To estimate the **monthly or annual out-of-pocket costs** for the top 10 medical conditions affecting African Americans, you can follow a structured **4-step calculation process**. This model adjusts for insurance status, care type, and medication use.

# Python script to estimate annual and monthly out-of-pocket medical costs

def calculate\_medical\_costs(condition, insurance\_type, income\_level, severity):

# Base cost estimates by condition (example values in USD)

base\_costs = {

"Hypertension": 2000,

"Type 2 Diabetes": 14000,

"Heart Disease": 25000,

"Stroke": 30000,

"Chronic Kidney Disease": 23000,

"Obesity": 1800,

"Cancer": 60000,

"Asthma": 4000,

"Mental Health": 6000,

"HIV/AIDS": 28000

}

# Insurance adjustment factors

insurance\_factors = {

"Uninsured": 1.0,

"Medicaid": 0.2,

"Medicare": 0.3,

"Private Insurance": 0.4

}

# Income-based subsidy adjustment (lower income = higher subsidy)

income\_factors = {

"Under $50k": 0.85,

"$50k-$100k": 1.0,

"Over $100k": 1.15

}

# Severity adjustment factors

severity\_factors = {

"Mild": 0.75,

"Moderate": 1.0,

"Severe": 1.5

}

# Validate input

if condition not in base\_costs:

return f"Condition '{condition}' not recognized."

if insurance\_type not in insurance\_factors or income\_level not in income\_factors or severity not in severity\_factors:

return "Invalid insurance type, income level, or severity level."

# Compute cost

base = base\_costs[condition]

insurance\_adj = insurance\_factors[insurance\_type]

income\_adj = income\_factors[income\_level]

severity\_adj = severity\_factors[severity]

annual\_cost = base \* insurance\_adj \* income\_adj \* severity\_adj

monthly\_cost = annual\_cost / 12

return {

"Condition": condition,

"Annual Out-of-Pocket Cost (USD)": round(annual\_cost, 2),

"Monthly Out-of-Pocket Cost (USD)": round(monthly\_cost, 2)

}

# Example usage

conditions\_to\_display = []

for condition in [

"Hypertension", "Type 2 Diabetes", "Heart Disease", "Stroke", "Chronic Kidney Disease",

"Obesity", "Cancer", "Asthma", "Mental Health", "HIV/AIDS"

]:

result = calculate\_medical\_costs(

condition=condition,

insurance\_type="Private Insurance",

income\_level="$50k-$100k",

severity="Moderate"

)

conditions\_to\_display.append(result)

import pandas as pd

import ace\_tools as tools

df = pd.DataFrame(conditions\_to\_display)

tools.display\_dataframe\_to\_user(name="Estimated Medical Costs Calculator", dataframe=df)