import numpy as np

import pandas as pd

# Set a random seed for reproducibility

np.random.seed(42)

# Generate 100 synthetic vitamin D levels

def generate\_vitamin\_d\_levels(count):

# Typical vitamin D levels range from 20 to 100 ng/mL

# Most healthy adults fall between 30-50 ng/mL

mean = 40 # Average vitamin D level

std\_dev = 10 # Standard deviation

# Generate normally distributed levels

levels = np.random.normal(loc=mean, scale=std\_dev, size=count)

# Clip values to realistic range (20-100 ng/mL)

levels = np.clip(levels, 20, 100)

# Round to one decimal place

levels = np.round(levels, 1)

return levels

# Generate the dataset

vitamin\_d\_levels = generate\_vitamin\_d\_levels(100)

# Create a DataFrame

df = pd.DataFrame({

'Vitamin\_D\_Levels': vitamin\_d\_levels

})