Group Project Analyses

AUTHOR
Shrestha Bhandari

AFFILIATION
Group I

Publication-Ready Figures

Univariate Analyses

Primary Analysis

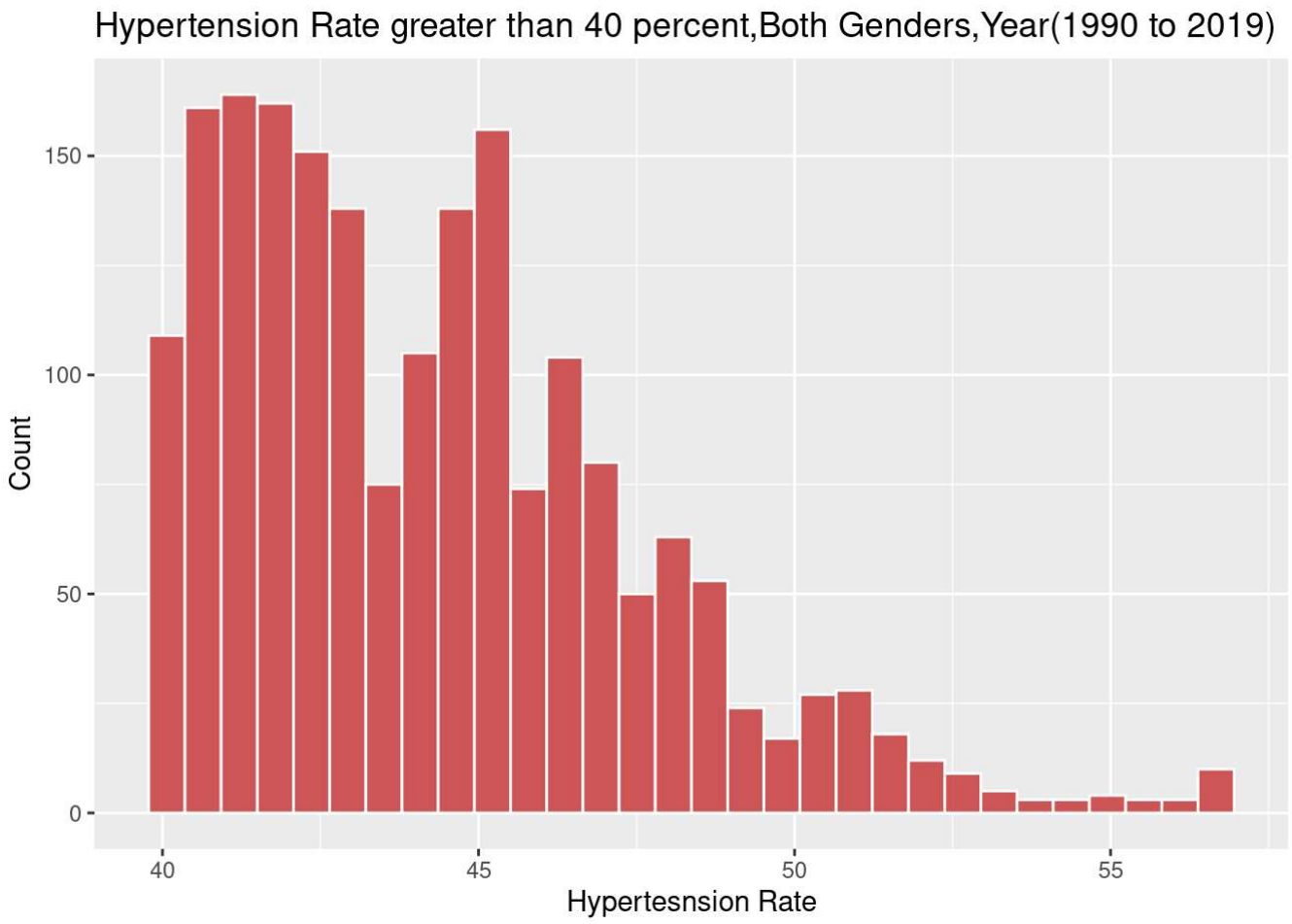

Figure 1: Histogram Graph

Secondary Analysis

Table 1: Summary Table

Hypertension Rate greater than 40 percent, Both Genders

Summary Statistics by Year

Gender	Mean	SD	γ_1	γ_2	No. of Cases
Both sexes	44.32	3.25	0.98	0.93	1,949.00

Data from 'Prevalence of Hypertension' dataset (**WHO**).

