

University of Washington - Tacoma

Sleep, Health, and Gender Study



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Introduction

We explored the intricate relationship between sleep health factors among both male and female demographics. Anchoring our analysis on the "Sleep & Health" dataset (Tharmalingam, 2023), we utilized queries to investigate correlations among various factors such as blood pressure, stress levels, sleep duration, physical activity, and geographic location. This was done to assess their impact on sleep quality, sleep disorders, and other essential sleep health determinants across genders.

Objective and Scope of the project

Our primary goal was to uncover patterns, parallels, and disparities in how specific variables influence sleep health and overall wellness across genders. By delving into the occurrence of sleep disorders categorized by occupation, evaluating sleep quality concerning geographic location and gender, studying the effects of physical activity on sleep quality, and analyzing the data on stress and blood pressure, our intention was to extract insights. These in-depth analysis highlighted sleep's profound influence on diverse health aspects. Ultimately, our discoveries hold the potential to inform strategies that foster healthy sleep routines, identify vulnerable segments within each gender, and lay the groundwork for interventions targeting sleep-centric health issues.

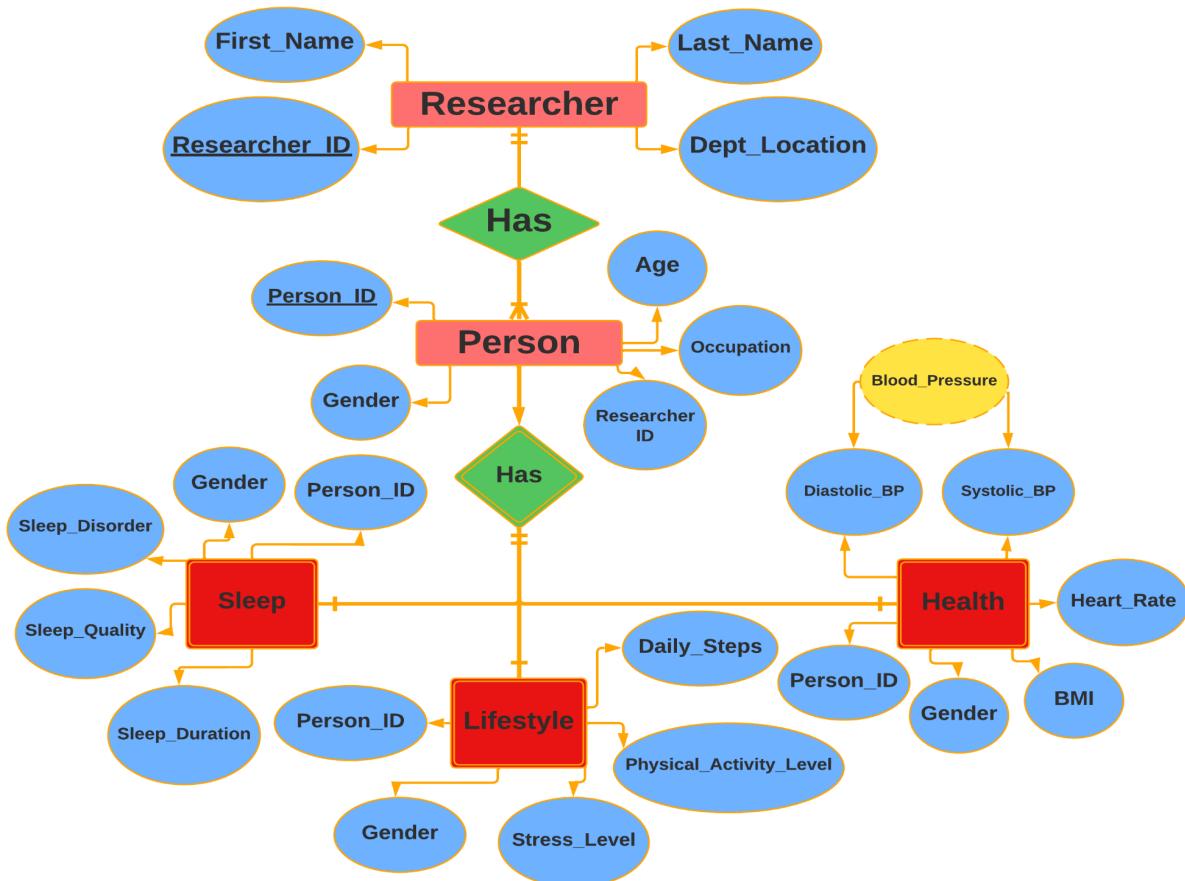
Relation to Existing Work

The National Sleep Foundation's "Sleep in America" 2022 poll provides valuable insights that complement our sleep health gender study database application. Their comprehensive study uncovers the intricate relationship between daily routines and sleep health, emphasizing the importance of factors like appropriate light exposure, regular meal timings, and physical activity in regulating circadian rhythms and sleep/wake cycles. Their findings, which demonstrate that

