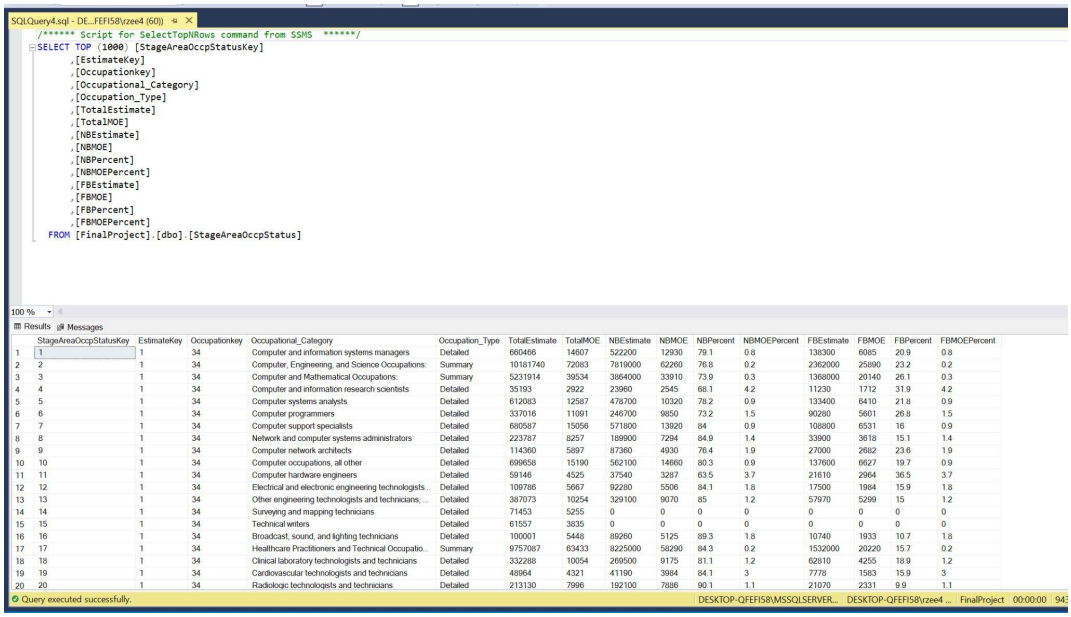


*Figure 25*




| | EarningsPercentageKey | EarningsKey | OccupationKey | OccupationCategorykey | F_Born_earningspercentageN_Born_est | F_Born_earningspercentageN_Born_MOE |
|---|---|---|---|---|---|---|
| 1 | 1 | 1 | 1 | 1 | 83.7 | 0.8 |
| 2 | 2 | 1 | 1 | 1 | 119.4 | 0.4 |
| 3 | 3 | 1 | 1 | 1 | 104.3 | 1.8 |
| 4 | 4 | 1 | 1 | 1 | 104.2 | 1 |
| 5 | 5 | 1 | 1 | 1 | 100 | 2.4 |
| 6 | 6 | 1 | 1 | 1 | 98.2 | 3.5 |
| 7 | 7 | 1 | 1 | 1 | NULL | NULL |
| 8 | 8 | 1 | 1 | 1 | NULL | NULL |
| 9 | 9 | 1 | 1 | 1 | 124.4 | 11.2 |
| 10 | 10 | 1 | 1 | 1 | 101.2 | 6.5 |
| 11 | 11 | 1 | 1 | 1 | NULL | NULL |
| 12 | 12 | 1 | 1 | 1 | NULL | NULL |
| 13 | 13 | 1 | 1 | 1 | 103 | 11.8 |
| 14 | 14 | 1 | 1 | 1 | 117.2 | 4.5 |
| 15 | 15 | 1 | 1 | 1 | 112.8 | 3.7 |
| 16 | 16 | 1 | 1 | 1 | NULL | NULL |
| 17 | 17 | 1 | 1 | 1 | 107.1 | 11.5 |
| 18 | 18 | 1 | 1 | 1 | NULL | NULL |
| 19 | 19 | 1 | 1 | 1 | 106.9 | 7.1 |
| 20 | 20 | 1 | 1 | 1 | 106.4 | 11.1 |

*Figure 26*




| | StageAreaOccpStatusKey | EstimateKey | Occupationkey | Occupational_Category | Occupation_Type | TotalEstimate | TotalMOE | NBEstimate | NBMOE | NBPercent | NBMOEPercent | FBEstimate | FBMOE | FBPercent | FBMOEPercent |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1 | 1 | 34 | Computer and information systems managers | Detailed | 660466 | 14607 | 522200 | 12930 | 79.1 | 0.8 | 138300 | 6085 | 20.9 | 0.8 |
| 2 | 2 | 1 | 34 | Computer, Engineering, and Science Occupations: | Summary | 10181740 | 72083 | 7819000 | 62260 | 76.8 | 0.2 | 2362000 | 25890 | 23.2 | 0.2 |
| 3 | 3 | 1 | 34 | Computer and Mathematical Occupations: | Summary | 5231914 | 39534 | 3864000 | 33910 | 73.9 | 0.3 | 1368000 | 20140 | 26.1 | 0.3 |
| 4 | 4 | 1 | 34 | Computer and information research scientists | Detailed | 35193 | 2922 | 23960 | 2545 | 68.1 | 4.2 | 11230 | 1712 | 31.9 | 4.2 |
| 5 | 5 | 1 | 34 | Computer systems analysts | Detailed | 612083 | 12587 | 478700 | 10320 | 78.2 | 0.9 | 133400 | 6410 | 21.8 | 0.9 |
| 6 | 6 | 1 | 34 | Computer programmers | Detailed | 337016 | 11091 | 246700 | 9850 | 73.2 | 1.5 | 90280 | 5601 | 26.8 | 1.5 |
| 7 | 7 | 1 | 34 | Computer support specialists | Detailed | 680587 | 15056 | 571800 | 13920 | 84 | 0.9 | 108800 | 6531 | 16 | 0.9 |
| 8 | 8 | 1 | 34 | Network and computer systems administrators | Detailed | 223787 | 8257 | 189900 | 7294 | 84.9 | 1.4 | 33900 | 3618 | 15.1 | 1.4 |
| 9 | 9 | 1 | 34 | Computer network architects | Detailed | 114360 | 5897 | 87360 | 4930 | 76.4 | 1.9 | 27000 | 2682 | 23.6 | 1.9 |
| 10 | 10 | 1 | 34 | Computer occupations, all other | Detailed | 699658 | 15190 | 562100 | 14660 | 80.3 | 0.9 | 137600 | 6627 | 19.7 | 0.9 |
| 11 | 11 | 1 | 34 | Computer hardware engineers | Detailed | 59146 | 4525 | 37540 | 3287 | 63.5 | 3.7 | 21610 | 2964 | 36.5 | 3.7 |
| 12 | 12 | 1 | 34 | Electrical and electronic engineering technologists... | Detailed | 109786 | 5667 | 92280 | 5506 | 84.1 | 1.8 | 17500 | 1984 | 15.9 | 1.8 |
| 13 | 13 | 1 | 34 | Other engineering technologists and technicians, ... | Detailed | 387073 | 10254 | 329100 | 9070 | 85 | 1.2 | 57970 | 5299 | 15 | 1.2 |
| 14 | 14 | 1 | 34 | Surveying and mapping technicians | Detailed | 71453 | 5255 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 15 | 15 | 1 | 34 | Technical writers | Detailed | 61557 | 3835 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 16 | 16 | 1 | 34 | Broadcast, sound, and lighting technicians | Detailed | 100001 | 5448 | 89260 | 5125 | 89.3 | 1.8 | 10740 | 1933 | 10.7 | 1.8 |
| 17 | 17 | 1 | 34 | Healthcare Practitioners and Technical Occupatio... | Summary | 9757087 | 63433 | 8225000 | 58290 | 84.3 | 0.2 | 1532000 | 20220 | 15.7 | 0.2 |
| 18 | 18 | 1 | 34 | Clinical laboratory technologists and technicians | Detailed | 332288 | 10054 | 269500 | 9175 | 81.1 | 1.2 | 62810 | 4255 | 18.9 | 1.2 |
| 19 | 19 | 1 | 34 | Cardiovascular technologists and technicians | Detailed | 48964 | 4321 | 41190 | 3984 | 84.1 | 3 | 7778 | 1583 | 15.9 | 3 |
| 20 | 20 | 1 | 34 | Radiologic technologists and technicians | Detailed | 213130 | 7996 | 192100 | 7886 | 90.1 | 1.1 | 21070 | 2331 | 9.9 | 1.1 |

*Figure 27*

SQLQuery7.sql - DE...FEFI58\rzee4 (59))

```
/****** Script for SelectTopNRows command from SSMS  ******/
SELECT TOP (1000) [Occupationkey]
      ,[Occupational_Category]
      ,[Occupation_Type]
  FROM [FinalProject].[dbo].[dimOccupation]
```

