Impact of Workplace Stress on Mental Health Conditions of Employees

Introduction:

The modern workplace has undergone significant changes in recent years, particularly with the widespread adoption of remote and hybrid work models. While these new work arrangements provide flexibility and convenience, they also raise important questions about their impact on employees' mental health and overall well-being. This report explores how factors like work-life balance, stress levels, meeting fatigue, sleep quality, and physical activity influence mental health in various work settings.

Using a dataset of 5,000 employees from diverse industries, this study examines the connections between work environments and employee wellness. The dataset includes information on demographic attributes, work patterns, mental health indicators, and stress levels for analysis. Through the creation of informative visualizations and discussions, we aim to identify key trends and actionable insights that organizations can use to support employee well-being.

Our analysis focuses on answering several critical questions:

- What is the role of sleep quality and physical activity in mitigating stress?
- Are there industry-specific patterns in mental health challenges?
- How do stress levels vary across different work locations (remote, hybrid, onsite)?
- What is the relationship between stress levels and mental health conditions across industries, job roles and locations?
- How do age and work location influence work-life balance?

The goal of this report is not only to present findings but also to provide practical recommendations that can help organizations encourage healthier, more productive workplaces. By understanding the challenges employees face and highlighting successful coping strategies, we aim to contribute to better workplace policies and practices. While the dataset has limitations, such as being based on self-reported data and representing only a subset of the global workforce, the findings offer valuable insights into the factors that shape employee well-being.

Methodology:

The dataset was sourced from the Kaggle website, and it contains information on the employee's demographic and mental health. The dataset contains 5000 unique rows, each representing an individual employee, with a total of 20 columns. It contains diverse factors such as the hours worked per week, satisfaction with remote work and mental health related variable, making it well-suited for exploring employee well-being.

To facilitate the analysis, the categorical variables were converted to numerical variables. The table below illustrates the categorical variables that are converted to numerical variables.

Variable
Stress_Level
Mental_Health_Condition
Access_to_Mental_Health_Resources
Productivity_Change
Satisfaction_with_Remote_Work
Physical_Activity
Sleep_Quality

Feature Engineering:

Certain columns are added to the dataset from the existing columns:

1) **Average_Meeting_Duration_per_Week:** Is calculated by dividing total hours worked by the number of virtual meetings.

2)**Experience-to-Age Ratio:** Computed by dividing years of experience by the participant's age.

3)**Work-Life Balance Score:** Determined by combining work-life balance rating, stress level, and satisfaction with remote work.

4)**Physical and Mental Health Index:** Averaged values of physical activity, sleep quality, and access to mental health resources.

5) **Meeting_Fatigue_Score:** calculated by multiplying the number of virtual meetings an individual attends per week with the average duration of those meetings. This score helps quantify the level of fatigue caused by virtual meetings based on both frequency and length.

6) **Overtime Indicator:** assigned a value of 1 if an individual's weekly hours worked over 40 hours indicating overtime, If the hours worked are 40 or less, the indicator is set to 0, indicating no overtime.

7) **Efficiency Score:** calculated by multiplying average productivity with a value that accounts for stress and satisfaction levels. It adjusts the productivity based on how stressed or satisfied someone is, giving a measure of their overall efficiency

Tools used:

This analysis was conducted using the R programming language. Packages such as the dplyr for data cleaning and manipulation and ggplot2 for visualizations are used predominantly.

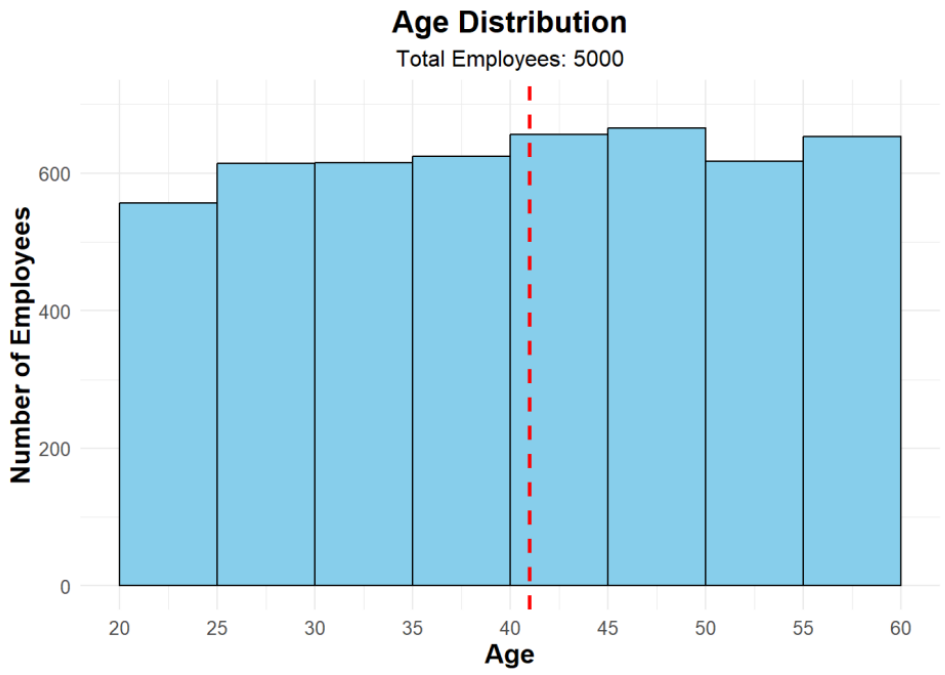
Results:

The analysis revealed several key patterns in the relationship between remote work and employee mental health through multiple visualizations. Each visualization provided unique insights into different aspects of employee well-being and work patterns.

1. Age Distribution Analysis

The histogram of employee age distribution for 5,000 employees shows a symmetric demographic centered around a mean age of 42 years (red dashed line), with the majority aged 35-50. The highest density is in the 40-45 range, representing approximately 650 employees, suggesting a workforce is dominated by mid-career professionals. The data visualization employs five-year age brackets on the x-axis (20-60 years) against employee count (0-700) on the y-axis, utilizing clear binning and consistent scaling to effectively communicate the workforce's age structure.

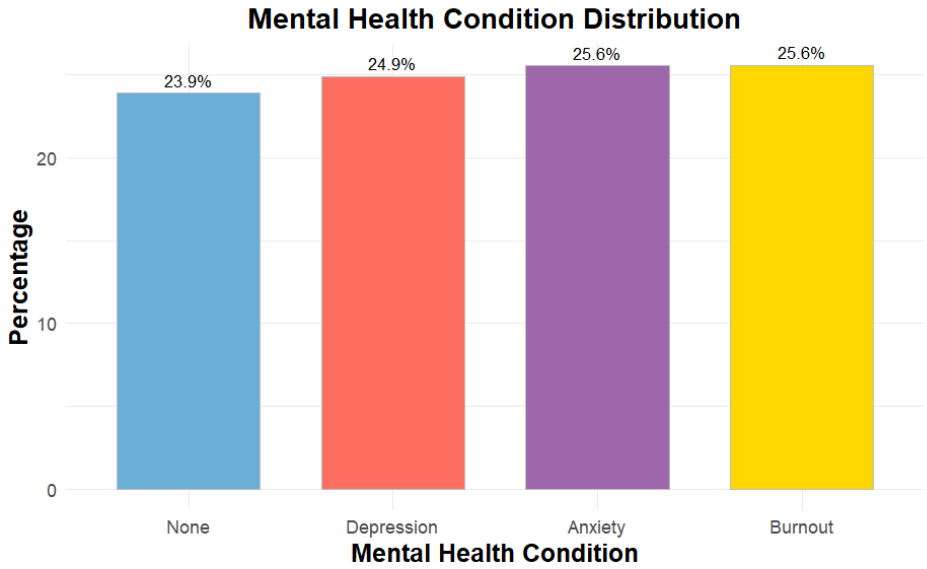
The symmetrical nature of the distribution around the mean age suggests a well-balanced age diversity, which can have important effects on workplace dynamics and plans for employee growth and development. The concentration of mid-career professionals' highlights opportunities to offer targeted development programs. The diversity in age groups also promotes collaboration across career stages, creating a dynamic and balanced workforce. Understanding this age profile is essential



2. Mental Health Condition Distribution

The visualization employs a bar chart design to effectively compare discrete categories of mental health conditions. The bar chart uses distinct colors (blue, coral, purple, yellow) and equal-width bars to clearly compare the prevalence of mental health conditions, with the y-axis scaled from 0-25% to show meaningful differences. The analysis of Mental Health Conditions revealed that depression, anxiety, and burnout are reported at nearly equal rates, each affecting approximately 25% of the workforce. Meanwhile, 23.9% of employees reported no mental health condition. This analysis suggests that mental health challenges are common across the workforce, emphasizing the need for better support systems. The nearly uniform distribution, with all conditions falling within a 0.7% range, suggests that workplace factors might systematically influence mental health outcomes, rather than random occurrence.

This data highlights a critical organizational concern: 76.1% of employees experience at least one mental health condition, indicating a need for proactive workplace interventions. The slightly higher prevalence of anxiety and burnout rates compared to depression may reflect specific workplace stressors, such as deadlines or performance pressures. Interestingly, 23.9% of employees reporting no mental health conditions presents an opportunity to identify protective factors and successful coping strategies that could be replicated across the organization.