almost half of the American population is not exposed to ideal light conditions and a significant portion do not meet CDC physical activity guidelines, resonate with our database's exploration into factors like stress levels, blood pressure, and physical activity across genders (National Sleep Foundation, 2022). Moreover, the "Sleep in America" poll's emphasis on personal stress and overall health as pivotal determinants of sleep quality mirrors our investigation's emphasis on how these factors uniquely impact male and female sleep health. Additionally, their Sleep Health Index®, which offers a validated measure of the nation's sleep health, can serve as a benchmark against which we can contextualize our findings.

Overview of the Architecture

Appendix A: ER Diagram



The ER diagram maps out the entities and attributes that are connected through relationships and cardinality style lines. The light red represents the strong entities that are pointing to our attributes in blue. The primary keys are underlined. Relationships are in green and connect researchers to people with a one to many relationship. From person to sleep, health, and lifestyle is a one to one relationship. We also show a derived attribute being blood pressure in yellow and it comes from both the diastolic and systolic blood pressure attributes

Appendix B: BCNF Normalization Proof

RESEARCHER

<u>Researcher_ID</u>	First_Name	Last_Name	Dept_Location
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FD1 {Researcher_ID} \rightarrow {First_Name, Last_Name, Dept_Location}

\therefore Researcher_ID is a candidate key for RESEARCHER since it is needed to identify First_Name, Last_Name, and Dept_Location.

Proof: Since FD1 has the determinant as a candidate key, this relation is in BCNF.

PERSON

<u>Person_ID</u>	Gender	Age	Occupation	Res_ID
------------------	--------	-----	------------	--------

FD2 {Person_ID} \rightarrow {Gender, Age, Occupation, Res_ID}

\therefore Person_ID is a candidate key for PERSON since it is needed to identify Gender, Age, Occupation, and Res_ID.

Proof: Since FD2 has the determinant as a candidate key, this relation is in BCNF.

HEALTH

<u>Person_ID</u>	Gender	BMI	Heart_Rate	Systolic_BP	Diastolic_BP	Blood_Pressure
------------------	--------	-----	------------	-------------	--------------	----------------

FD3 {Person_ID} \rightarrow {Gender, BMI, Heart_Rate, Systolic_BP, Diastolic_BP, Blood_Pressure}

\therefore Person_ID is a candidate key for HEALTH since it is needed to identify Gender, BMI, Heart_Rate, Systolic_BP, Diastolic_BP, and Blood_Pressure.

Proof: Since FD3 has the determinant as a candidate key, this relation is in BCNF.

LIFESTYLE

Person_ID	Gender	Stress_Level	Daily_Steps	Physical_Activity
-----------	--------	--------------	-------------	-------------------

FD4 {Person_ID} \rightarrow {Gender, Stress_Level, Daily_Steps, Physical_Activity}

\therefore Person_ID is a candidate key for LIFESTYLE since it is needed to identify Gender, Stress_Level, Daily_Steps, Physical_Activity.

Proof: Since FD4 has the determinant as a candidate key, this relation is in BCNF.