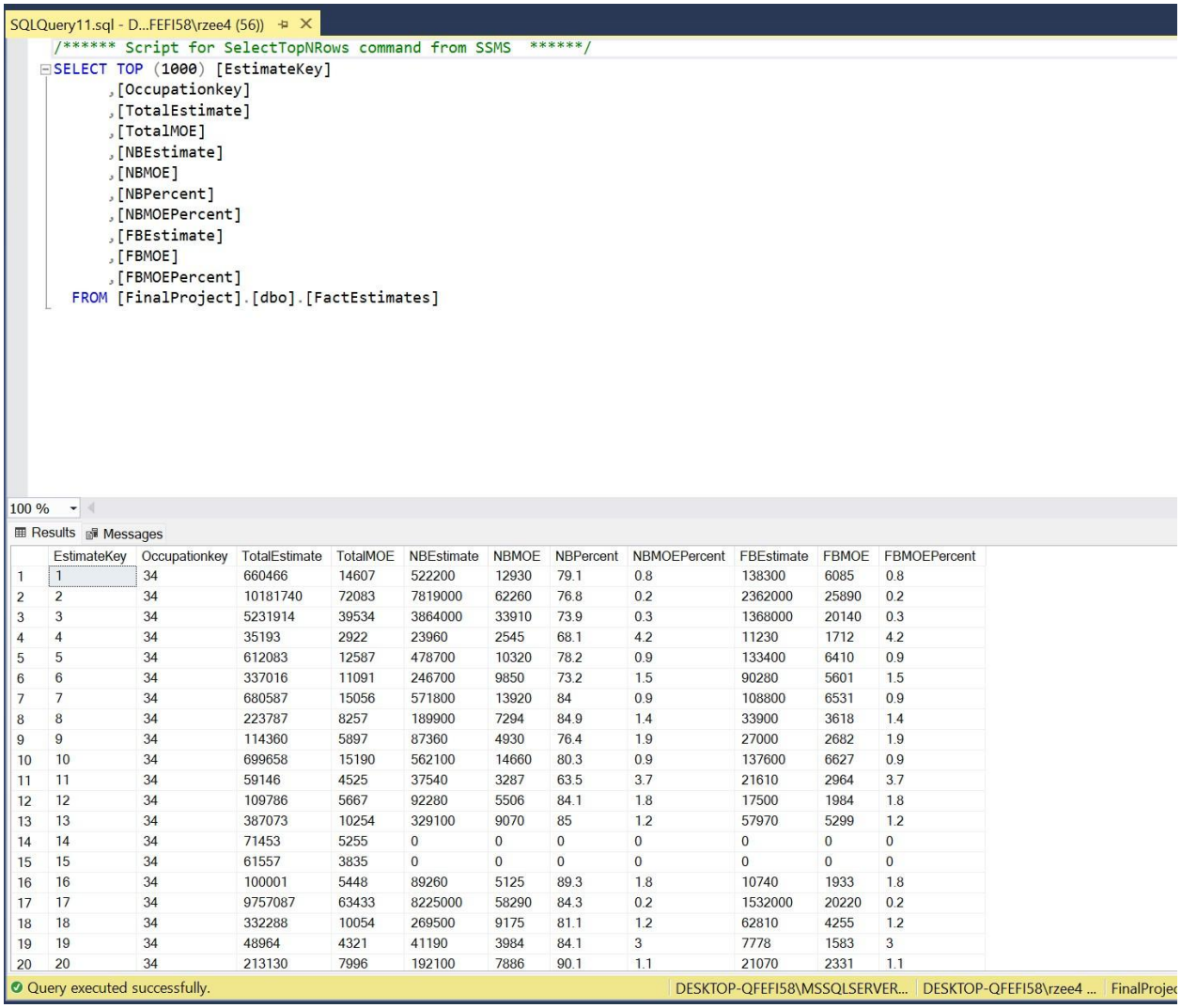
100 %

Results Messages

| | Occupationkey | Occupational_Category | Occupation_Type |
|---|---|---|---|
| 1 | 1 | Computer and information systems managers | Detailed |
| 2 | 2 | Computer, Engineering, and Science Occupations: | Summary |
| 3 | 3 | Computer and Mathematical Occupations: | Summary |
| 4 | 4 | Computer and information research scientists | Detailed |
| 5 | 5 | Computer systems analysts | Detailed |
| 6 | 6 | Computer programmers | Detailed |
| 7 | 7 | Computer support specialists | Detailed |
| 8 | 8 | Network and computer systems administrators | Detailed |
| 9 | 9 | Computer network architects | Detailed |
| 10 | 10 | Computer occupations, all other | Detailed |
| 11 | 11 | Computer hardware engineers | Detailed |
| 12 | 12 | Electrical and electronic engineering technologists... | Detailed |
| 13 | 13 | Other engineering technologists and technicians, ... | Detailed |
| 14 | 14 | Surveying and mapping technicians | Detailed |
| 15 | 15 | Technical writers | Detailed |
| 16 | 16 | Broadcast, sound, and lighting technicians | Detailed |
| 17 | 17 | Healthcare Practitioners and Technical Occupatio... | Summary |
| 18 | 18 | Clinical laboratory technologists and technicians | Detailed |
| 19 | 19 | Cardiovascular technologists and technicians | Detailed |
| 20 | 20 | Radiologic technologists and technicians | Detailed |

Query executed successfully. DESKTOP-QFEFI58\MSSQLSERVER... DESKTOP-QFEFI58\rzee4 ... FinalPr

*Figure 28*




| | EstimateKey | Occupationkey | TotalEstimate | TotalMOE | NBEstimate | NBMOE | NBPercent | NBMOEPercent | FBEstimate | FBMOE | FBMOEPercent |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1 | 34 | 660466 | 14607 | 522200 | 12930 | 79.1 | 0.8 | 138300 | 6085 | 0.8 |
| 2 | 2 | 34 | 10181740 | 72083 | 7819000 | 62260 | 76.8 | 0.2 | 2362000 | 25890 | 0.2 |
| 3 | 3 | 34 | 5231914 | 39534 | 3864000 | 33910 | 73.9 | 0.3 | 1368000 | 20140 | 0.3 |
| 4 | 4 | 34 | 35193 | 2922 | 23960 | 2545 | 68.1 | 4.2 | 11230 | 1712 | 4.2 |
| 5 | 5 | 34 | 612083 | 12587 | 478700 | 10320 | 78.2 | 0.9 | 133400 | 6410 | 0.9 |
| 6 | 6 | 34 | 337016 | 11091 | 246700 | 9850 | 73.2 | 1.5 | 90280 | 5601 | 1.5 |
| 7 | 7 | 34 | 680587 | 15056 | 571800 | 13920 | 84 | 0.9 | 108800 | 6531 | 0.9 |
| 8 | 8 | 34 | 223787 | 8257 | 189900 | 7294 | 84.9 | 1.4 | 33900 | 3618 | 1.4 |
| 9 | 9 | 34 | 114360 | 5897 | 87360 | 4930 | 76.4 | 1.9 | 27000 | 2682 | 1.9 |
| 10 | 10 | 34 | 699658 | 15190 | 562100 | 14660 | 80.3 | 0.9 | 137600 | 6627 | 0.9 |
| 11 | 11 | 34 | 59146 | 4525 | 37540 | 3287 | 63.5 | 3.7 | 21610 | 2964 | 3.7 |
| 12 | 12 | 34 | 109786 | 5667 | 92280 | 5506 | 84.1 | 1.8 | 17500 | 1984 | 1.8 |
| 13 | 13 | 34 | 387073 | 10254 | 329100 | 9070 | 85 | 1.2 | 57970 | 5299 | 1.2 |
| 14 | 14 | 34 | 71453 | 5255 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 15 | 15 | 34 | 61557 | 3835 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 16 | 16 | 34 | 100001 | 5448 | 89260 | 5125 | 89.3 | 1.8 | 10740 | 1933 | 1.8 |
| 17 | 17 | 34 | 9757087 | 63433 | 8225000 | 58290 | 84.3 | 0.2 | 1532000 | 20220 | 0.2 |
| 18 | 18 | 34 | 332288 | 10054 | 269500 | 9175 | 81.1 | 1.2 | 62810 | 4255 | 1.2 |
| 19 | 19 | 34 | 48964 | 4321 | 41190 | 3984 | 84.1 | 3 | 7778 | 1583 | 3 |
| 20 | 20 | 34 | 213130 | 7996 | 192100 | 7886 | 90.1 | 1.1 | 21070 | 2331 | 1.1 |



