Week 8: Solving an SDG Problem with Data

Part 1: SDG Selection and Problem Definition

Good Health and Well-Being

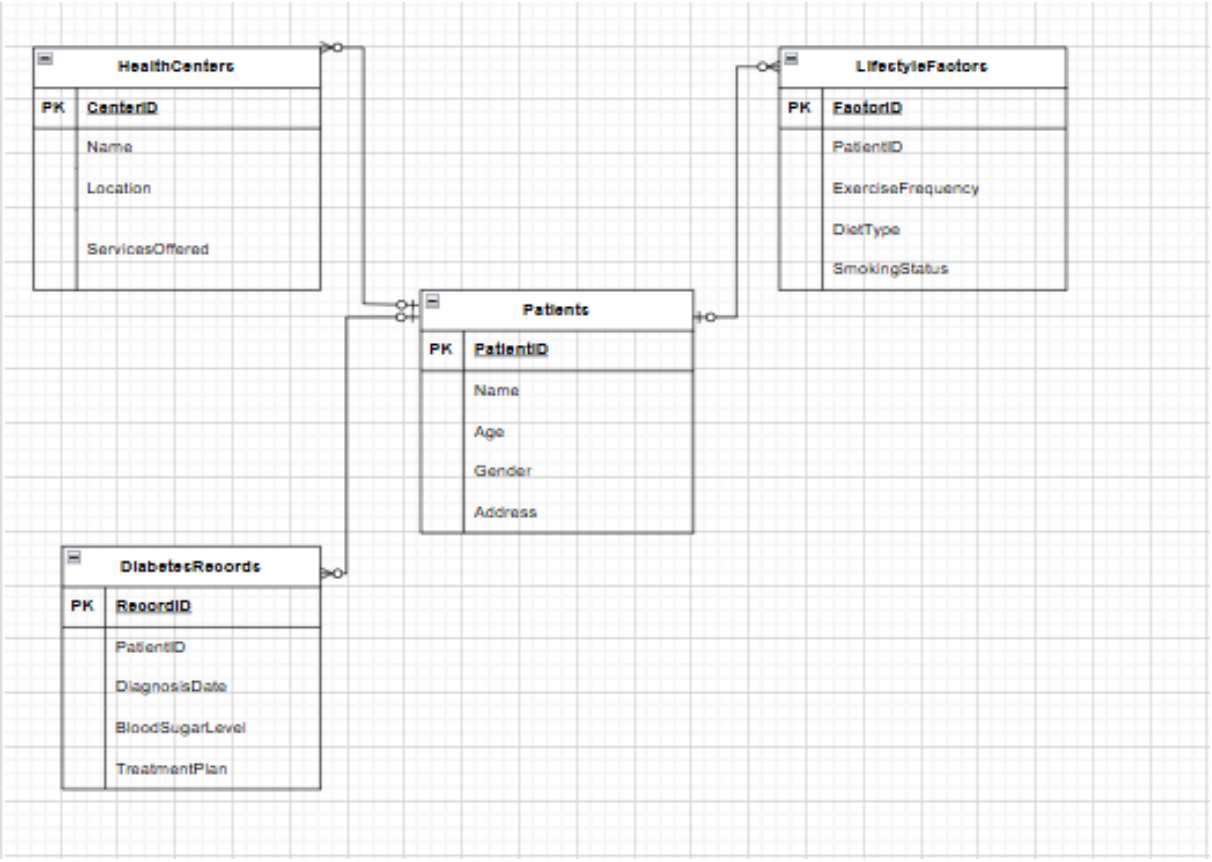
High incidence of diabetes in the southern region.

High incidence of diabetes in the southern region is causing significant health challenges and economic burden. Data is needed to identify trends, risk factors, and areas requiring intervention.

Objectives:

- Identify diabetes prevalence rates.
- Analyze demographic and lifestyle factors contributing to high diabetes incidence.
- Provide insights for targeted health interventions.

