COVID-19 Impact on Work Environment Analysis Report

Introduction

This report explores the impact of the COVID-19 pandemic on various aspects of work, including productivity, stress levels, work-from-home arrangements, and other related factors. The analysis is based on data stored in the `covid_impact_table`, which includes several variables such as increased work hours, work from home status, meetings per day, productivity changes, stress levels, and more.

The goal is to understand the relationship between these variables and how they affect workers during the pandemic, especially in terms of productivity, stress, and health issues.

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1. Data Overview

The table `covid_impact_table` contains data on:

- **Increased Work Hours:** Whether the individual reported increased work hours.
- **Work from Home:** Whether the individual worked from home.
- **Hours Worked Per Day:** Average hours worked per day.
- **Meetings Per Day:** Average number of meetings per day.
- **Productivity Change:** Self-reported productivity change.
- **Stress Level:** Reported stress level (Low, Medium, High).
- **Health Issue:** Whether the individual experienced health issues during the pandemic.
- **Sector:** Industry or sector of work.

The first step was to check for missing values in key columns: `increased_work_hours`, `work_from_home`, `stress_level`, and `sector`.

Missing Values Check:

- No significant missing values were identified in the key columns, allowing us to proceed with analysis confidently.

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2. Exploratory Data Analysis (EDA)

2.1 Summary Statistics

Key statistics such as average hours worked per day, average meetings per day, and productivity change provide an overview of the dataset:

- **Average hours worked per day:**
  - On average, employees worked around 8.00653760147129 `hours` per day.
- **Average meetings per day:**
  - On average, employees had 3.9767170187647496 `meetings` per day.
- **Productivity change:**
  - There was an average productivity change 0.5022.

Other useful metrics include maximum and minimum values for hours worked per day and meetings per day.

2.2 Stress Distribution

Stress levels are categorized as `Low`, `Medium`, and `High`. The distribution shows:

Stress level	Distribution	Percentage distribution
Low stress	2008	49.56%
Medium stress	4956	30.36%
High stress	3036	20.08%

2.3 Sector Distribution

Different industries were affected in various ways. The top sectors reporting impacts were:

Sector distribution	Distribution	Percentage distribution
IT	2546	25.46%
Healthcare	2498	24.98%
Education	2484	24.84%
Retail	2472	24.72%

3. Correlation and Relationships

3.1 Correlation Between Increased Work Hours and Productivity Change

The correlation between increased work hours and productivity change was calculated as:

- **Correlation Coefficient:** 0.006247412320884278

This indicates a very weak or almost negligible positive relationship between the two variables. In practical terms, the increase in work hours has little to no direct impact on productivity change based on this dataset.

3.2 Stress Level vs. Health Issues

Analyzing the relationship between stress levels and health issues:

- High stress levels were associated with an increased likelihood of reporting health issues (`1465 cases of health issues` under high stress).

3.3 Stress Level and Sector Relationship

The relationship between stress levels and sectors was analyzed to identify which sectors had the highest stress levels. The top sectors facing high stress included:

High	Education	741
High	Healthcare	767

3.4 Correlation Between Hours Worked and Productivity Change

- The correlation coefficient between hours worked per day and productivity change was 0.013252835936351078.

  This indicates an extremely weak positive relationship between the two variables. In practical terms, this means that the amount of hours worked has almost no effect on changes in productivity based on this dataset. Any observed changes in productivity are likely due to other factors rather than the hours worked.

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4. Advanced Analysis

4.1 Median of Meetings per Day

The median number of meetings per day was calculated as:

- **Median Meetings per Day:** 3.98134439263628

4.2 Variance in Hours Worked by Stress Levels

Stress level appears to impact the number of hours worked. The average number of hours worked under different stress levels is as follows:

- **Low Stress:** 3.855890706584721 `hours/day`
- **Medium Stress:** 3.9642905457348574 `hours/day`
- **High Stress:** 3.869899595134062 `hours/day`

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5. Conclusion

The analysis shows that the COVID-19 pandemic significantly impacted the work environment, with increased work hours, changes in productivity, and heightened stress levels being prominent. The data indicates correlations between these factors, particularly between stress levels and health issues, and between productivity and work-from-home arrangements.

This analysis provides valuable insights into how individuals and sectors were affected, highlighting the importance of managing work hours, stress, and productivity, especially during a global crisis like the pandemic.

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6. Recommendations

Based on the findings, the following recommendations could help address challenges in work environments during and after a pandemic:

1. **Promote Work-Life Balance:** Organizations should monitor work hours to prevent overwork and ensure productivity without increasing stress.
2. **Support for Remote Work:** Continue offering support for work-from-home arrangements as they seem to affect productivity positively.
3. **Stress Management Programs:** Implement stress management and health support programs, especially in sectors with high stress levels.