

ETL Process in SQL Server

STEPS:

Creating Database:

```
create database db_churn
```

Import csv into SQL server staging table:

Import Wizard

Right click on the newly created database in the explorer window and then go to Task >> Import >> Flat file >> Browse CSV file

Using 'select' to see the entire dataset:

```
select * from stg_churn
```

| | Customer_ID | Gender | Age | Married | State | Number_of_Referrals | Tenure_in_Months | Value_Deal | Phone_Service | Multiple_Lines | Internet_Service | Internet_Type | Online_Security | Online_Backup | Device_Protection_Plan | Premium |
|----|-------------|--------|-----|---------|-----------------|---------------------|------------------|------------|---------------|----------------|------------------|---------------|-----------------|---------------|------------------------|---------|
| 1 | 11098-MAD | Female | 30 | Yes | Madhya Pradesh | 0 | 31 | Deal 1 | Yes | No | Yes | Fiber Optic | Yes | Yes | No | Yes |
| 2 | 11114-PUN | Male | 51 | No | Punjab | 5 | 9 | Deal 5 | Yes | No | Yes | DSL | No | No | Yes | No |
| 3 | 11167-WES | Female | 43 | Yes | West Bengal | 3 | 28 | Deal 1 | Yes | Yes | Yes | Fiber Optic | Yes | Yes | Yes | Yes |
| 4 | 11179-MAH | Male | 35 | No | Maharashtra | 10 | 12 | NULL | Yes | No | Yes | DSL | Yes | Yes | Yes | Yes |
| 5 | 11180-TAM | Male | 75 | Yes | Tamil Nadu | 12 | 27 | Deal 2 | Yes | No | Yes | DSL | Yes | No | No | Yes |
| 6 | 11241-MAD | Female | 41 | Yes | Madhya Pradesh | 4 | 11 | NULL | Yes | No | Yes | Fiber Optic | No | Yes | Yes | Yes |
| 7 | 11244-JAM | Female | 20 | No | Jammu & Kashmir | 3 | 9 | NULL | Yes | Yes | Yes | Cable | Yes | No | No | No |
| 8 | 11251-UTT | Female | 51 | No | Uttarakhand | 1 | 19 | NULL | Yes | Yes | No | NULL | NULL | NULL | NULL | NULL |
| 9 | 11262-HAR | Female | 73 | Yes | Haryana | 5 | 32 | NULL | Yes | Yes | Yes | Fiber Optic | No | No | No | No |
| 10 | 11263-HAR | Female | 41 | No | Haryana | 13 | 31 | Deal 2 | Yes | Yes | Yes | Fiber Optic | Yes | No | No | No |
| 11 | 11264-MAH | Female | 27 | Yes | Maharashtra | 14 | 17 | Deal 5 | No | NULL | Yes | DSL | No | No | No | No |
| 12 | 11272-UTT | Female | 65 | No | Uttar Pradesh | 0 | 19 | Deal 5 | Yes | Yes | Yes | Fiber Optic | No | No | No | No |
| 13 | 11277-UTT | Male | 66 | Yes | Uttar Pradesh | 10 | 23 | NULL | Yes | No | Yes | DSL | No | Yes | Yes | No |
| 14 | 11288-MAD | Male | 52 | No | Madhya Pradesh | 6 | 24 | NULL | Yes | No | No | NULL | NULL | NULL | NULL | NULL |
| 15 | 11290-JAM | Female | 70 | Yes | Jammu & Kashmir | 0 | 36 | Deal 5 | Yes | Yes | Yes | Fiber Optic | No | No | No | No |

Data Exploration :

```
SELECT Gender, Count(Gender) as TotalCount,
Count(Gender) * 100.0 / (Select Count(*) from stg_Churn) as Percentage
from stg_Churn
Group by Gender
```

| | Gender | total_count | percentage |
|---|--------|-------------|-----------------|
| 1 | Male | 2370 | 36.927391710813 |
| 2 | Female | 4048 | 63.072608289186 |

```
SELECT Contract, Count(Contract) as TotalCount,
Count(Contract) * 100.0 / (Select Count(*) from stg_Churn) as Percentage
from stg_Churn
Group by Contract
```

| | Contract | TotalCount | Percentage |
|---|----------------|------------|-----------------|
| 1 | Month-to-Month | 3286 | 51.199750701153 |
| 2 | One Year | 1413 | 22.016204425054 |
| 3 | Two Year | 1719 | 26.784044873792 |

```
SELECT Customer_Status, Count(Customer_Status) as TotalCount, Sum(Total_Revenue)
as TotalRev,
Sum(Total_Revenue) / (Select sum(Total_Revenue) from stg_Churn) * 100 as
RevPercentage
from stg_Churn
Group by Customer_Status
```