Part 2: Database Design ERD



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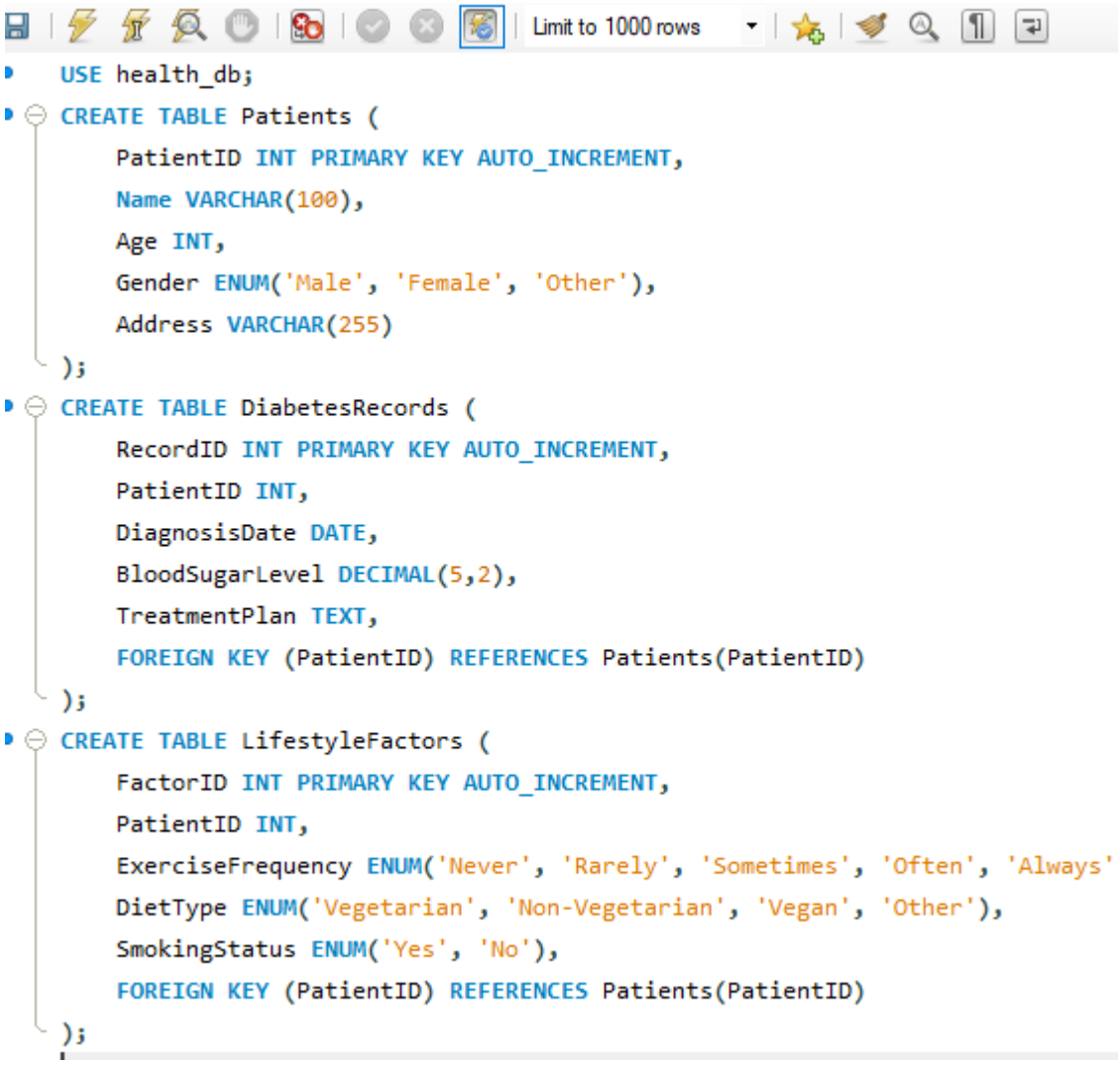
Schema: Write SQL statements to create the database schema based on your ERD.



```
USE health_db;
CREATE TABLE Patients (
    PatientID INT PRIMARY KEY AUTO_INCREMENT,
    Name VARCHAR(100),
    Age INT,
    Gender ENUM('Male', 'Female', 'Other'),
    Address VARCHAR(255)
);
CREATE TABLE DiabetesRecords (
    RecordID INT PRIMARY KEY AUTO_INCREMENT,
    PatientID INT,
    DiagnosisDate DATE,
    BloodSugarLevel DECIMAL(5,2),
    TreatmentPlan TEXT,
    FOREIGN KEY (PatientID) REFERENCES Patients(PatientID)
);
CREATE TABLE LifestyleFactors (
    FactorID INT PRIMARY KEY AUTO_INCREMENT,
    PatientID INT,
    ExerciseFrequency ENUM('Never', 'Rarely', 'Sometimes', 'Often', 'Always'
    DietType ENUM('Vegetarian', 'Non-Vegetarian', 'Vegan', 'Other'),
    SmokingStatus ENUM('Yes', 'No'),
    FOREIGN KEY (PatientID) REFERENCES Patients(PatientID)
);
```

```
CREATE TABLE HealthCenters (
    CenterID INT PRIMARY KEY AUTO_INCREMENT,
    Name VARCHAR(100),
    Location VARCHAR(255),
    ServicesOffered TEXT
);
```