SLEEP

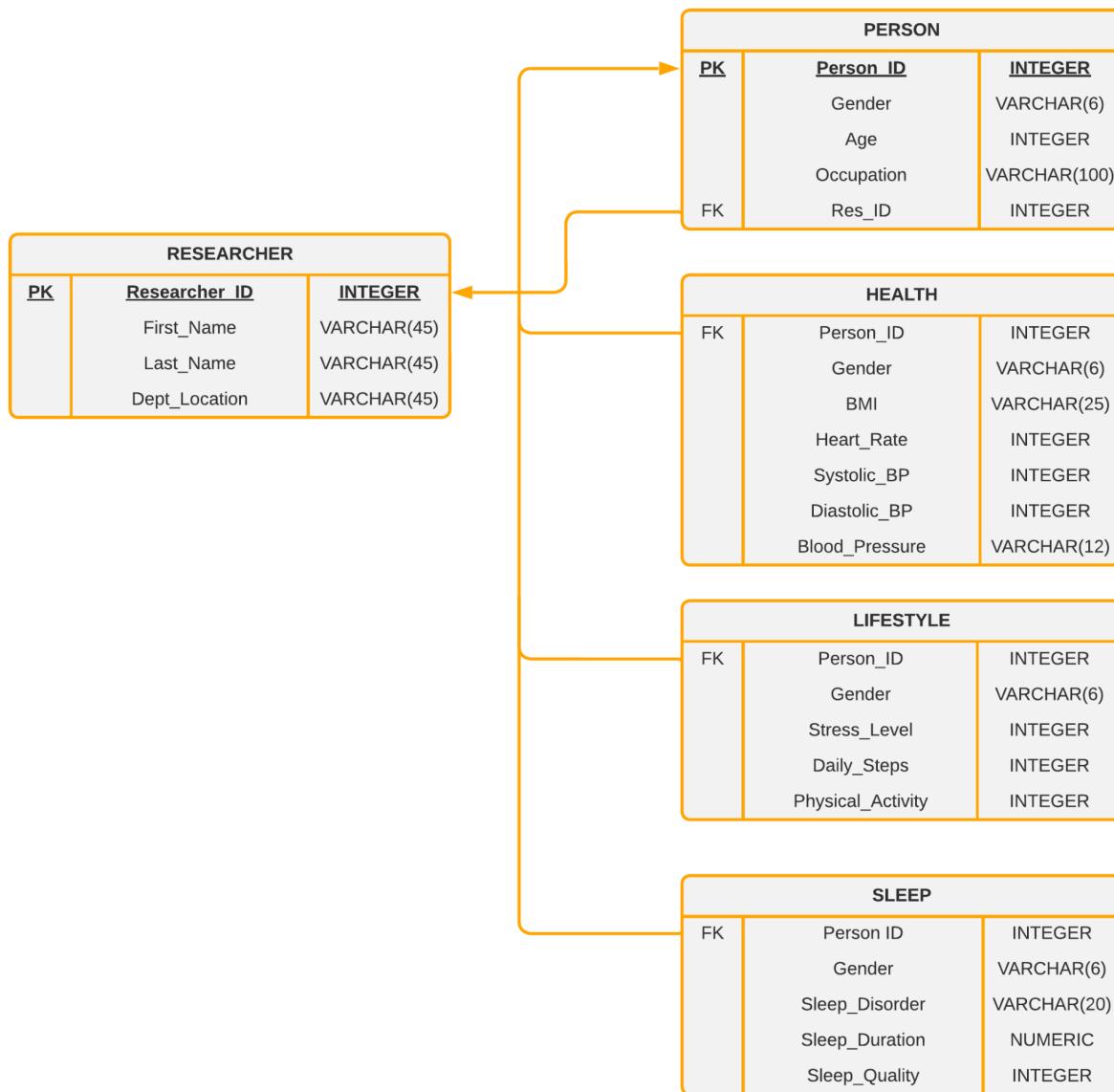
Person_ID	Gender	Sleep_Disorder	Sleep_Duration	Sleep_Quality
-----------	--------	----------------	----------------	---------------

FD5 {Person_ID} \rightarrow {Gender, Sleep_Disorder, Sleep_Duration, Sleep_Quality}

\therefore Person_ID is a candidate key for SLEEP since it is needed to identify Gender, Sleep_Disorder, Sleep_Duration, Sleep_Quality

Proof: Since FD5 has the determinant as a candidate key, this relation is in BCNF.

Appendix C: Relational Schema Diagram



The relational schema was initially broken down into two main sections, the researcher and person tables. Then the person table was split into four tables, person, health, lifestyle, and sleep where each table uses person_id as its primary key. This guarantees a one-to-one relationship. Attributes were assigned to tables based on similarity and likeliness to be used in the same query to maintain efficiency when joining tables together. Gender was also included in each table as it is the main focus of the study.