*Figure 29*

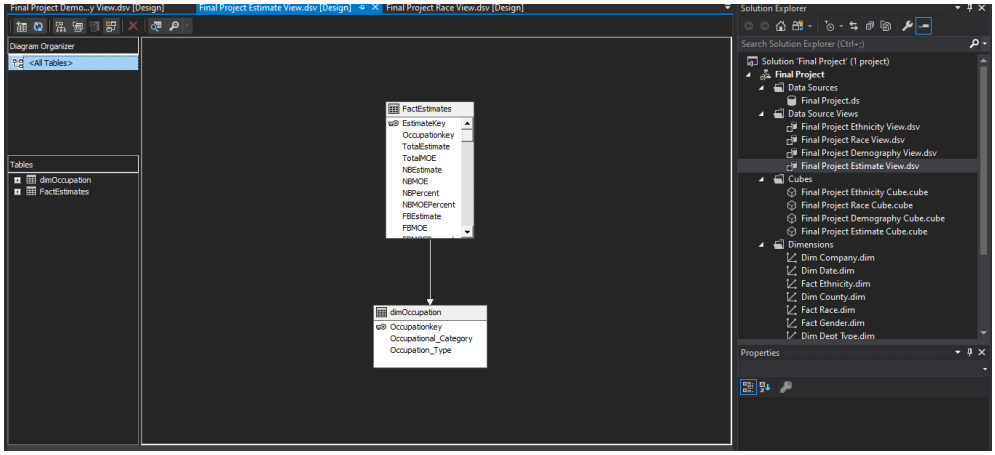


*Figure 30*

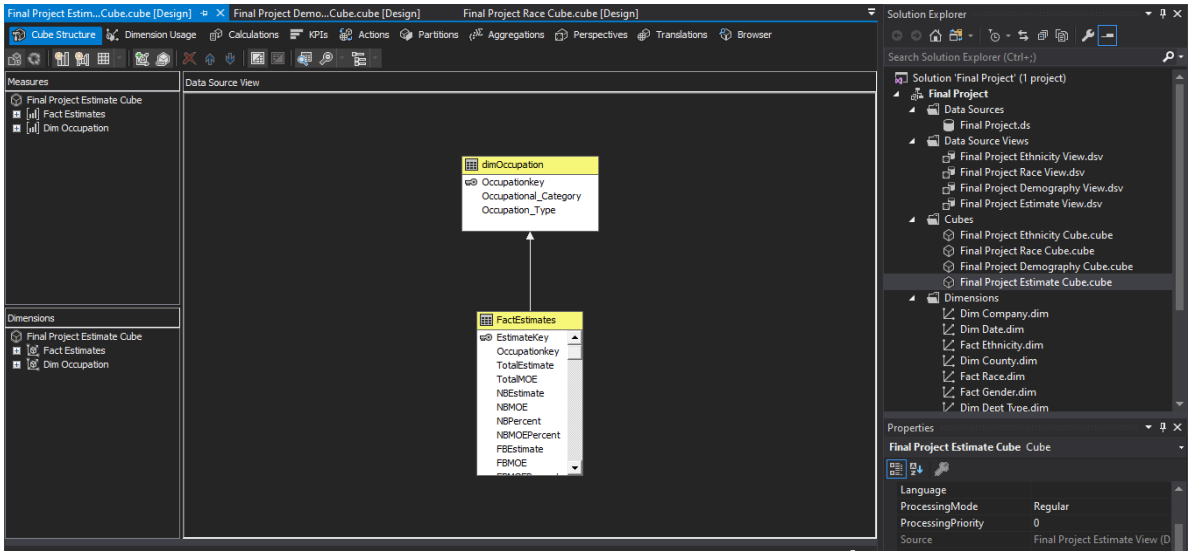



*Figure 31*

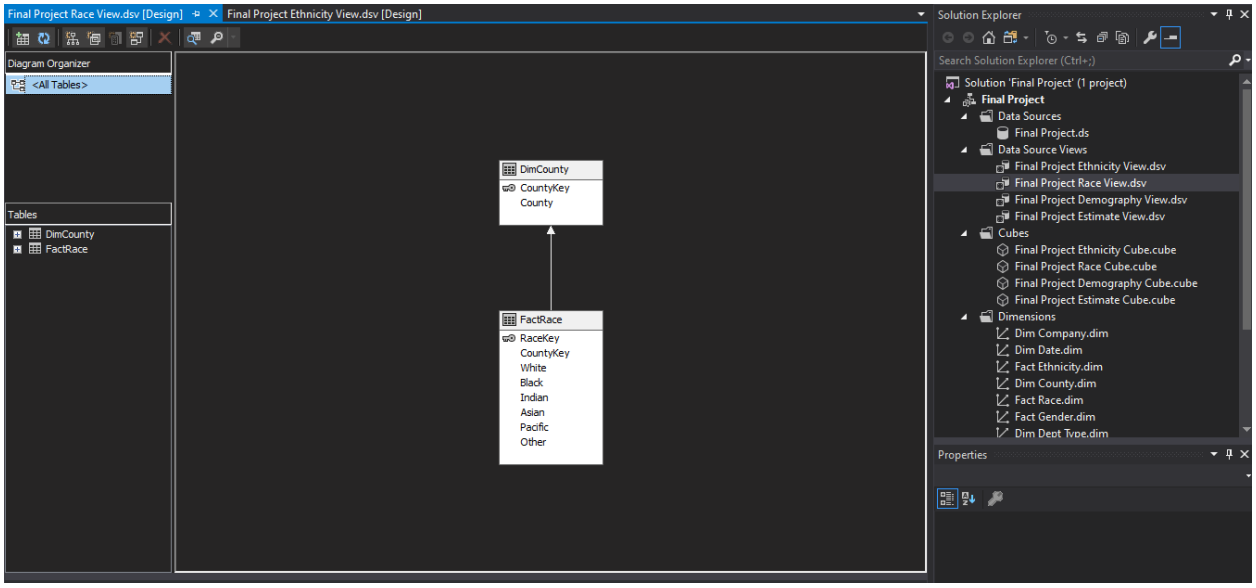


*Figure 32*

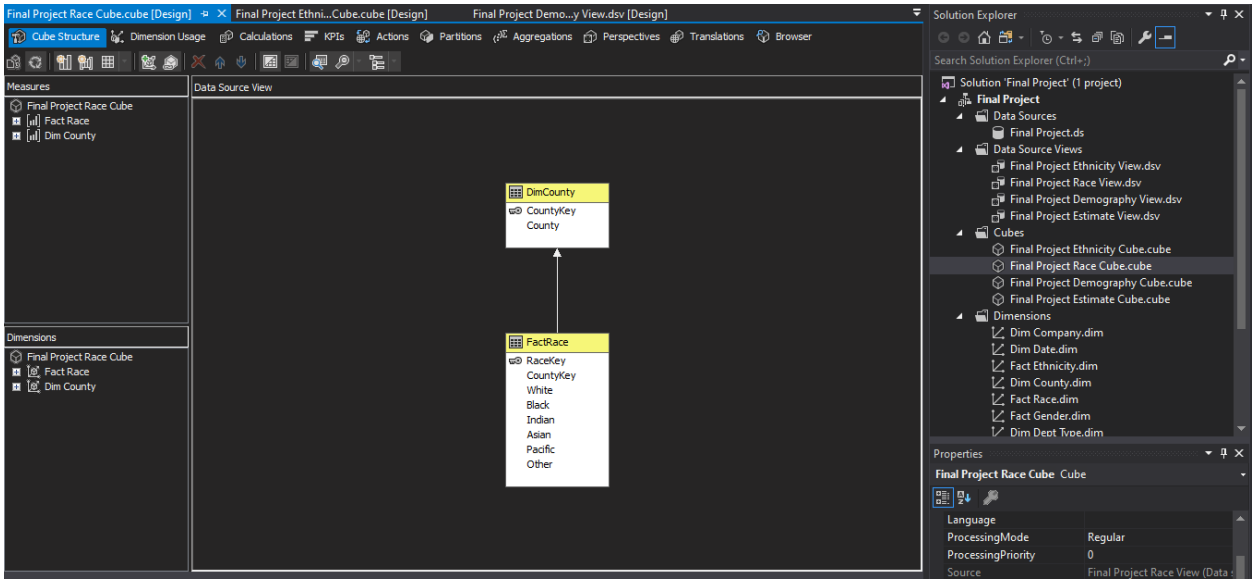



*Figure 33*

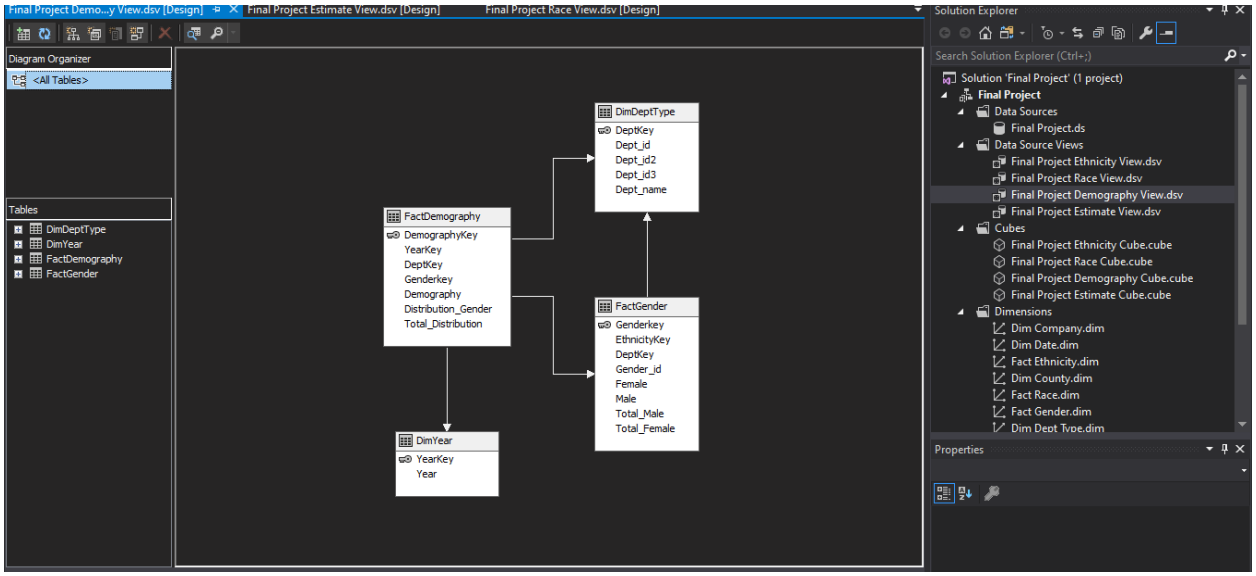


*Figure 34*

