

BIOS640 Week 4 - Exercise #4

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rmarkdown::render("your_file.Rmd")

The State of the Nephron: Systolic Blood Pressure trends from the NHANES (2015 - 2018)

Introduction

The National Health Assessment and Nutrition Survey (NHANES) is an american program designed to identify the current trends in nutrition and health within the american population, including both pediatric and adult populations. The study is carried out by the Center for Disease Control (CDC) with the hope of identifying trends in deficiencies, to eventually prevent the development of disease. This report identifies trends in systolic blood pressure within this studied population, to highlight the prevalence of varying degrees of hypertension across ethnic groups, categories of age and gender. The data reviewed for this study spans 2015 to 2018 inclusively.

Demographics Across Sample Years

Unfortunately the data I wanted to present has bugged out and cannot be accessed. I was able to generate a table highlighting all of the data, as requested in the prompt, but an error with Latex resulted in me not being able to render a PDF. Due to time constraints, and almost 8 hours of my day, I was not able to troubleshoot it so I opted to not run this section of code for part marks. None the less, the data demonstrated that there was a even distribution of male:female participants, and that demographics were appropriately distributed through the years. This table highlighted the quality of the NHANES data-set, as it encompassed a diverse sample of the american population.

Ethnicity and Blood Pressure

A common demographic in all fields of medicine is ethnicity, and how it relates to the pathologies faced within one's sub specialty. This is no different to identifying risk factors within ethnic groups for underlying pathologies. The data below highlights that mean systolic blood pressures are consistent in the elevated range across all ethnic groups. This trend has increased across all groups, with the exception of those identifying as Mexican remaining relatively stable. Interestingly, we see an increase in standard deviation across all groups, suggesting a shift from a homogeneity. One aspect that should be evaluated as a control for this data set, is the current household income given that socioeconomic standing in the United States correlates strongly with ethnic background, and health outcomes. In a future report I would like to review this connection.

Table 1: Summary Statistics for SBP by Ethnicity and Wave

Ethnicity	Min			Max			Median			Mean			SD		
	2013-2014	2015-2016	2017-2018	2013-2014	2015-2016	2017-2018	2013-2016	2017-2018	2015-2016	2013-2014	2015-2016	2017-2018	2013-2014	2015-2016	2017-2018
Asian	86.7	88.0	72.7	185.3	198.7	215.3	117.3	118.0	121.3	120.9	121.3	124.3	17.1	17.2	19.3
Black	73.3	84.7	74.0	216.7	231.3	224.7	125.3	126.0	128.0	127.5	129.1	131.8	18.5	20.0	21.8
Mexican	89.3	89.3	81.0	212.0	202.0	214.7	119.3	122.7	122.7	122.9	124.9	124.6	17.8	17.1	18.6
Other	92.7	91.3	78.7	186.7	217.3	188.0	119.3	123.0	122.3	121.9	124.1	125.9	16.1	17.8	18.8
Other Hispanic	90.0	84.0	84.7	205.3	206.0	207.3	119.3	123.3	123.7	122.4	125.8	125.9	18.5	17.9	21.0
White	64.7	85.3	86.7	228.7	206.7	234.0	119.3	122.7	123.3	122.6	125.0	126.5	17.8	18.1	19.1

References

- Centers for Disease Control and Prevention (CDC), National Center for Health Statistics (NCHS). 2015a. “National Health and Nutrition Examination Survey: Demographics Data, 2013-2014.” <https://wwwn.cdc.gov/nchs/nhanes/continuousnhanes/default.aspx?Cycle=2013-2014>.
- . 2015b. “National Health and Nutrition Examination Survey: Examination Data, Blood Pressure, 2013-2014.” <https://wwwn.cdc.gov/nchs/nhanes/continuousnhanes/default.aspx?Cycle=2013-2014>.
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- . 2020a. “National Health and Nutrition Examination Survey: Demographics Data, 2017-2018.” <https://wwwn.cdc.gov/nchs/nhanes/continuousnhanes/default.aspx?Cycle=2017-2018>.
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