Thoughts on Future Implementations

Implementation of Sleep Health Strategies

The insights gathered offer a promising approach to proactively addressing sleep health at a broader level. The benefits of optimal sleep on cognitive function, emotional well-being, and overall physical health demonstrate the importance of its contribution. In and of itself, there lies an untapped potential in the implementation and deployment of sleep health improvement strategies after demonstrating our findings. Through conceptualizing public health campaigns tailored to raise awareness and educate the public on best sleep practices, we can aim to bring about a noticeable awareness in societal sleep patterns.

Dive into more Demographics:

While the initial findings related to gender demographics provide a foundational understanding of sleep health disparities, it is imperative to take a more granular approach to fully comprehend the landscape. Diverse gender brackets, for instance, can offer insights into how sleep patterns evolve a wider general audience. Moreover, considering factors such as ethnicity and socioeconomic status could shed light on systemic or cultural influences that affect sleep quality and duration. By widening the scope of demographic exploration, we can not only identify potential sleep health challenges faced by specific groups but also customize interventions that cater to their unique needs, ensuring that no segment of the population is left behind in the pursuit of optimal sleep health.

Appendix D: Screenshots of Functional SQL Queries

Description: This method fetches all unique occupations from the ‘PERSON’ table to later be used to dynamically populate the filtering data feature (dropdown options) in our Sleep Disorder by Occupation table.

```
1 usage
@Query(nativeQuery = true, value = "SELECT DISTINCT Occupation FROM PERSON")
List<String> getAllDistinctOccupations();
```

Description: This method fetches all unique department locations from the ‘RESEARCHER’ table

```
1 usage
@Query(nativeQuery = true, value = "SELECT DISTINCT Dept_Location FROM RESEARCHER")
List<String> getAllDistinctLocations();
```

Description: This method fetches all unique gender’s from the ‘PERSON’ table to later be used to dynamically populate the filtering data feature (dropdown options) in all our tables.

```
1 usage
@Query("SELECT DISTINCT p.gender FROM Person p")
List<String> findDistinctGenders();
```

Description: This method fetches the impact of physical activity on sleep quality, categorizing people as ‘Active’ or ‘Inactive’ based on their physical activity time.

```
1 usage
@Query(nativeQuery = true, value =
"SELECT Lifestyle.Gender, " +
"CASE WHEN Physical_Activity >= 60 THEN 'Active' ELSE 'Inactive' END AS 'Activity Status', " +
"ROUND(AVG(Sleep_Quality), 2) AS 'Avg Sleep Quality' " +
"FROM Lifestyle " +
"JOIN Sleep ON Lifestyle.Person_ID = Sleep.Person_ID " +
"WHERE (:gender IS NULL OR Lifestyle.Gender = :gender) " +
"AND (:activityStatus IS NULL OR (CASE WHEN Physical_Activity >= 60 THEN 'Active' ELSE 'Inactive' END) = :activityStatus) " +
"GROUP BY Lifestyle.Gender, CASE WHEN Physical_Activity >= 60 THEN 'Active' ELSE 'Inactive' END " +
"ORDER BY Lifestyle.Gender")
List<Object[]> getPhysicalActivityImpactOnSleepQuality(@Param("gender") String gender, @Param("activityStatus") String activityStatus);
```

Description: This method fetches the number and percentage of people with sleep disorders groups by occupation and gender.

```

1 usage
@Query(nativeQuery = true, value =
    "SELECT Person.Gender, Person.Occupation, " +
    "SUM(IF(Sleep.Sleep_Disorder <> 'None', 1, 0)) AS 'Number of People w/ Sleep Disorder', " +
    "COUNT(Sleep.Person_ID) AS 'Total Number of People', " +
    "CONCAT(ROUND(SUM(IF(Sleep.Sleep_Disorder <> 'None', 1, 0)) / COUNT(Sleep.Person_ID) * 100), '%') " +
    "AS 'Percent w/ Sleep Disorder' " +
    "FROM Person " +
    "JOIN Sleep ON Person.Person_ID = Sleep.Person_ID " +
    "WHERE (:gender IS NULL OR Person.Gender = :gender) " +
    "AND (:occupation IS NULL OR Person.Occupation = :occupation) " +
    "GROUP BY Person.Gender, Person.Occupation " +
    "ORDER BY ROUND(SUM(IF(Sleep.Sleep_Disorder <> 'None', 1, 0)) / COUNT(Sleep.Person_ID) * 100) DESC")
List<Object[]> getSleepDisordersByOccupationAndGender(@Param("gender") String gender, @Param("occupation") String occupation);