Figure 1 displays the distribution of hypertension rates greater than 40% across both genders for the period 1990 to 2019. The x-axis represents the hypertension rate, while the y-axis shows the count or frequency of countries. The histogram reveals a right-skewed distribution, with the majority of countries clustering around lower hypertension rates between 40% and 45%. As the hypertension rate increases, there is a gradual decline in the number of countries, forming a long tail towards the higher end of the distribution. A small number of countries exhibit hypertension rates above 55%, representing the extreme values in the data set.

Table 1 Table provides summary statistics for hypertension rates greater than 40% across both genders for the period 1990 to 2019. The mean hypertension rate is 44.32% with a standard deviation of 3.25%, indicating moderate variability around the mean. The skewness value of 0.98 suggests a right-skewed distribution, while the kurtosis of 0.93 implies a slightly flatter distribution compared to a normal curve. The table is based on a substantial sample size of 1,949 cases or country-year observations from the World Health Organization's 'Prevalence of Hypertension' dataset.

Bivariate Analyses

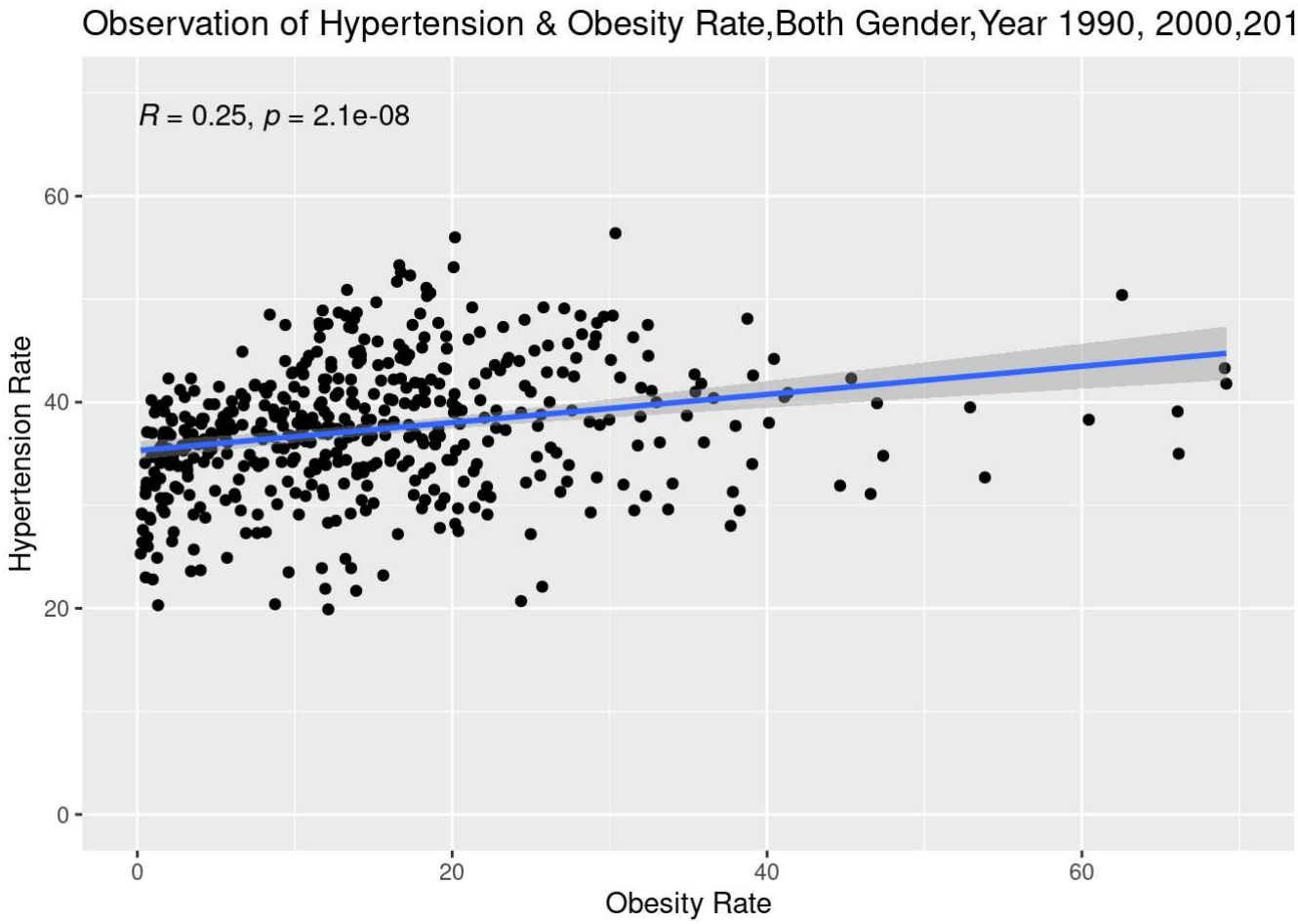

Figure 2: Scatter Plot

Figure 2 The plot depicts the relationship between obesity and hypertension rates across three decades (1990, 2000, and 2019) for both sexes. A noticeable upward trend in both variables suggests a positive correlation, indicating that as the obesity rate increases, so does the hypertension rate. This correlation underscores the importance of addressing obesity as a potential risk factor for hypertension and other cardiovascular diseases. The scattered data points reveal variability in the strength of this relationship across different years and genders, emphasizing the need for targeted public health interventions to mitigate the rising prevalence of these chronic conditions.