| | Customer_Status | TotalCount | TotalRev | RevPercentage |
|---|-----------------|------------|------------------|-------------------|
| 1 | Joined | 411 | 49281.5598697662 | 0.253097281975677 |
| 2 | Churned | 1732 | 3411960.5796299 | 17.5229426827105 |
| 3 | Stayed | 4275 | 16010148.2622757 | 82.2239600353138 |

```
SELECT State, Count(State) as TotalCount,
Count(State) * 100.0 / (Select Count(*) from stg_Churn) as Percentage
from stg_Churn
Group by State
Order by Percentage desc
```

| | State | TotalCount | Percentage |
|----|-----------------|------------|----------------|
| 1 | Uttar Pradesh | 629 | 9.800560922405 |
| 2 | Tamil Nadu | 600 | 9.348706762231 |
| 3 | Maharashtra | 504 | 7.852913680274 |
| 4 | Karnataka | 470 | 7.323153630414 |
| 5 | Haryana | 398 | 6.201308818946 |
| 6 | Andhra Pradesh | 395 | 6.154565285135 |
| 7 | West Bengal | 368 | 5.733873480835 |
| 8 | Punjab | 342 | 5.328762854471 |
| 9 | Bihar | 336 | 5.235275786849 |
| 10 | Gujarat | 335 | 5.219694608912 |
| 11 | Jammu & Kashmir | 320 | 4.985976939856 |
| 12 | Madhya Pradesh | 288 | 4.487379245870 |
| 13 | Telangana | 281 | 4.378311000311 |
| 14 | Rajasthan | 259 | 4.035525085696 |
| 15 | Kerala | 200 | 3.116235587410 |
| 16 | Odisha | 152 | 2.368339046431 |
| 17 | Assam | 139 | 2.165783733250 |
| 18 | Delhi | 127 | 1.978809598005 |
| 19 | Jharkhand | 113 | 1.760673106886 |
| 20 | Uttarakhand | 62 | 0.966033032097 |
| 21 | Chhattisgarh | 59 | 0.919289498286 |
| 22 | Puducherry | 41 | 0.638828295419 |