```

Description: This method fetches and analyzes the average stress levels, sleep duration and sleep quality grouped by gender and blood pressure.

```

1 usage
@Query(value =
    "SELECT " +
        "Person.Gender, Blood_Pressure AS 'Blood Pressure', " +
        "ROUND(AVG(Stress_Level), 1) AS 'Stress Level', " +
        "ROUND(AVG(Sleep_Duration), 1) AS 'Sleep Duration (Hours)', " +
        "ROUND(AVG(Sleep_Quality), 1) AS 'Sleep Quality' " +
    "FROM " +
        "Person " +
    "JOIN " +
        "Health ON Person.Person_ID = Health.Person_ID " +
    "JOIN " +
        "Lifestyle ON Person.Person_ID = Lifestyle.Person_ID " +
    "JOIN " +
        "Sleep ON Person.Person_ID = Sleep.Person_ID " +
    "WHERE " +
        "(:gender IS NULL OR Person.Gender = :gender) " +
    "AND " +
        "(:bloodPressure IS NULL OR Health.Blood_Pressure = :bloodPressure)" +
    "GROUP BY " +
        "Person.Gender, Blood_Pressure " +
    "ORDER BY " +
        "AVG(Stress_Level) DESC", nativeQuery = true)
List<Object[]> analyzeGenderStressAndBloodPressure(@Param("gender") String gender, @Param("bloodPressure") String bloodPressure);

```

Description: This method fetches the average sleep quality by department location and gender

```

1 usage
@Query(nativeQuery = true, value =
    "SELECT PERSON.Gender, RESEARCHER.Dept_Location, ROUND(AVG(Sleep_Quality), 2) AS 'Avg Sleep Quality' " +
    "FROM RESEARCHER, PERSON, SLEEP " +
    "WHERE RESEARCHER.Researcher_ID = PERSON.Res_ID AND PERSON.Person_ID = SLEEP.Person_ID AND " +
    "(:gender IS NULL OR PERSON.Gender = :gender) AND " +
    "(:location IS NULL OR RESEARCHER.Dept_Location = :location) " +
    "GROUP BY RESEARCHER.Dept_Location, PERSON.Gender")
List<Object[]> getSleepQualityByLocationAndGender(@Param("gender") String gender, @Param("location") String location);

```

Appendix E: Screenshots of Functional Web Interface

Content:

- Screenshot of the front-page
- Screenshot of the 4 additional pages representing each query
 - Stress and Blood Pressure Analysis
 - Physical Activity Impact on Sleep Quality
 - Sleep Disorder by Occupation
 - Sleep Quality by Location
- Data tables located from each of the additional pages
 - Examples of data filter feature for each gender in all tables
 - Examples query Specific data filter to assist the user in analyzing patterns regarding query specific variables and their impact on sleep.
- Example of Column heading displaying detail about the data stored in the tuples of the column (when the user hovers their mouse over the '?' symbol).

Front Page

The screenshot shows the front page of a web application. At the top, there is a navigation bar with five items: "Front Page", "Stress and Blood Pressure Analysis", "Physical Activity Impact on Sleep Quality", "Sleep Disorders by Occupation", and "Sleep Quality by Location". Below the navigation bar is a large circular logo featuring a stylized letter 'S' and stars. Underneath the logo, the text "Sleep, Health, and Gender Study" is displayed in a bold, yellow font. The main content area has a dark background. It features a section titled "GOAL" in yellow, which contains a paragraph of text explaining the project's purpose. Below this is a section titled "PROJECT DESCRIPTION" in yellow, followed by a paragraph of text detailing the primary aim and methods. At the bottom, there is a section titled "MEET THE DEVELOPERS" in yellow, listing three developer names and their contact emails. Each developer name is accompanied by a small, stylized icon related to sleep or health.

Front Page Stress and Blood Pressure Analysis Physical Activity Impact on Sleep Quality Sleep Disorders by Occupation Sleep Quality by Location

GOAL

Our goal is to analyze the relationship among sleep health factors within a population, with a specific focus on both the female and male genders. This analysis relies on the provided associations found in the Sleep & Health dataset. To achieve this, we will utilize the Sleep Health and Lifestyle dataset. Our investigation will delve into how different variables such as blood pressure, stress levels, sleep duration, physical activity levels, and location correlate with sleep quality, sleep disorders, and other significant factors for each gender.