Multivariate Analyses

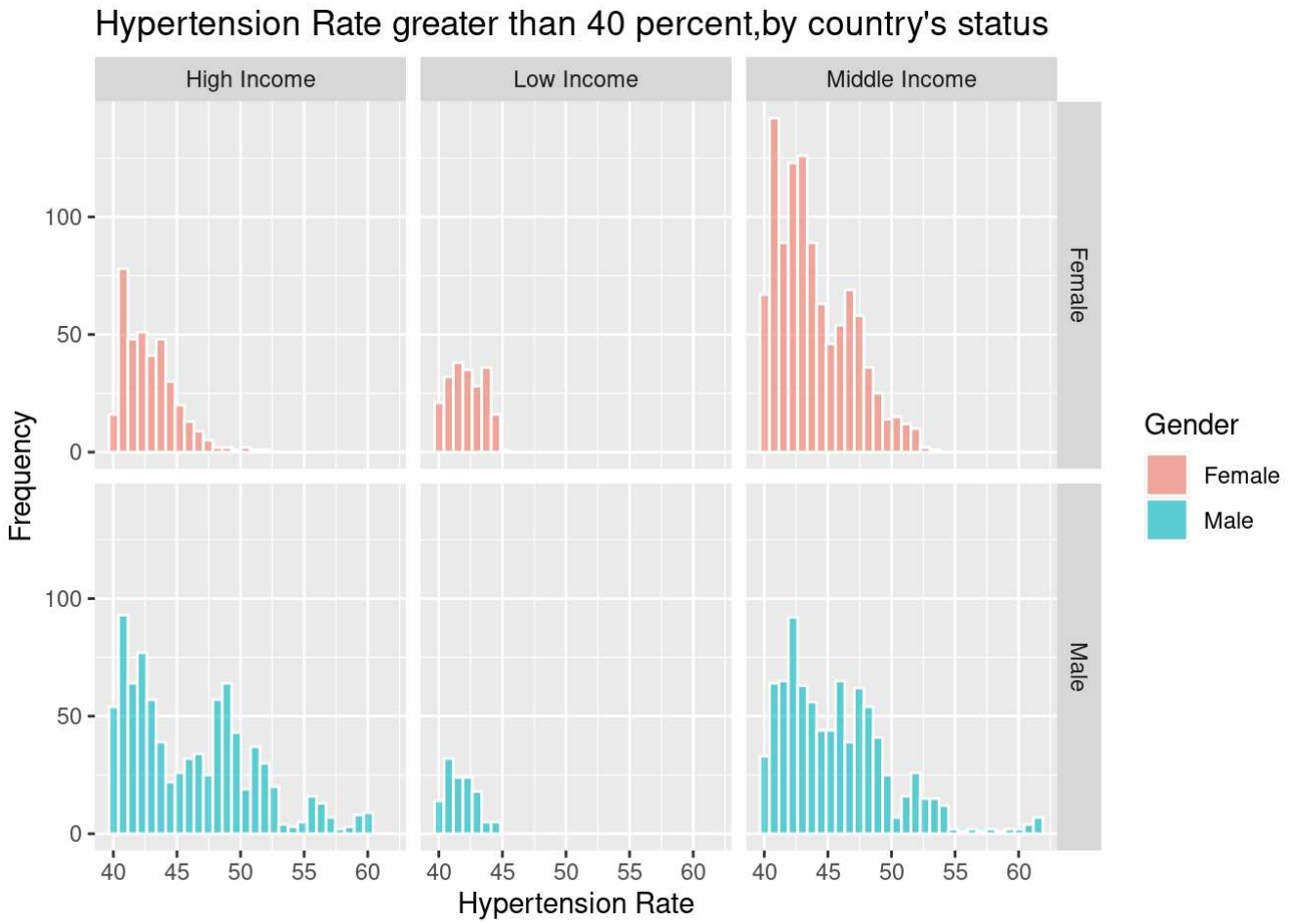

Figure 3

Figure 3 depicts the frequency of hypertension rates exceeding 40% across income categories (high, low, and middle) and genders (female and male). It highlights disparities in hypertension prevalence, with lower frequencies observed in high-income populations and higher frequencies in low-income communities. The distribution in middle-income countries falls between these extremes. This visualization underscores the importance of targeted interventions to address hypertension and improve health outcomes across different socioeconomic contexts. ## Publication-Ready Tables

Contingency Table

Table 2: Prevalence of Treatment

Prevalence of Treatment				
	Country by Income Status			
	Low	*Middle*	*High*	**Total**
Treamtment Level (in percent)				
Data from `Prevalence of Treatment` dataset (from **WHO**).				

Prevalence of Treatment

	Country by Income Status			
	Low	*Middle*	*High*	**Total**
<20%	525 (11%)	861 (18%)	37 (0.8%)	1,423 (29%)
20%-40%	118 (2.4%)	1,265 (26%)	693 (14%)	2,076 (43%)
41%-50%	17 (0.3%)	398 (8.2%)	398 (8.2%)	813 (17%)
51%-60%	0 (0%)	138 (2.8%)	300 (6.2%)	438 (9.0%)
61%-70%	0 (0%)	36 (0.7%)	55 (1.1%)	91 (1.9%)
70%+	0 (0%)	2 (<0.1%)	17 (0.3%)	19 (0.4%)
Total	660 (14%)	2,700 (56%)	1,500 (31%)	4,860 (100%)

Data from `Prevalence of Treatment` dataset (from **WHO**).