Data Exploration – Check Nulls

```
SELECT
SUM(CASE WHEN Customer_ID IS NULL THEN 1 ELSE 0 END) AS Customer_ID_Null_Count,

SUM(CASE WHEN Gender IS NULL THEN 1 ELSE 0 END) AS Gender_Null_Count,

SUM(CASE WHEN Age IS NULL THEN 1 ELSE 0 END) AS Age_Null_Count,

SUM(CASE WHEN Married IS NULL THEN 1 ELSE 0 END) AS Married_Null_Count,

SUM(CASE WHEN State IS NULL THEN 1 ELSE 0 END) AS State_Null_Count,

SUM(CASE WHEN Number_of_Referrals IS NULL THEN 1 ELSE 0 END) AS
Number_of_Referrals_Null_Count,

SUM(CASE WHEN Tenure_in_Months IS NULL THEN 1 ELSE 0 END) AS
Tenure_in_Months_Null_Count,

SUM(CASE WHEN Value_Deal IS NULL THEN 1 ELSE 0 END) AS Value_Deal_Null_Count,

SUM(CASE WHEN Phone_Service IS NULL THEN 1 ELSE 0 END) AS
Phone_Service_Null_Count,

SUM(CASE WHEN Multiple_Lines IS NULL THEN 1 ELSE 0 END) AS
Multiple_Lines_Null_Count,

SUM(CASE WHEN Internet_Service IS NULL THEN 1 ELSE 0 END) AS
Internet_Service_Null_Count,
```

```

SUM(CASE WHEN Internet_Type IS NULL THEN 1 ELSE 0 END) AS
Internet_Type_Null_Count,

SUM(CASE WHEN Online_Security IS NULL THEN 1 ELSE 0 END) AS
Online_Security_Null_Count,

SUM(CASE WHEN Online_Backup IS NULL THEN 1 ELSE 0 END) AS
Online_Backup_Null_Count,

SUM(CASE WHEN Device_Protection_Plan IS NULL THEN 1 ELSE 0 END) AS
Device_Protection_Plan_Null_Count,

SUM(CASE WHEN Premium_Support IS NULL THEN 1 ELSE 0 END) AS
Premium_Support_Null_Count,

SUM(CASE WHEN Streaming_TV IS NULL THEN 1 ELSE 0 END) AS
Streaming_TV_Null_Count,

SUM(CASE WHEN Streaming_Movies IS NULL THEN 1 ELSE 0 END) AS
Streaming_Movies_Null_Count,

SUM(CASE WHEN Streaming_Music IS NULL THEN 1 ELSE 0 END) AS
Streaming_Music_Null_Count,

SUM(CASE WHEN Unlimited_Data IS NULL THEN 1 ELSE 0 END) AS
Unlimited_Data_Null_Count,

SUM(CASE WHEN Contract IS NULL THEN 1 ELSE 0 END) AS Contract_Null_Count,

SUM(CASE WHEN Paperless_Billing IS NULL THEN 1 ELSE 0 END) AS
Paperless_Billing_Null_Count,

SUM(CASE WHEN Payment_Method IS NULL THEN 1 ELSE 0 END) AS
Payment_Method_Null_Count,

SUM(CASE WHEN Monthly_Charge IS NULL THEN 1 ELSE 0 END) AS
Monthly_Charge_Null_Count,

SUM(CASE WHEN Total_Charges IS NULL THEN 1 ELSE 0 END) AS
Total_Charges_Null_Count,

SUM(CASE WHEN Total_Refunds IS NULL THEN 1 ELSE 0 END) AS
Total_Refunds_Null_Count,

SUM(CASE WHEN Total_Extra_Data_Charges IS NULL THEN 1 ELSE 0 END) AS
Total_Extra_Data_Charges_Null_Count,

SUM(CASE WHEN Total_Long_Distance_Charges IS NULL THEN 1 ELSE 0 END) AS
Total_Long_Distance_Charges_Null_Count,

SUM(CASE WHEN Total_Revenue IS NULL THEN 1 ELSE 0 END) AS
Total_Revenue_Null_Count,

SUM(CASE WHEN Customer_Status IS NULL THEN 1 ELSE 0 END) AS
Customer_Status_Null_Count,

SUM(CASE WHEN Churn_Category IS NULL THEN 1 ELSE 0 END) AS
Churn_Category_Null_Count,

SUM(CASE WHEN Churn_Reason IS NULL THEN 1 ELSE 0 END) AS
Churn_Reason_Null_Count
FROM stg_Churn;

```

| | | | | |
|--|--------------------------|----------------------------|---------------------------|-------------------------|
| Total_Long_Distance_Charges_Null_Count | Total_Revenue_Null_Count | Customer_Status_Null_Count | Churn_Category_Null_Count | Churn_Reason_Null_Count |
| 0 | 0 | 0 | 4686 | 4686 |

Only two columns had not null values

Remove null and insert the new data into Prod table

SELECT

```
Customer_ID, Gender, Age, Married, State,
Number_of_Referrals,
Tenure_in_Months,
ISNULL(Value_Deal, 'None') AS Value_Deal,
Phone_Service,
ISNULL(Multiple_Lines, 'No') AS Multiple_Lines,
Internet_Service,
ISNULL(Internet_Type, 'None') AS Internet_Type,
ISNULL(Online_Security, 'No') AS Online_Security,
ISNULL(Online_Backup, 'No') AS Online_Backup,
ISNULL(Device_Protection_Plan, 'No') AS Device_Protection_Plan,
ISNULL(Premium_Support, 'No') AS Premium_Support,
ISNULL(Streaming_TV, 'No') AS Streaming_TV,
ISNULL(Streaming_Movies, 'No') AS Streaming_Movies,
ISNULL(Streaming_Music, 'No') AS Streaming_Music,
ISNULL(Unlimited_Data, 'No') AS Unlimited_Data,
Contract,
Paperless_Billing,
Payment_Method,
Monthly_Charge,
Total_Charges,
Total_Refunds,
Total_Extra_Data_Charges,
Total_Long_Distance_Charges,
Total_Revenue,
Customer_Status,
ISNULL(Churn_Category, 'Others') AS Churn_Category,
ISNULL(Churn_Reason, 'Others') AS Churn_Reason
```