PROJECT DESCRIPTION

Our primary aim is to uncover patterns, similarities, and distinctions in the manner specific variables impact the overall sleep health and well-being of each gender. By conducting an analysis of sleep disorders categorized by occupation and gender, evaluating sleep quality relative to location and gender, studying the influence of physical activity on sleep quality in relation to gender, as well as exploring stress and blood pressure data, we intend to extract valuable insights regarding the potential effects of sleep on various health parameters. These findings can subsequently be applied to formulate strategies that endorse healthy sleep habits, identify at-risk communities within each gender, and potentially contribute to the development of interventions or treatments targeting sleep-related health issues.

MEET THE DEVELOPERS

Andy Comfort - acomfort@uw.edu Evan Chard - echard@uw.edu Caroline El Jazmi - eljazmi@uw.edu

Stress and Blood Pressure Analysis by Gender

Front Page Stress and Blood Pressure Analysis Physical Activity Impact on Sleep Quality Sleep Disorders by Occupation Sleep Quality by Location

Stress and Blood Pressure Analysis by Gender

PURPOSE

Analyze gender, stress level, and blood pressure to see if there is an impact on the person's sleep duration and quality.

OVERVIEW

Key observations include:

- Slight sleep quality variations observed between genders in the studied cities.
 - Seattle: Males have slightly higher sleep quality average than females.
 - Dallas: Females exhibit higher sleep quality than males.
- Comparative data to understand regional sleep patterns and gender influence in urban environments.

The analysis examines sleep quality based on gender in Seattle, Dallas, Miami, and Boston. Variations in sleep quality between genders are observed, with Seattle showing higher sleep quality among males and Dallas displaying higher sleep quality among females. This data aids in understanding sleep patterns and gender influences across different cities.

Gender: Blood Pressure: Filter

Gender ⓘ	Blood Pressure ⓘ	Stress Level ⓘ	Sleep Duration (Hours) ⓘ	Sleep Quality ⓘ
Female	Stage 2 HTN	6.6	6.6	6.7
Male	Stage 1 HTN	5.6	7.2	7.0
Female	Stage 1 HTN	5.5	7.2	7.1
Male	Stage 2 HTN	5.5	7.0	7.6
Male	Elevated	4.9	7.9	7.8
Female	Elevated	4.8	7.7	7.7
Male	Normal	4.3	7.3	7.9
Female	Normal	4.0	7.1	7.8

Source: Sleep Health and Lifestyle Dataset

Gender: Blood Pressure: All

Gender ⓘ	Blood Pressure ⓘ	Stress Level ⓘ	Sleep Duration (Hours) ⓘ	Sleep Quality ⓘ
Female	Stage 2 HTN	6.6	6.6	6.7
Male	Stage 1 HTN	5.6	7.2	7.0
Female	Stage 1 HTN	5.5	7.2	7.1
Male	Stage 2 HTN	5.5	7.0	7.6
Male	Elevated	4.9	7.9	7.8
Female	Elevated	4.8	7.7	7.7
Male	Normal	4.3	7.3	7.9
Female	Normal	4.0	7.1	7.8

Source: Sleep Health and Lifestyle Dataset

Gender: Male Blood Pressure: Elevated Filter

Gender ⓘ	Blood Pressure ⓘ	Stress Level ⓘ	Sleep Duration (Hours) ⓘ	Sleep Quality ⓘ
Male	Elevated	4.9	7.9	7.8

Source: Sleep Health and Lifestyle Dataset

Both
Male
Gender: ✓ Female Blood Pressure: Elevated Filter

Gender ⓘ	Blood Pressure ⓘ	Stress Level ⓘ	Sleep Duration (Hours) ⓘ	Sleep Quality ⓘ
Female	Elevated	4.8	7.7	7.7

Source: Sleep Health and Lifestyle Dataset

Physical Activity Impact on Sleep Quality and Gender

Front Page Stress and Blood Pressure Analysis Physical Activity Impact on Sleep Quality Sleep Disorders by Occupation Sleep Quality by Location

Physical Activity Impact on Sleep Quality and Gender

PURPOSE

Determine if the physical activity level of each gender impacts their average sleep quality.