Secondary Analysis

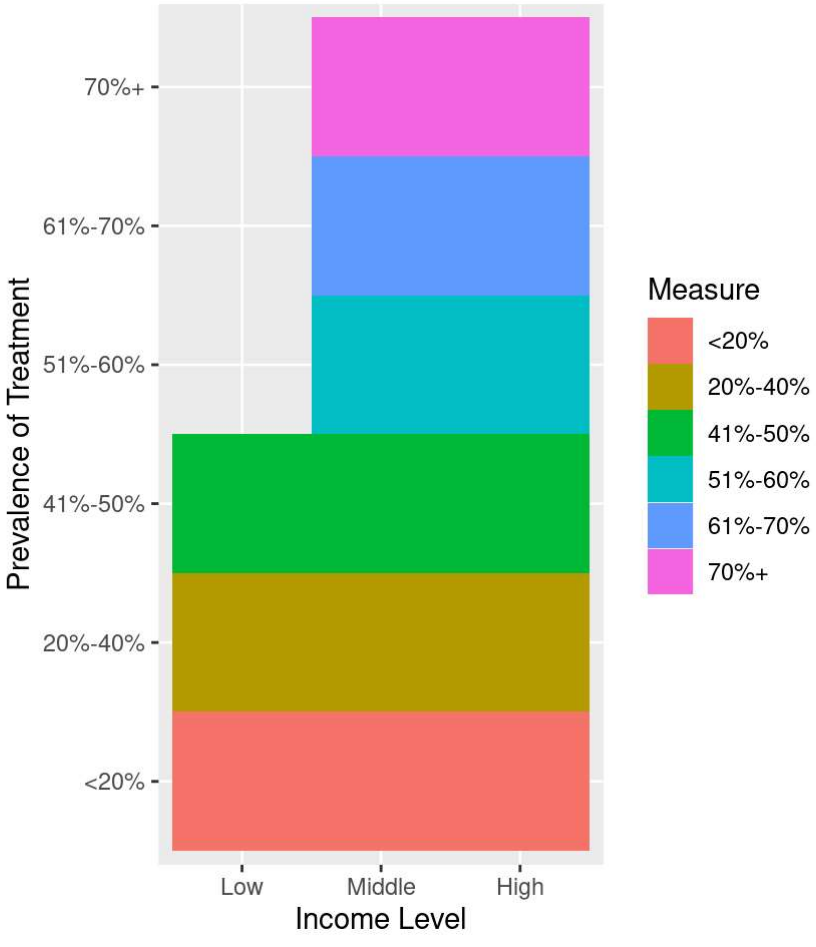

Figure 4: Heat Map

Table 2 The table presents the distribution of treatment levels for hypertension across low, middle, and high-income countries. A significant proportion (29%) of countries have treatment levels below 20%, with a higher prevalence in low (11%) and middle-income (18%) nations compared to high-income countries (0.8%). Middle-income countries show the highest percentage (26%) in the 20%-40% treatment range, while high and middle-income countries have similar shares (around 8%) in the 41%-50% range. Higher treatment levels above 50% are more common in high-income countries compared to middle and low-income nations.

Summary Table A

Table 3: Prevalence of Hypertension

Hypertension Rate Time Period (1990-2019)	Mean[1]	SD[2]	γ_1[3]	γ_2[4]
Both sexes				
High Income	38.61	5.89	0.16	−0.26
Low Income	36.67	4.55	−0.88	0.46
Middle Income	37.51	6.72	−0.17	−0.03
Female				
High Income	34.79	6.14	−0.01	−0.68
Low Income	37.36	4.85	−0.93	0.49
Middle Income	37.55	6.63	−0.43	−0.07
Male				
High Income	42.19	6.25	0.43	0.08
Low Income	35.83	4.51	−0.61	0.15
Middle Income	37.30	7.30	0.22	0.18

[1] arithmetic mean

[2] standard deviation

[3] skewness

[4] kurtosis

Data from 'Prevalence of Hypertension' dataset (WHO).

Table 3 The table presents hypertension rates across income groups and genders for the period 1990-2019. For both sexes combined, high-income countries have the highest mean hypertension rate of 38.61%, while low-income countries have the lowest at 36.67%. However, for females, the trend is reversed, with low-income countries showing the