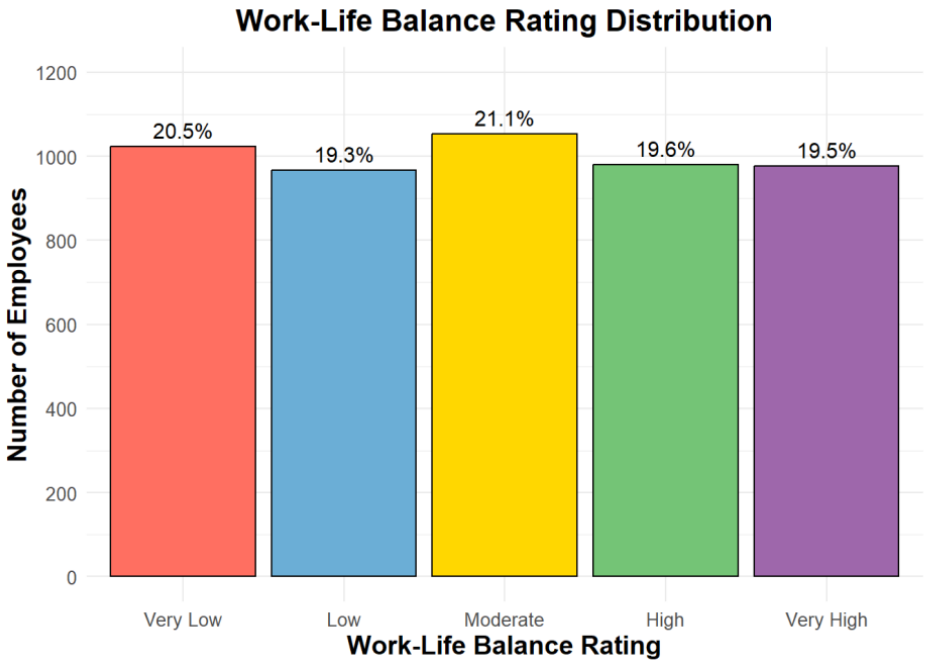


Given the equal distribution shown in the visualization, organizations should develop balanced support systems that address all three conditions with equal priority. This analysis underscores the importance of integrated mental health support programs that address multiple conditions simultaneously while fostering an environment that promotes overall employee wellness. Regular monitoring of these metrics would be valuable to assess the effectiveness of interventions. This visualization effectively communicates both the prevalence and uniformity of mental health challenges in the workforce, supporting data-driven decision-making for workplace wellness initiatives.

3. Work Life Balance Rating Distribution

Work-life balance ratings assess employees' perceptions of balancing work responsibilities with personal commitments, shaped by workload, flexibility, and time management. A bar chart visualizes the distribution across five categories: Very Low (coral), Low (blue), Moderate (yellow), High (green), and Very High (purple). The y-axis represents employee counts, with corresponding percentages displayed above each bar. Equal-width bars and consistent spacing make comparisons straightforward.

The data shows a nearly uniform distribution, with ratings ranging from 19.3% to 21.1%. Moderate ratings peak at 21.1%, followed closely by Very Low (20.5%). Low, High, and Very High ratings show minimal variation, differing by less than 0.3%. This near-equal distribution indicates diverse experiences with work-life balance across the organization, with some employees achieving balance while others struggle to maintain it, showing a significant variation in how different individuals manage their work-life boundaries.



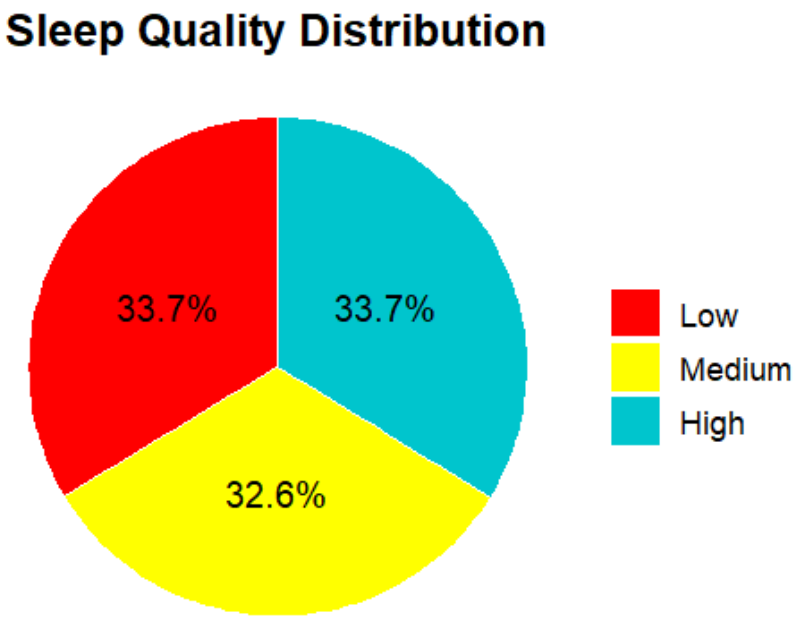
A concerning pattern emerges when combining the rating categories: 39.8% of employees report poor work-life balance (very low and low), while a similar percentage, 39.1%, report positive balance (high and very high). The moderate category, representing 21.1% of employees, bridges these two extremes. This indicates a potential systemic issue in how work-life balance is structured or supported within the organization.