SELECT * FROM prod_Churn

| | Customer_ID | Gender | Age | Married | State | Number_of_Referrals | Tenure_in_Months | Value_Deal | Phone_Service | Multiple_Lines | Internet_Service | Internet_Type | Online_Security | Online_Backup | Device_Protection_Plan | Premium |
|----|-------------|--------|-----|---------|-----------------|---------------------|------------------|------------|---------------|----------------|------------------|---------------|-----------------|---------------|------------------------|---------|
| 1 | 11098-MAD | Female | 30 | Yes | Madhya Pradesh | 0 | 31 | Deal 1 | Yes | No | Yes | Fiber Optic | Yes | Yes | No | Yes |
| 2 | 11114-PUN | Male | 51 | No | Punjab | 5 | 9 | Deal 5 | Yes | No | Yes | DSL | No | No | Yes | No |
| 3 | 11167-WES | Female | 43 | Yes | West Bengal | 3 | 28 | Deal 1 | Yes | Yes | Yes | Fiber Optic | Yes | Yes | Yes | Yes |
| 4 | 11179-MAH | Male | 35 | No | Maharashtra | 10 | 12 | None | Yes | No | Yes | DSL | Yes | Yes | Yes | Yes |
| 5 | 11180-TAM | Male | 75 | Yes | Tamil Nadu | 12 | 27 | Deal 2 | Yes | No | Yes | DSL | Yes | No | No | Yes |
| 6 | 11241-MAD | Female | 41 | Yes | Madhya Pradesh | 4 | 11 | None | Yes | No | Yes | Fiber Optic | No | Yes | Yes | Yes |
| 7 | 11244-JAM | Female | 20 | No | Jammu & Kashmir | 3 | 9 | None | Yes | Yes | Yes | Cable | Yes | No | No | No |
| 8 | 11251-UTT | Female | 51 | No | Uttarakhand | 1 | 19 | None | Yes | Yes | No | None | No | No | No | No |
| 9 | 11262-HAR | Female | 73 | Yes | Haryana | 5 | 32 | None | Yes | Yes | Yes | Fiber Optic | No | No | No | No |
| 10 | 11263-HAR | Female | 41 | No | Haryana | 13 | 31 | Deal 2 | Yes | Yes | Yes | Fiber Optic | Yes | No | No | No |
| 11 | 11264-MAH | Female | 27 | Yes | Maharashtra | 14 | 17 | Deal 5 | No | No | Yes | DSL | No | No | No | No |
| 12 | 11272-UTT | Female | 65 | No | Uttar Pradesh | 0 | 19 | Deal 5 | Yes | Yes | Yes | Fiber Optic | No | No | No | No |
| 13 | 11277-UTT | Male | 66 | Yes | Uttar Pradesh | 10 | 23 | None | Yes | No | Yes | DSL | No | Yes | Yes | No |
| 14 | 11289-MAD | Male | 52 | No | Madhya Pradesh | 6 | 24 | None | Yes | No | No | None | No | No | No | No |

Create View for Power BI

Create View vw_churnData as

```
select * from prod_Churn where Customer_Status In ('Churned', 'Stayed')
```

SELECT * FROM vw_churndata

| Results Messages | | | | | | | | | | | | | | | | |
|------------------|-------------|--------|-----|---------|-----------------|---------------------|------------------|------------|---------------|----------------|------------------|---------------|-----------------|---------------|------------------------|---------|
| | Customer_ID | Gender | Age | Married | State | Number_of_Referrals | Tenure_in_Months | Value_Deal | Phone_Service | Multiple_Lines | Internet_Service | Internet_Type | Online_Security | Online_Backup | Device_Protection_Plan | Premium |
| 1 | 11098-MAD | Female | 30 | Yes | Madhya Pradesh | 0 | 31 | Deal 1 | Yes | No | Yes | Fiber Optic | Yes | Yes | No | Yes |
| 2 | 11114-PUN | Male | 51 | No | Punjab | 5 | 9 | Deal 5 | Yes | No | Yes | DSL | No | No | Yes | No |
| 3 | 11167-WES | Female | 43 | Yes | West Bengal | 3 | 28 | Deal 1 | Yes | Yes | Yes | Fiber Optic | Yes | Yes | Yes | Yes |
| 4 | 11179-MAH | Male | 35 | No | Maharashtra | 10 | 12 | None | Yes | No | Yes | DSL | Yes | Yes | Yes | Yes |
| 5 | 11180-TAM | Male | 75 | Yes | Tamil Nadu | 12 | 27 | Deal 2 | Yes | No | Yes | DSL | Yes | No | No | Yes |
| 6 | 11241-MAD | Female | 41 | Yes | Madhya Pradesh | 4 | 11 | None | Yes | No | Yes | Fiber Optic | No | Yes | Yes | Yes |
| 7 | 11244-JAM | Female | 20 | No | Jammu & Kashmir | 3 | 9 | None | Yes | Yes | Yes | Cable | Yes | No | No | No |
| 8 | 11251-UTT | Female | 51 | No | Uttarakhand | 1 | 19 | None | Yes | Yes | No | None | No | No | No | No |
| 9 | 11262-HAR | Female | 73 | Yes | Haryana | 5 | 32 | None | Yes | Yes | Yes | Fiber Optic | No | No | No | No |
| 10 | 11263-HAR | Female | 41 | No | Haryana | 13 | 31 | Deal 2 | Yes | Yes | Yes | Fiber Optic | Yes | No | No | No |
| 11 | 11264-MAH | Female | 27 | Yes | Maharashtra | 14 | 17 | Deal 5 | No | No | Yes | DSL | No | No | No | No |
| 12 | 11272-UTT | Female | 65 | No | Uttar Pradesh | 0 | 19 | Deal 5 | Yes | Yes | Yes | Fiber Optic | No | No | No | No |
| 13 | 11277-UTT | Male | 66 | Yes | Uttar Pradesh | 10 | 23 | None | Yes | No | Yes | DSL | No | Yes | Yes | No |
| 14 | 11288-MAD | Male | 52 | No | Madhya Pradesh | 6 | 24 | None | Yes | No | No | None | No | No | No | No |

```
Create View vw_JoinData as
select * from prod_Churn where Customer_Status = 'Joined'
```

```
SELECT * FROM vw_joindata
```