highest mean rate of 37.36%. For males, high-income countries again exhibit the highest mean rate at 42.19%. The data displays varying patterns of skewness and kurtosis across the different groups, indicating potential distributional differences in hypertension prevalence.

Summary Table B

Table 4: Hypertension Rate,its Treatment Rate and Obesity Rate

Prevalence of Hypertension and it's Treatment			
Characteristic	**High Income**, N = 4,500[1]	**Low Income**, N = 1,980[1]	**Middle Income**, N = 8,100[1]
Gender			
Both sexes	1,500 (33%)	660 (33%)	2,700 (33%)
Female	1,500 (33%)	660 (33%)	2,700 (33%)
Male	1,500 (33%)	660 (33%)	2,700 (33%)
Hypertension Rate	38.5 (6.8)	36.6 (4.7)	37.5 (6.9)
Obesity Rate	20.1 (10.4)	5.0 (5.8)	15.6 (12.4)
Treatment Rate	41.3 (13.0)	14.4 (9.0)	28.5 (14.6)

[1] n (%); Mean (SD)

dataset (from **WHO**).

Table 4 This table presents various health-related characteristics across three income groups - high income, low income, and middle income. The gender distribution is equal (33%) across all income groups. There is a notable difference in hypertension rates, with the high income group having the highest rate of 38.5% compared to 36.6% for low income and 37.5% for middle income. Obesity rates show a more significant disparity, with the high income group having an obesity rate of 20.1%, much higher than the low income group's 5.0% and the middle income group's 15.6%. The treatment rate follows a similar pattern, with the high income group having the highest rate of 41.3%, compared to 14.4% for low income and 28.5% for middle income.

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