OVERVIEW

Key observations include:

- Clear pattern: Higher average sleep quality among active individuals, irrespective of gender.
 - Active females: Average sleep quality of 7.46, compared to inactive females with 6.75.
 - Active males: Average sleep quality of 7.62, in contrast to inactive males scoring 6.86.
- Suggests a positive correlation between physical activity and better sleep quality.

The analysis examines how gender-specific physical activity levels relate to average sleep quality. Results indicate that both active females and males experience higher average sleep quality compared to their inactive counterparts. Active females score 7.46, while inactive females score 6.75. Similarly, active males score 7.62, while inactive males score 6.86. These findings suggest a potential positive connection between physical activity and improved sleep quality.

Gender: Both Activity: All Filter

Gender ⓘ	Activity Level Status ⓘ	Average Sleep Quality ⓘ
Female	Active	7.46
Female	Inactive	6.75
Male	Active	7.62
Male	Inactive	6.86

Source: Sleep Health and Lifestyle Dataset

Gender: Female Activity: All Active Inactive Filter

Gender	Activity Level Status	Average Sleep Quality
Female	Active	7.46
Female	Inactive	6.75
Male	Active	7.62
Male	Inactive	6.86

Source: [Sleep Health and Lifestyle Dataset](#)

Gender: Female Activity: Active Filter

Gender	Activity Level Status	Average Sleep Quality
Female	Active	7.46

Source: [Sleep Health and Lifestyle Dataset](#)

Sleep Disorders by Occupation and Gender

[Front Page](#) [Stress and Blood Pressure Analysis](#) [Physical Activity Impact on Sleep Quality](#) [Sleep Disorders by Occupation](#) [Sleep Quality by Location](#)

Sleep Disorders by Occupation and Gender

PURPOSE

Evaluate the prevalence of sleep disorders among different occupations and understand the potential gender discrepancies.

OVERVIEW

Key observations include:

- Overall Trend
 - Nurses have the highest sleep disorder prevalence, around 31-33% for both genders.
- Similar Prevalence Across Genders
 - Salespersons, Teachers, Doctors, and Accountants have roughly equal rates between males and females.
- Significant Gender Differences
 - Male Sales Representatives have a higher rate (16%) than females (2%).
 - Male Software Engineers show 0% while female counterparts show 1%.
- Lowest Rates
 - Scientists, Software Engineers, and female Managers all report near-zero prevalence.

The analysis examines sleep disorders across genders and occupations reveals key trends. Nurses show the highest sleep disorder prevalence (31-33%) across both genders. Certain occupations, such as Salespersons, Teachers, Doctors, and Accountants, exhibit similar rates among males and females. However, gender differences are significant in roles like Male Sales Representatives (16% vs. 2% in females) and Male Software Engineers (0% vs. 1% in females). Scientists, Software Engineers, and female Managers report the lowest prevalence. Notably, the data lacks context such as age and work hours, prompting the need for more comprehensive research, especially in high-risk professions.

Gender: Both Occupation: All Filter

Gender	Occupation	Prevalence of Sleep Disorders
Female	Sales Representative	2%
Male	Salesperson	16%
Female	Salesperson	14%
Male	Nurse	31%
Female	Nurse	33%
Male	Teacher	15%
Female	Teacher	16%
Male	Scientist	2%
Female	Software Engineer	1%
Female	Accountant	4%
Male	Engineer	5%
Male	Accountant	3%
Female	Lawyer	3%
Male	Doctor	4%
Female	Doctor	3%
Male	Lawyer	2%
Female	Engineer	1%
Male	Software Engineer	0%
Female	Scientist	0%
Female	Manager	0%

Source: Sleep Health and Lifestyle Dataset

Gender: Both Occupation: All Filter

All
 Software Engineer
 Doctor
 Sales Representative
 Teacher
 Nurse
 Engineer
 Accountant
 Scientist
 Lawyer
 Salesperson
 Manager

Gender	Occupation	Prevalence of Sleep Disorders
Female	Sales Representative	2%
Male	Salesperson	16%
Female	Salesperson	14%
Male	Nurse	31%
Female	Nurse	33%
Male	Teacher	15%
Female	Teacher	16%
Male	Scientist	2%
Female	Software Engineer	1%
Female	Accountant	4%
Male	Engineer	5%
Male	Accountant	3%
Female	Lawyer	3%
Male	Doctor	4%
Female	Doctor	3%
Male	Lawyer	2%
Female	Engineer	1%
Male	Software Engineer	0%
Female	Scientist	0%
Female	Manager	0%