| Results Messages | | | | | | | | | | | | | | | | |
|------------------|-------------|--------|-----|---------|----------------|---------------------|------------------|------------|---------------|----------------|------------------|---------------|-----------------|---------------|------------------------|-----------|
| | Customer_ID | Gender | Age | Married | State | Number_of_Referrals | Tenure_in_Months | Value_Deal | Phone_Service | Multiple_Lines | Internet_Service | Internet_Type | Online_Security | Online_Backup | Device_Protection_Plan | Premium_S |
| 1 | 11751-TAM | Female | 18 | No | Tamil Nadu | 5 | 7 | Deal 5 | No | No | Yes | DSL | No | No | No | No |
| 2 | 12056-WES | Male | 27 | No | West Bengal | 2 | 20 | None | Yes | No | Yes | Fiber Optic | No | Yes | Yes | No |
| 3 | 12136-RAJ | Female | 25 | Yes | Rajasthan | 2 | 35 | None | Yes | No | No | None | No | No | No | No |
| 4 | 12257-ASS | Female | 39 | No | Assam | 9 | 1 | None | Yes | No | No | None | No | No | No | No |
| 5 | 12340-DEL | Female | 51 | Yes | Delhi | 0 | 10 | None | Yes | No | Yes | Cable | No | No | No | No |
| 6 | 12469-AND | Male | 24 | Yes | Andhra Pradesh | 11 | 4 | None | Yes | No | Yes | DSL | No | No | No | No |
| 7 | 12490-TEL | Female | 52 | No | Telangana | 9 | 6 | None | Yes | No | Yes | Fiber Optic | No | No | Yes | No |
| 8 | 13058-MAD | Female | 58 | No | Madhya Pradesh | 13 | 22 | None | Yes | No | Yes | DSL | No | No | No | No |
| 9 | 13123-BIH | Female | 46 | No | Bihar | 13 | 18 | Deal 5 | Yes | No | Yes | Fiber Optic | Yes | Yes | No | No |
| 10 | 13666-UTT | Male | 57 | Yes | Uttarakhand | 15 | 16 | None | Yes | No | Yes | Fiber Optic | No | Yes | No | No |
| 11 | 13744-AND | Female | 41 | Yes | Andhra Pradesh | 8 | 3 | Deal 5 | Yes | No | No | None | No | No | No | No |
| 12 | 13823-TEL | Female | 31 | Yes | Telangana | 1 | 28 | Deal 5 | No | No | Yes | DSL | No | No | No | No |
| 13 | 13946-HAR | Female | 41 | Yes | Haryana | 1 | 3 | Deal 5 | Yes | No | No | None | No | No | No | No |
| 14 | 14567-TAM | Male | 43 | No | Tamil Nadu | 1 | 9 | None | Yes | No | No | None | No | No | No | No |
| 15 | 15349-UTT | Male | 47 | Yes | Uttar Pradesh | 9 | 12 | Deal 5 | Yes | Yes | Yes | DSL | No | No | No | No |
| 16 | 15591-KAR | Female | 26 | No | Karnataka | 3 | 31 | None | Yes | No | No | None | No | No | No | No |
| 17 | 15803-UTT | Female | 34 | No | Uttar Pradesh | 6 | 31 | None | Yes | No | No | None | No | No | No | No |