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-- Telecom Churn Analysis SQL Queries --

USE db_chrn;

-- 1. Describe dataset structure
DESCRIBE customer_data;

-- 2. Check gender distribution
SELECT gender, COUNT(*) AS total_count,
COUNT(gender) * 100 / (SELECT COUNT(*) FROM customer_data) AS percentage
FROM customer_data GROUP BY gender;

-- 3. Check contract type distribution
SELECT contract, COUNT(*) AS total_contract,
COUNT(contract) * 100 / (SELECT COUNT(*) FROM customer_data) AS percentage
FROM customer_data GROUP BY contract ORDER BY total_contract DESC;

-- 4. Check churn status and revenue contribution
SELECT Customer_Status, COUNT(*) AS total_customer,
ROUND(SUM(total_revenue), 0) AS total_revenue,
(SUM(total_revenue) / (SELECT SUM(total_revenue) FROM customer_data)) * 100 AS percentage
FROM customer_data GROUP BY Customer_Status ORDER BY total_customer DESC;

-- 5. Top 5 states by customer count
SELECT state, COUNT(*) AS total_state_count,
COUNT(state) * 100 / (SELECT COUNT(*) FROM customer_data) AS percentage
FROM customer_data GROUP BY state ORDER BY percentage DESC LIMIT 5;

-- 6. Check for null or missing values
SELECT SUM(CASE WHEN Customer_ID IS NULL OR Customer_ID='' THEN 1 ELSE 0 END) AS Customer_ID_Null_Count,
SUM(CASE WHEN Gender IS NULL OR Gender='' THEN 1 ELSE 0 END) AS Gender_Null_Count,
SUM(CASE WHEN Age IS NULL OR Age='' THEN 1 ELSE 0 END) AS Age_Null_Count,
SUM(CASE WHEN Married IS NULL OR Married='' 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 OR Number_of_Referrals='' THEN 1 ELSE 0 END) AS Number_of_Referrals_Null_Count
FROM customer_data;

-- 7. Create clean data table
CREATE TABLE prod_churn AS
SELECT Customer_ID, Gender, Age, Married, State, Number_of_Referrals, Tenure_in_Months,
CASE WHEN Value_Deal = '' THEN 'None' ELSE Value_Deal END AS Value_Deal,
Phone_Service,
CASE WHEN Multiple_Lines = '' THEN 'No' ELSE Multiple_Lines END AS Multiple_Lines,
Internet_Service,
CASE WHEN Internet_Type = '' THEN 'None' ELSE Internet_Type END AS Internet_Type,
CASE WHEN Online_Security = '' THEN 'No' ELSE Online_Security END AS Online_Security,
CASE WHEN Online_Backup = '' THEN 'No' ELSE Online_Backup END AS Online_Backup,
CASE WHEN Device_Protection_Plan = '' THEN 'No' ELSE Device_Protection_Plan END AS Device_Protection_Plan,
CASE WHEN Premium_Support = '' THEN 'No' ELSE Premium_Support END AS Premium_Support,
CASE WHEN Streaming_TV = '' THEN 'No' ELSE Streaming_TV END AS Streaming_TV,
CASE WHEN Streaming_Movies = '' THEN 'No' ELSE Streaming_Movies END AS Streaming_Movies,
CASE WHEN Streaming_Music = '' THEN 'No' ELSE Streaming_Music END AS Streaming_Music,
CASE WHEN Unlimited_Data = '' THEN 'No' ELSE Unlimited_Data END 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,
CASE WHEN Churn_Category = '' THEN 'Others' ELSE Churn_Category END AS Churn_Category,
CASE WHEN Churn_Reason = '' THEN 'Others' ELSE Churn_Reason END AS Churn_Reason
FROM customer_data;

-- 8. Create churn and join views
CREATE VIEW vw_churndata AS SELECT * FROM prod_churn WHERE customer_status IN ('Churned', 'Stayed');
CREATE VIEW vw_joindata AS SELECT * FROM prod_churn WHERE customer_status='Joined';

-- 9. Analyze churn by category and reason
SELECT churn_category, churn_reason, COUNT(1) AS total_count
FROM prod_churn WHERE customer_status='Churned'
GROUP BY churn_category, churn_reason ORDER BY total_count DESC;

-- 10. Analyze churn by internet type
SELECT Internet_Type, COUNT(*) AS total_count,
ROUND(SUM(CASE WHEN customer_status='Churned' THEN 1 END)*100/COUNT(*),2) AS churn_percentage
FROM prod_churn GROUP BY Internet_Type ORDER BY churn_percentage DESC;

-- 11. State-wise churn rate
SELECT state, ROUND(SUM(CASE WHEN customer_status='Churned' THEN 1 ELSE 0 END)*100/COUNT(*),2) AS churn_percentage
FROM prod_churn GROUP BY state ORDER BY churn_percentage DESC LIMIT 5;
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