Source: Sleep Health and Lifestyle Dataset

Gender: Both Occupation: Nurse Filter

Gender ⓘ	Occupation ⓘ	Prevalence of Sleep Disorders ⓘ
Male	Nurse	31%
Female	Nurse	33%

Source: Sleep Health and Lifestyle Dataset

Sleep Quality by Department of Location and Gender

Front Page Stress and Blood Pressure Analysis Physical Activity Impact on Sleep Quality Sleep Disorders by Occupation Sleep Quality by Location

Sleep Quality by Department Location and Gender

PURPOSE

Evaluate the sleep quality of people living in or around certain cities based on gender.

OVERVIEW

Key observations include:

- Slight sleep quality variations observed between genders in the studied cities.
 - Seattle: Males have slightly higher sleep quality average than females.
 - Dallas: Females exhibit higher sleep quality than males.
- Comparative data to understand regional sleep patterns and gender influence in urban environments.

The analysis examines sleep quality based on gender in Seattle, Dallas, Miami, and Boston. Variations in sleep quality between genders are observed, with Seattle showing higher sleep quality among males and Dallas displaying higher sleep quality among females. This data aids in understanding sleep patterns and gender influences across different cities.

Gender: Both Department Location: All Filter

Gender ⓘ	Department Location ⓘ	Average Sleep Quality ⓘ
Female	Seattle	6.84
Male	Seattle	7.32
Female	Dallas	7.42
Male	Dallas	7.25
Female	Miami	7.06
Male	Miami	7.26
Female	Boston	7.26
Male	Boston	7.23

Source: Sleep Health and Lifestyle Dataset

Gender: Both Department Location: All Seattle Dallas Miami Boston Filter

Gender ?	Department Location ?	Average Sleep Quality ?
Female	Seattle	6.84
Male	Seattle	7.32
Female	Dallas	7.42
Male	Dallas	7.25
Female	Miami	7.06
Male	Miami	7.26
Female	Boston	7.26
Male	Boston	7.23

Source: Sleep Health and Lifestyle Dataset

Gender: Female Department Location: Dallas Filter

Gender ?	Department Location ?	Average Sleep Quality ?
Female	Dallas	7.42

Source: Sleep Health and Lifestyle Dataset

Example of Column heading displaying detail about the data stored in the tuples of the column (when the user hovers their mouse over the '?' symbol).

Gender: Both Blood Pressure: All A subjective rating of the stress level experienced by the person, ranging from 1 to 10.

Gender ?	Blood Pressure ?	Stress Level ?	Sleep Duration (Hours) ?	Sleep Quality ?
Female	Stage 2 HTN	6.6	6.6	6.7
Male	Stage 1 HTN	5.6	7.2	7.0
Female	Stage 1 HTN	5.5	7.2	7.1
Male	Stage 2 HTN	5.5	7.0	7.6
Male	Elevated	4.9	7.9	7.8
Female	Elevated	4.8	7.7	7.7
Male	Normal	4.3	7.3	7.9
Female	Normal	4.0	7.1	7.8

Source: Sleep Health and Lifestyle Dataset

Gender: Both Blood Pressure: All Filter

The blood pressure measurement of the person.

Gender ⓘ	Blood Pressure ⓘ	Stress Level ⓘ	Sleep Duration (Hours) ⓘ	Sleep Quality ⓘ
Female	Stage 2 HTN	6.6	6.6	6.7
Male	Stage 1 HTN	5.6	7.2	7.0
Female	Stage 1 HTN	5.5	7.2	7.1
Male	Stage 2 HTN	5.5	7.0	7.6
Male	Elevated	4.9	7.9	7.8
Female	Elevated	4.8	7.7	7.7
Male	Normal	4.3	7.3	7.9
Female	Normal	4.0	7.1	7.8

Source: Sleep Health and Lifestyle Dataset

References

- Tharmalingam, L. (2023, May 26). *Sleep health and lifestyle dataset*. Kaggle.
<https://www.kaggle.com/datasets/uom190346a/sleep-health-and-lifestyle-dataset>
- National Sleep Foundation . (2022). National Sleep Foundation's Sleep in America® Poll.
<https://www.thensf.org/wp-content/uploads/2022/03/NSF-2022-Sleep-in-America-Poll-Report.pdf>