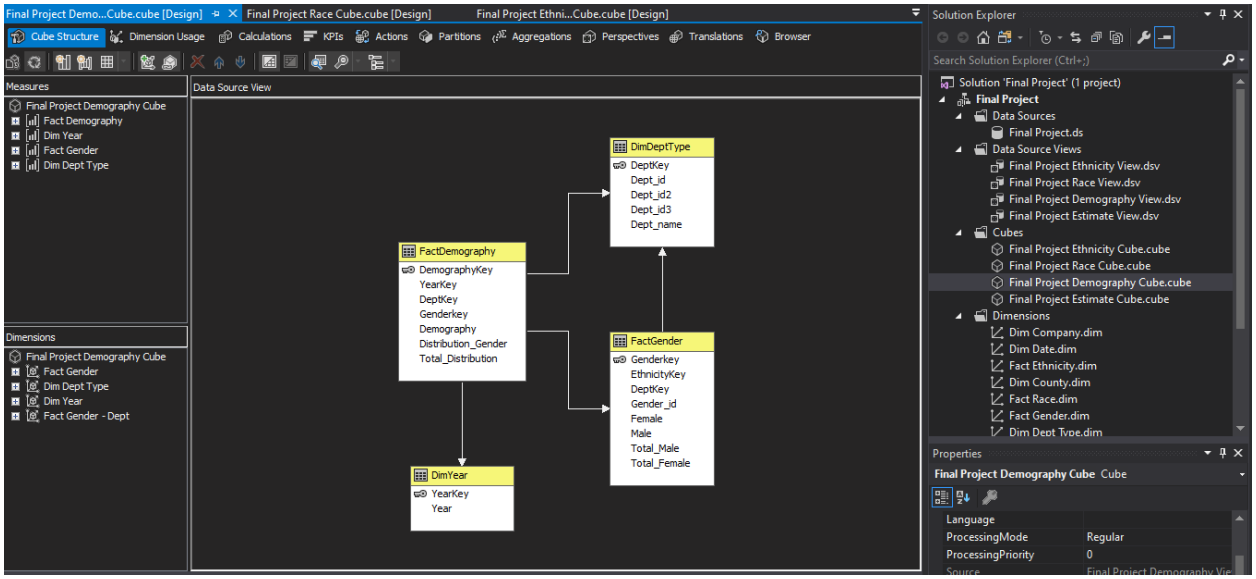



*Figure 35*

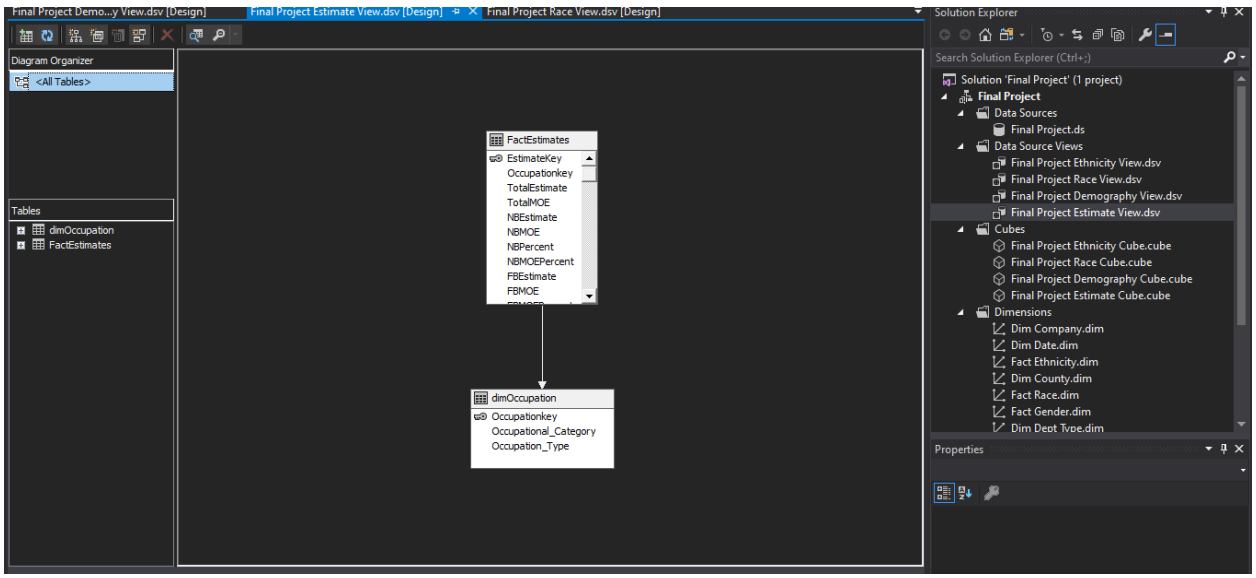


*Figure 36*

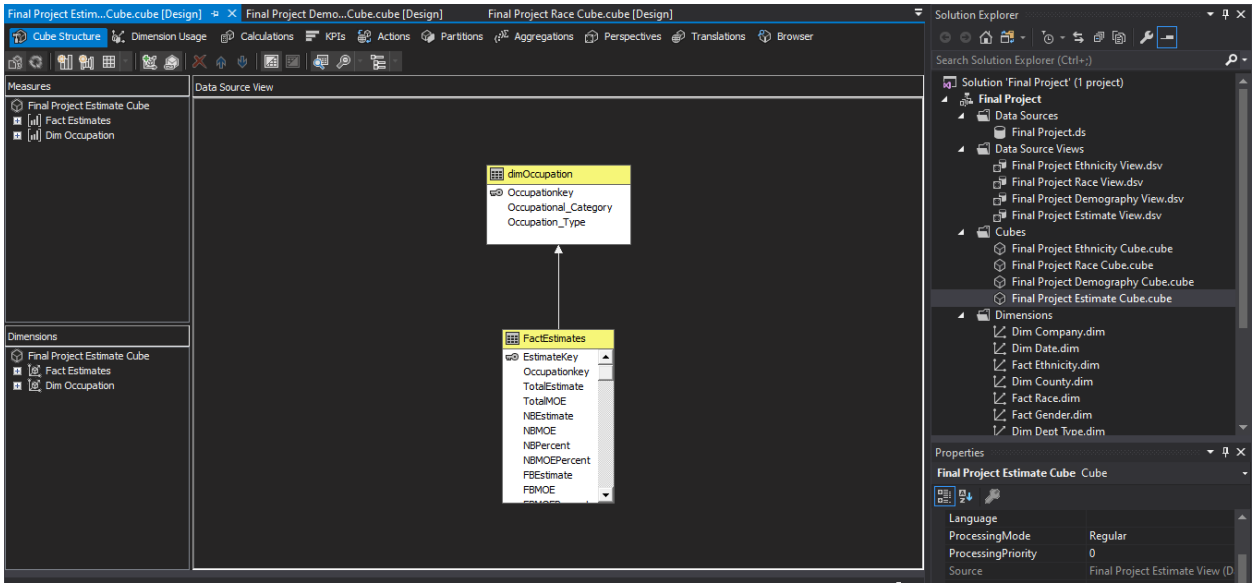



*Figure 38*

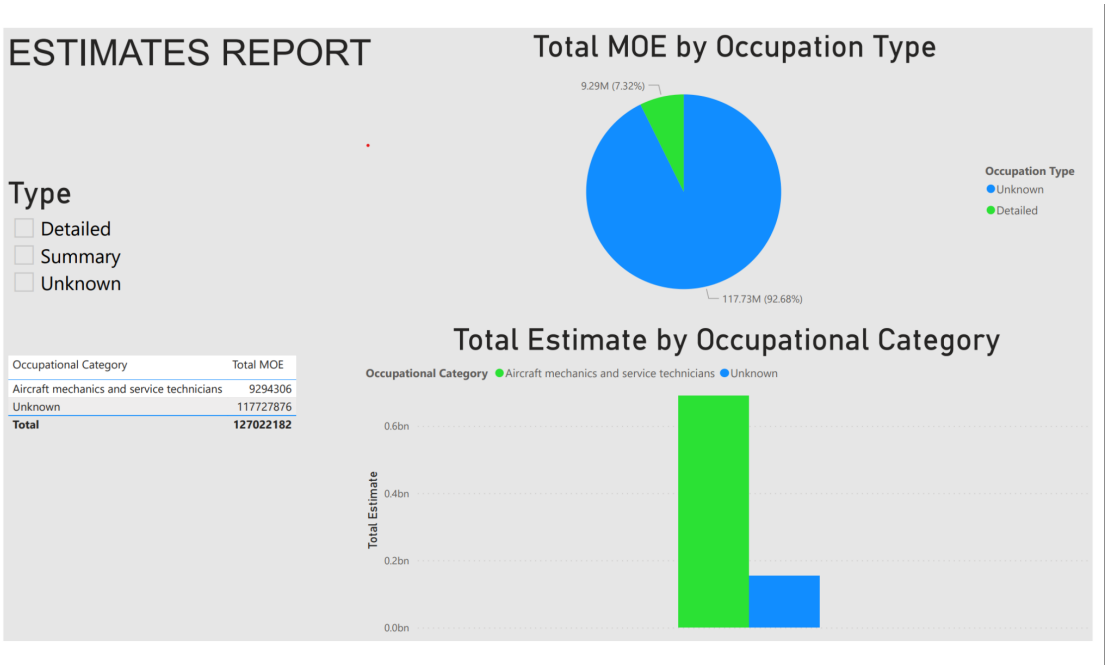


*Figure 39*

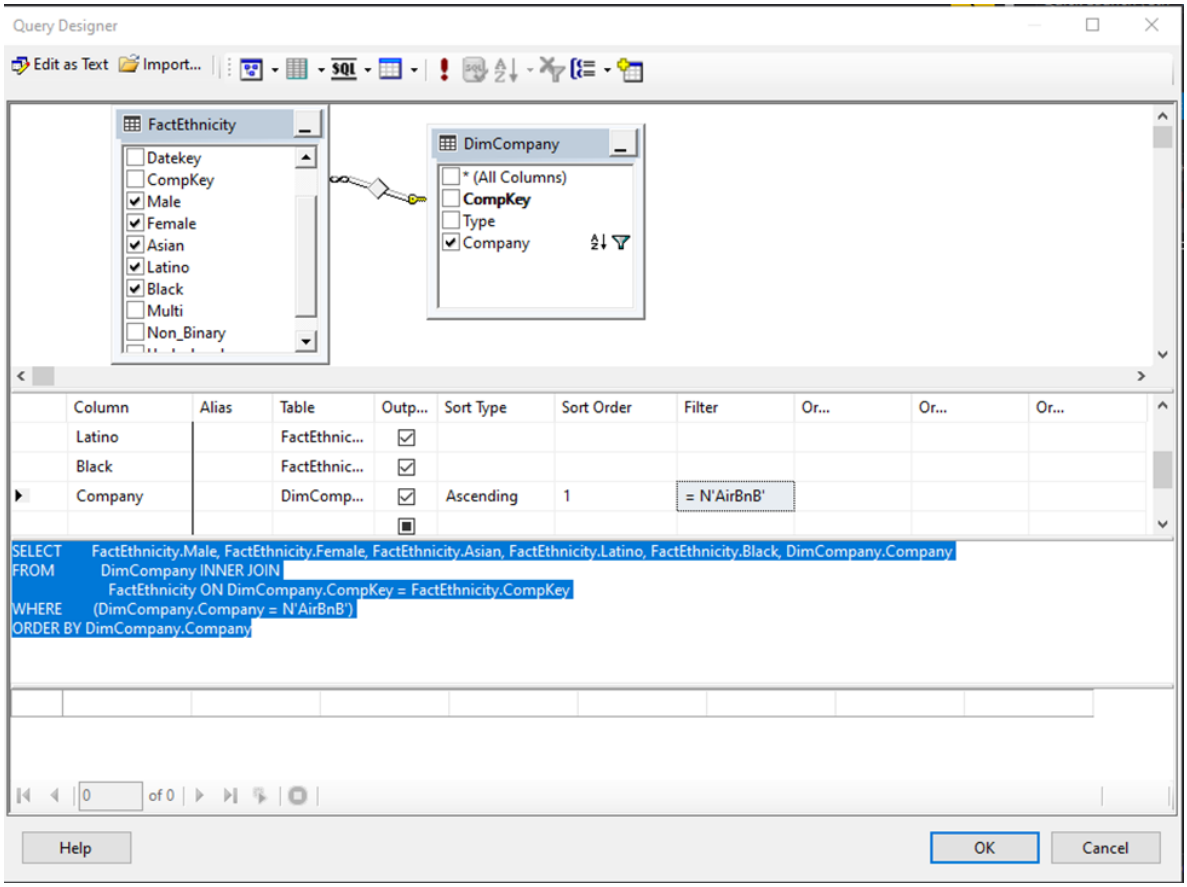



*Figure 40*

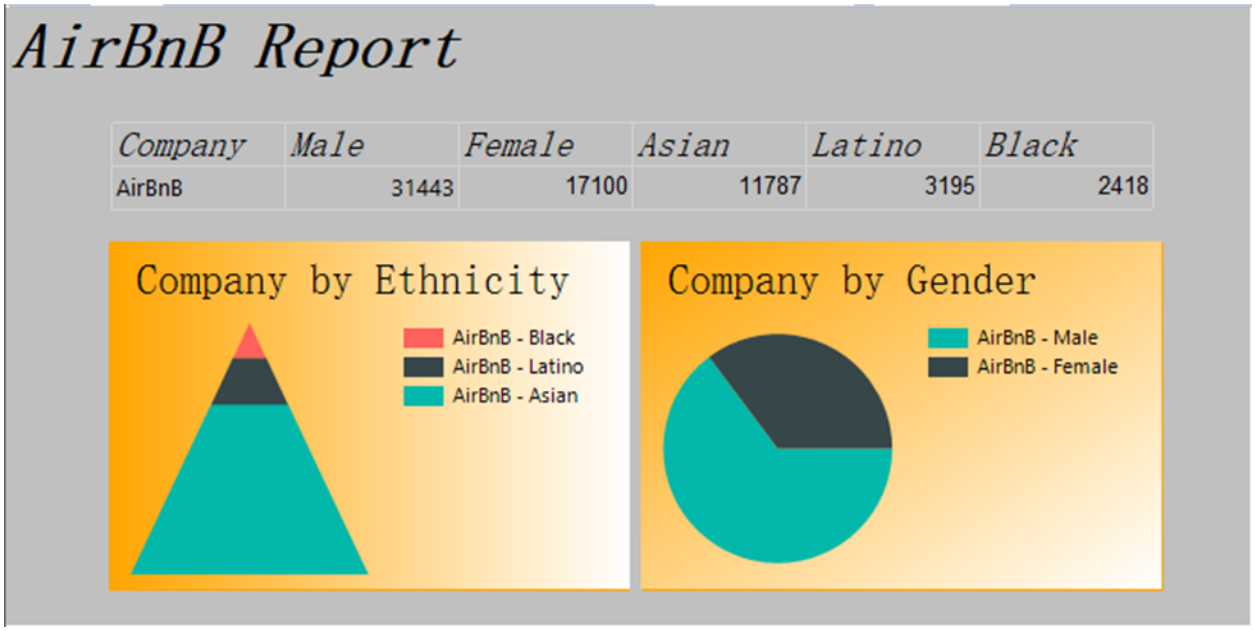