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Sample Data: Populate the database with relevant sample data.

```
USE health_db;
INSERT INTO Patients (Name, Age, Gender, Address) VALUES
('John Doe', 45, 'Male', '123 Elm St'),
('Jane Smith', 50, 'Female', '456 Oak St');
INSERT INTO DiabetesRecords (PatientID, DiagnosisDate, BloodSugarLevel, TreatmentPlan) VALUES
(1, '2023-01-15', 8.5, 'Insulin therapy'),
(2, '2023-02-20', 7.0, 'Medication and lifestyle changes');
INSERT INTO LifestyleFactors (PatientID, ExerciseFrequency, DietType, SmokingStatus) VALUES
(1, 'Sometimes', 'Non-Vegetarian', 'No'),
(2, 'Rarely', 'Vegetarian', 'Yes');
INSERT INTO HealthCenters (Name, Location, ServicesOffered) VALUES
('Health Center A', '789 Maple St', 'Diabetes care, General check-ups'),
('Health Center B', '101 Pine St', 'Specialized diabetes management');
```

Part 3: SQL Programming

Data Retrieval: Write SQL queries to retrieve relevant data based on your problem definition.

```
1  USE health_db;
2  SELECT * FROM DiabetesRecords;
3  SELECT p.Name, d.DiagnosisDate, d.BloodSugarLevel
4  FROM Patients p
5  JOIN DiabetesRecords d ON p.PatientID = d.PatientID;
6
7
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

Name	DiagnosisDate	BloodSugarLevel
John Doe	2024-01-15	180.00
Jane Smith	2024-02-10	210.00
Emily Johnson	2024-03-05	220.00
Michael Brown	2024-04-22	190.00

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Data Analysis: Write SQL queries to analyze data and generate insights related to your SDG problem.

```
SELECT
    CASE
        WHEN Age < 40 THEN 'Under 40'
        WHEN Age BETWEEN 40 AND 60 THEN '40-60'
        ELSE 'Above 60'
    END AS AgeGroup,
    AVG(BloodSugarLevel) AS AvgBloodSugar
FROM Patients p
JOIN DiabetesRecords d ON p.PatientID = d.PatientID
GROUP BY AgeGroup;
SELECT SmokingStatus, COUNT(*) AS PatientCount
FROM LifestyleFactors
GROUP BY SmokingStatus;
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

SmokingStatus	PatientCount
No	7
Yes	3