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| **PROJECT OVERVIEW** | **Impact of Socio-economic Factors on Health Outcomes & Performance in Underserved Communities of America : Maine** | **Project Manager :**  **Syed Huda** |

**STATEMENT (POS)**

Federal Qualified Health Centers (FQHC’s) are primary healthcare providers which offer medical services to millions of underserved communities, rural areas, low-income families, and uninsured population in America. For some communities it’s the only access to healthcare. These communities, which are often regarded as the underbelly of America, are the most vulnerable to socioeconomic conditions. This study reviews the data provided by FQHCs through HRSA (Health Resources and Services Administration) to analyze the impact of socioeconomic factors on health outcomes and quality performance across different counties of Maine. This model can be further implemented to all U.S counties to provide accurate predictions of health outcomes, to better address the health disparities and improve healthcare access for underprivileged communities.

**Problem/Opportunity/Research Question(s):**

* Does Socioeconomic factors affect health performance and outcomes in Maine?
* What is the relationship between these factors and economic factors?
* Can you accurately predict any health outcomes with use of economic factors?
* Does County demographics also effect the health outcomes?

**Dataset:**

**Maine County Profile Dataset**

Economic Indicators: (Independent Variable)

Labor Force (NSA)

* County Employment & Unemployment rate%

Population

* County yearly (Gender, total population, Age & Sex)

Per-capita

* County personal income yearly

Income bracket

* Individual Income
* Household Income

**ME Awardee Datase**t

[National Health Center Program Uniform Data System (UDS) Look-Alike Data](https://data.hrsa.gov/tools/data-reporting/program-data/national-lookalikes)

[Health Center Program Uniform Data System (UDS) Data Overview](https://data.hrsa.gov/tools/data-reporting/program-data?type=AWARDEE&state=ME)

ME Patient Characteristics

* Patients at or below 200% of poverty
* Patients at or below 100% of poverty
* Type of insurance (Uninsured, Medicaid/CHIP, Medicare, Third party)

Health Outcomes: (Dependent Variable)

ME Clinical Data

* Hypertension
* Diabetes
* Asthma
* HIV
* Cervical Cancer Screening
* Blood Pressure Control (Hypertensive Patients with Blood Pressure < 140/90)
* Breast Cancer Screening,
* Colorectal Cancer Screening

ME Services

* Substance Abuse
* Mental Health

**Goal:**

**Specific**. We need to establish a relationship between Economic Indicators & health outcomes. Identify underlying issues with public health domain. It’s important to show visualization & descriptive explanation)

**Measurable**. If I can accurately predict health outcomes for counties in Maine, R value, P value < 0.05.

**Realistic**. I should work on one state at a time rather than handling multiple states at once.

**Time-related**. If I can finish Maine by 03/20, I’ll move on to next state.

**Objectives:**

The result of the regression models gives us accurate R-squared value. I want to use the model to make predictions of the counties for Maine. If the model is giving me good accuracy. I would want to move to building models for each county of America to give us an accurate picture of the health outcomes and performance of states.

**Success Criteria:**

There is a clear relationship between factors and health outcomes. The ML model gives outcome prediction with great accuracy. All the visualization, plots, heatmaps, charts, figures clearly show a relationship between economics and health outcomes.

**Assumptions, Risks, Obstacles:**

The main issue which I can face is the model accuracy (R-value). The model can be overfitted or undertrained. It could be that I might not have enough data to make any accurate predictions. I’ll be cooperating with a vast amount of data from multiple sources. There can be irregularities in data compilation.

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