*Figure 41*

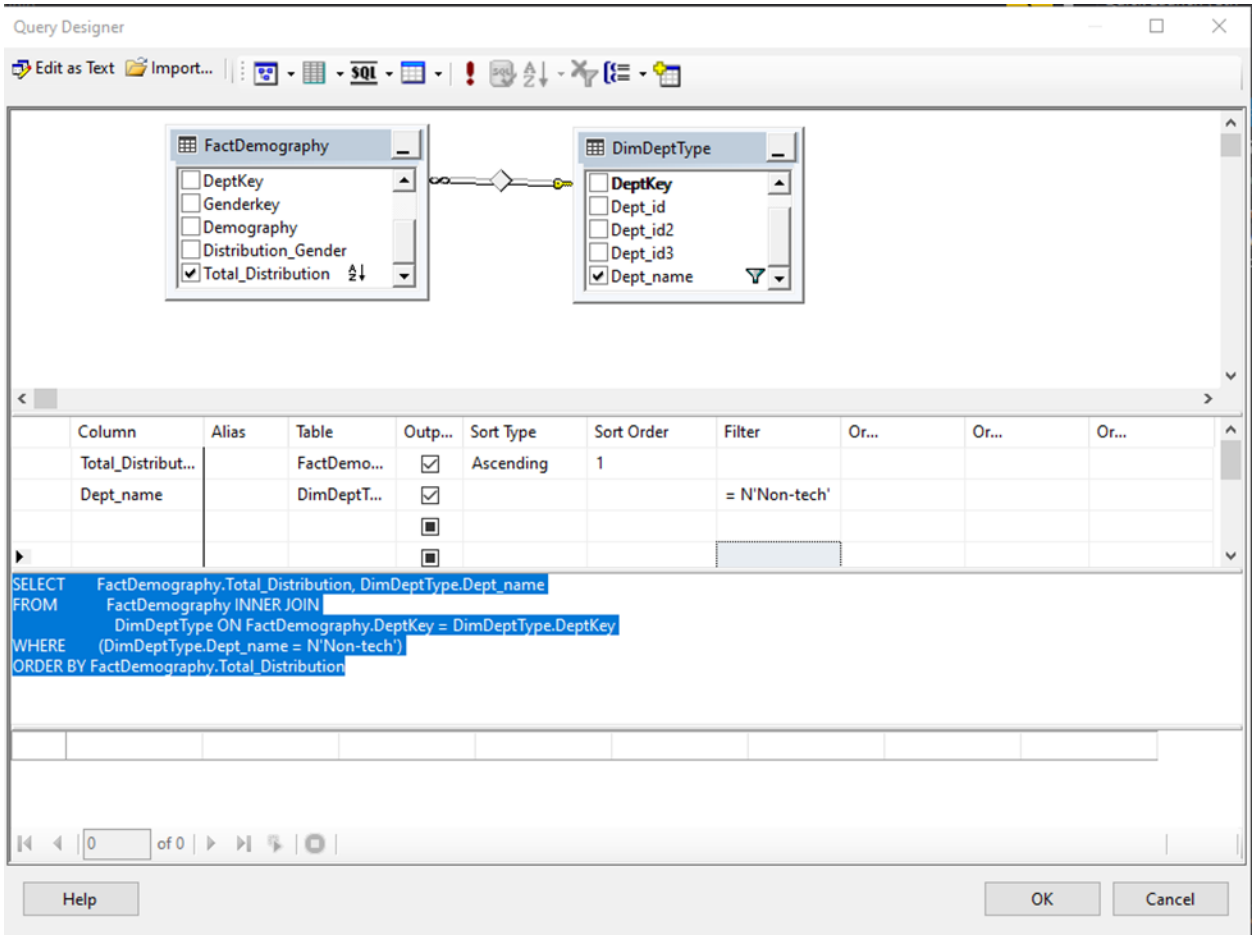



*Figure 42*

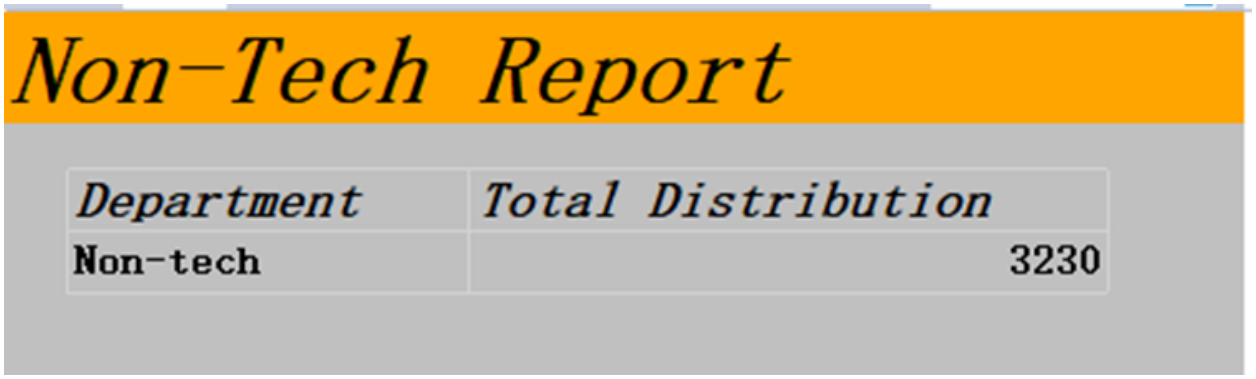


*Figure 43*

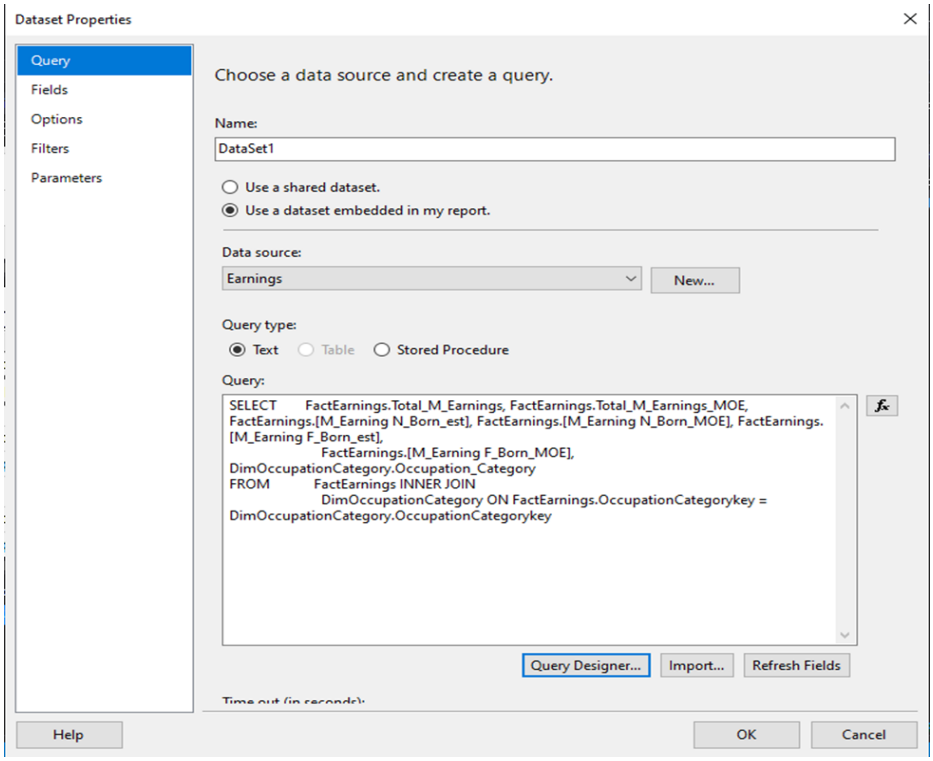



*Figure 44*

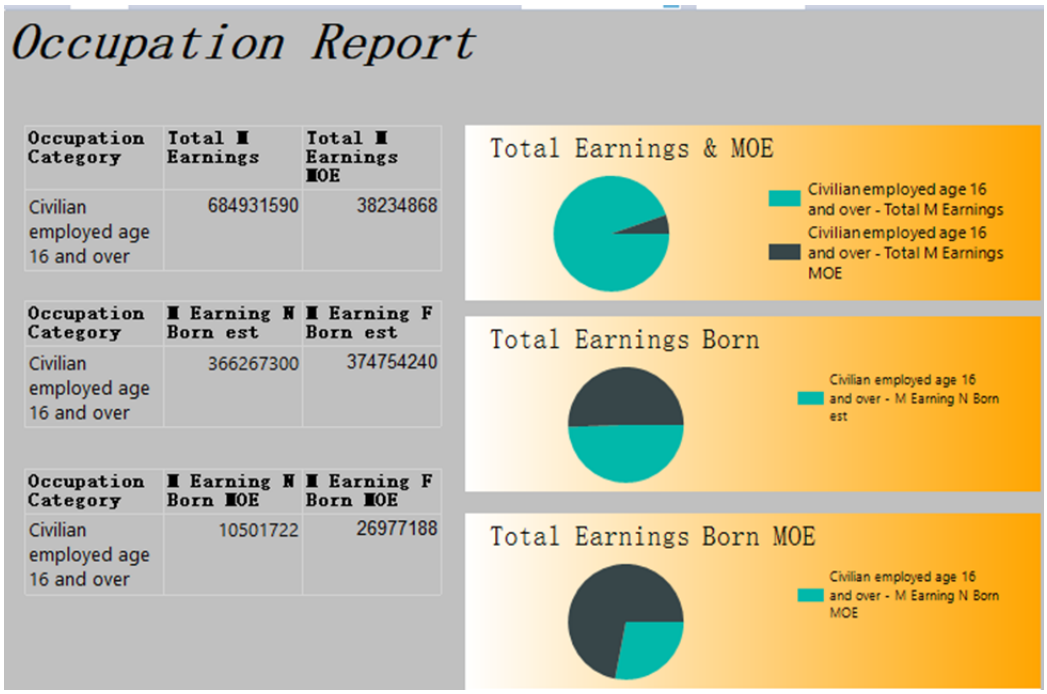


*Figure 45*

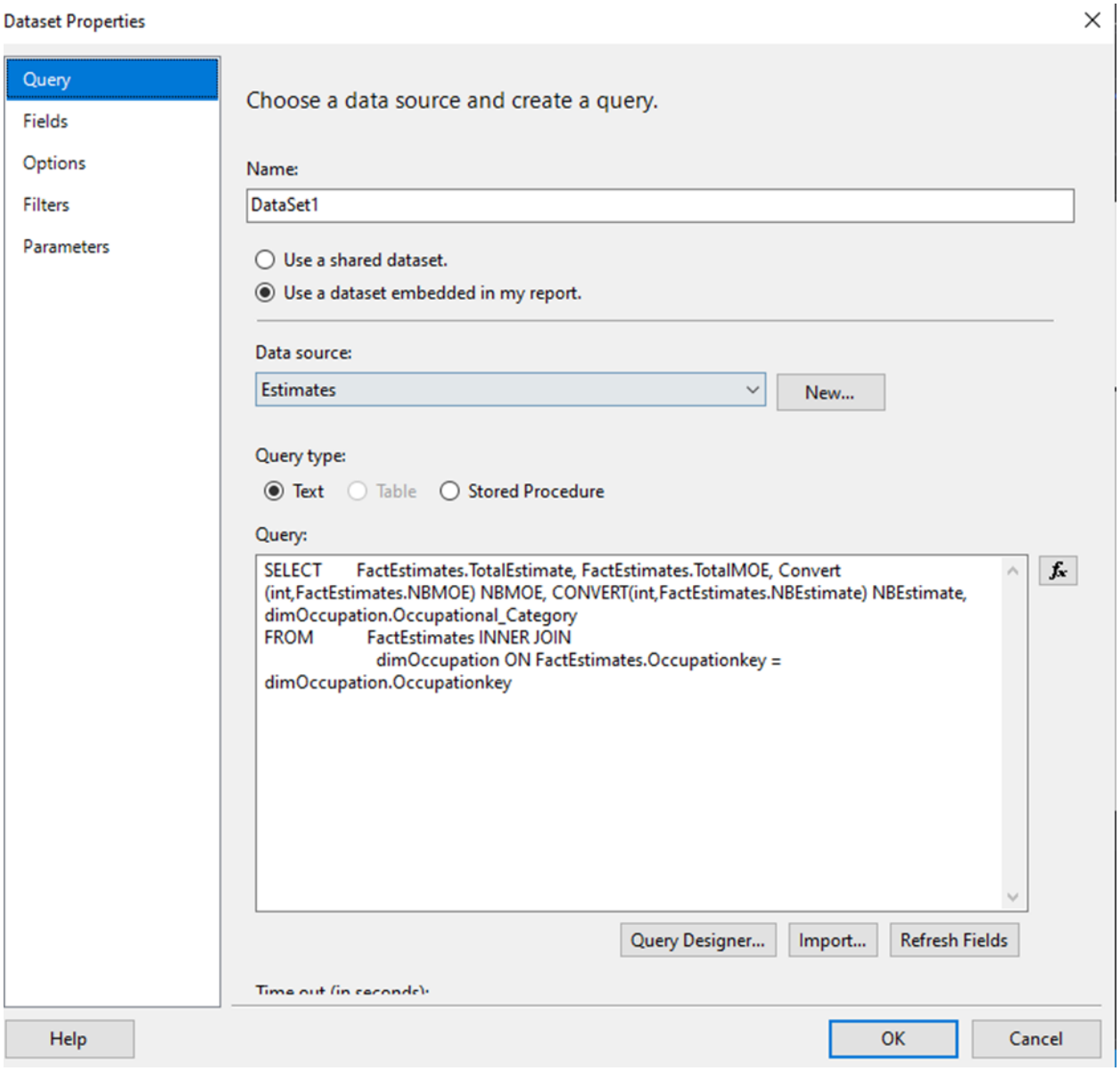

Dataset Properties
Query
Fields
Options
Filters
Parameters
Choose a data source and create a query.
Name:
DataSet1
Use a shared dataset.
Use a dataset embedded in my report.
Data source:
Estimates
New...
Query type:
Text
Table
Stored Procedure
Query:
SELECT FactEstimates.TotalEstimate, FactEstimates.TotalMOE, Convert (int,FactEstimates.NBMOE) NBMOE, CONVERT(int,FactEstimates.NBEstimate) NBEstimate, dimOccupation.Occupational_Category
FROM FactEstimates INNER JOIN
dimOccupation ON FactEstimates.Occupationkey = dimOccupation.Occupationkey
Query Designer...
Import...
Refresh Fields
Help
OK
Cancel

*Figure 46*

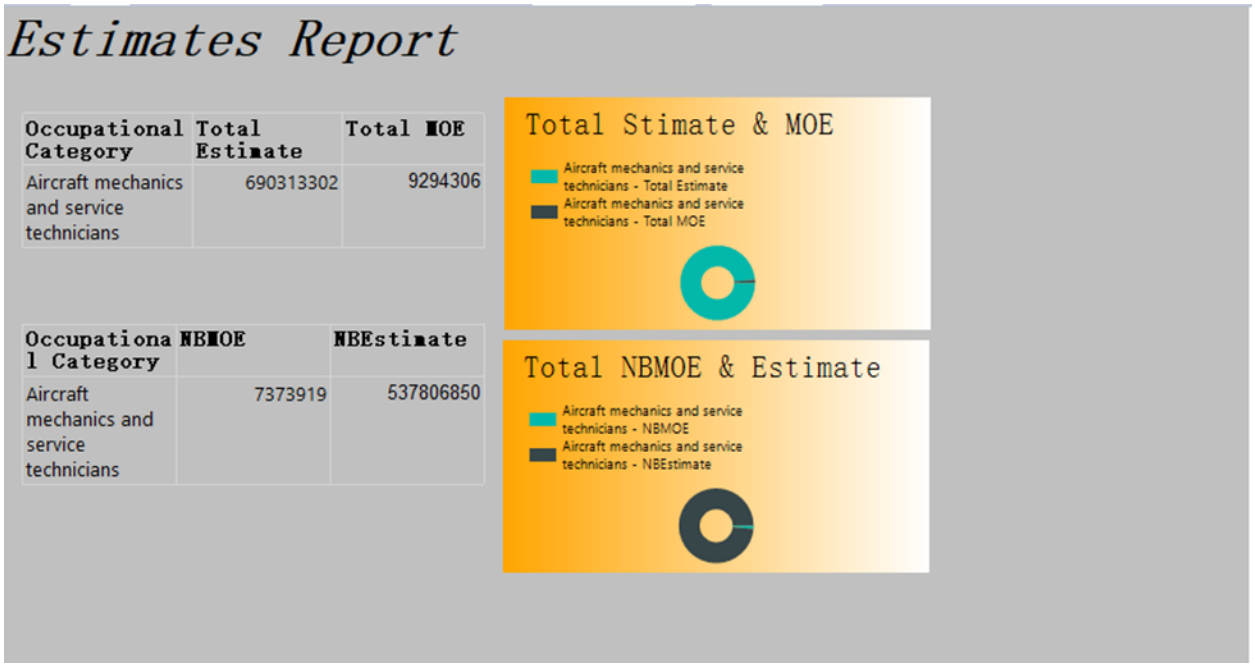



*Figure 47*

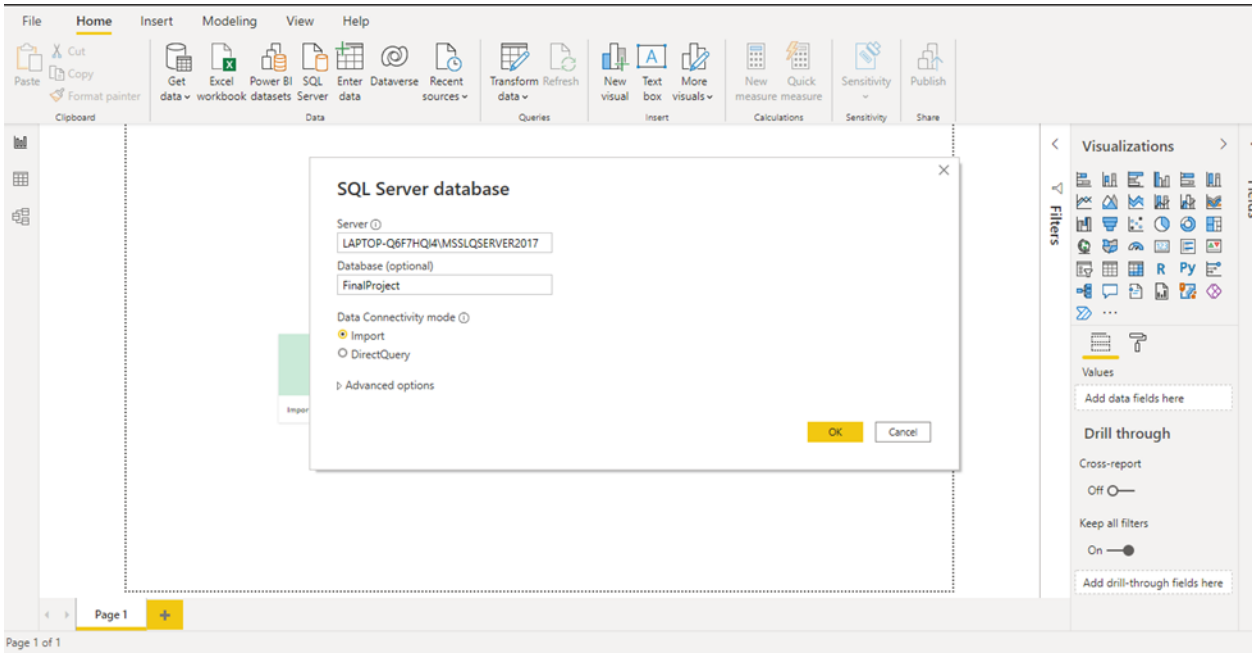


*Figure 48*

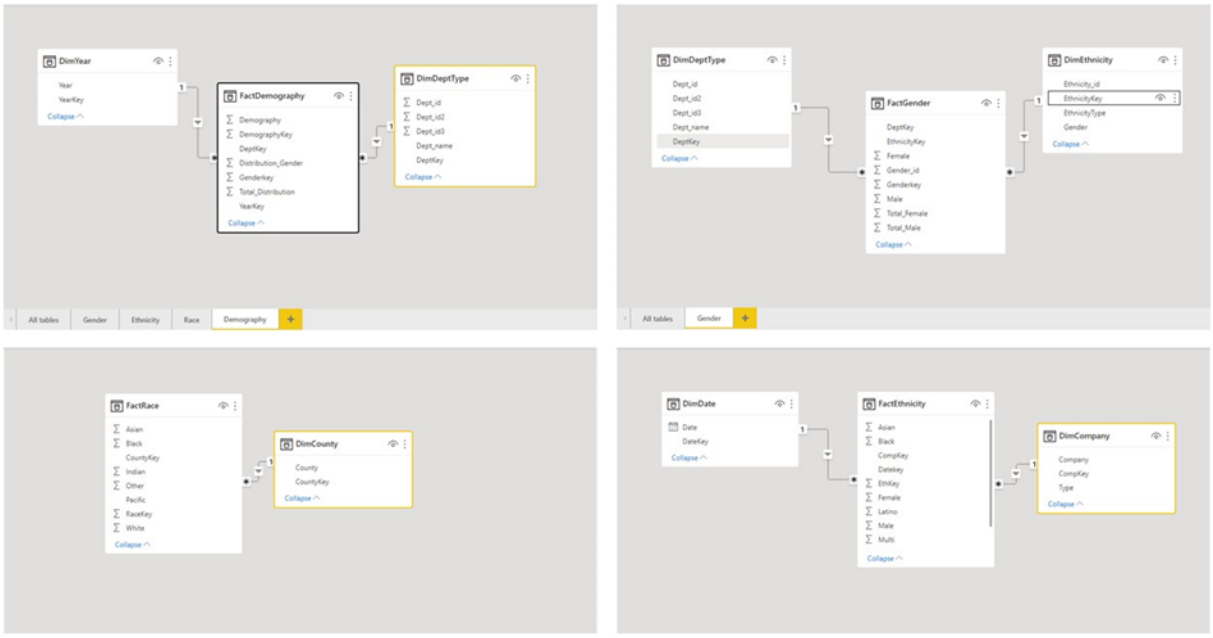
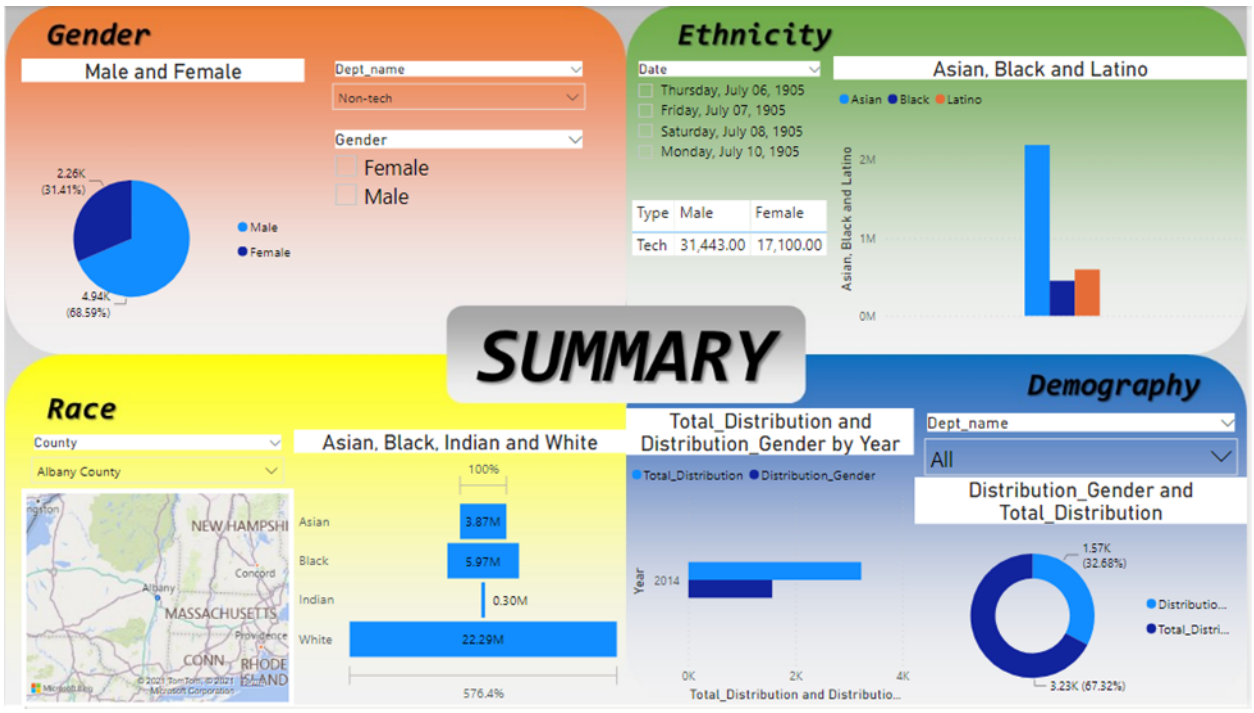



*Figure 49*



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- Data Warehouse Architecture - **Group 1**
- Database Diagram - **Zoya Raja**
- Database Warehouse - **Group 1**
    - Creating Data Warehouse - **Zoya Raja**
    - Writing Queries **Group 1**
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            - Dim and Fact Tables - **Zoya, Jefferson, Gabriel**
        - StageAreaDiversity - **Gabriel Monlina**
            - Dim and Fact Tables - **Zoya, Jefferson, Gabriel**
        - StageAreaOccupationStatus - **Zoya Raja**
            - Dim and Fact Tables - **Jefferson Rosa**
        - StageAreaOccupation - **Zoya Raja**
            - Dim and Fact Tables - **Gabriel Monlina**
        - StageAreaCounty - **Christina Gomes**
            - Dim and Fact Tables - **Christina Gomes**
        - Update Statements - **Zoya Raja**
- SSIS - **Zoya Raja**
- SSAS - **Jefferson Rosa**
- SSRS - **Gabriel Monlina**
- Conclusion - **Christina Gomes**
- References - **Christina Gomes**