These findings suggest several actionable insights for organizational supervision. The even distribution across ratings indicates that work-life balance experiences are not randomly distributed but may be influenced by specific departmental, role-based, or policy factors. Organizations could investigate the practices and conditions present among employees reporting high and very high balance to identify successful strategies for improvement. The substantial proportion of employees reporting poor balance (39.8%) signals an urgent need for intervention, potentially through flexible work arrangements, clearer boundaries between work and personal time, or enhanced support systems. Regular monitoring of these distributions could help assess the effectiveness of any implemented changes and ensure progress toward better work-life balance across the workforce. This insight can help organizations tailor strategies to enhance work-life harmony.

4. Sleep Quality Distribution

The visualization uses a pie chart to display sleep quality distribution, with distinct colors: red for Low, yellow for Medium, and turquoise for High. The pie chart effectively shows proportional relationships, while percentage labels provide precise data. A clear legend beneath the chart ensures easy interpretation. The data reveals a balanced distribution of sleep quality across the workforce. Both Low and High sleep quality categories show identical proportions at 33.7% each, while Medium quality sleep accounts for

32.6% of responses. This near-equal three-way split, with all categories falling within 1.1 percentage points of each other, highlights varied sleep experiences across the workforce without any clear skew.



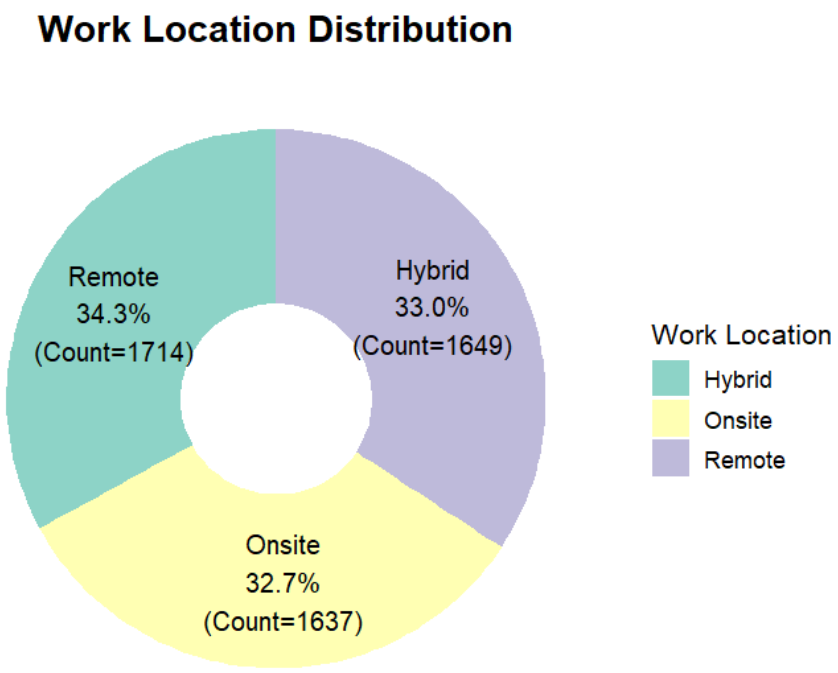
The findings present a concerning insight: approximately one-third (33.7%) of employees report low sleep quality, potentially impacting their workplace performance, mental health, and overall well-being. Equally noteworthy is that another third (33.7%) report high sleep quality, providing an opportunity to investigate what factors contribute to better sleep among this group. The substantial middle group (32.6%) reporting medium sleep quality might represent employees whose sleep patterns could be improved through focused actions.

These results indicate a clear need for organizational attention to sleep health. The equal distribution suggests that poor sleep quality is not an isolated issue but affects a significant portion of the workforce. Organizations could benefit from investigating the correlations between sleep quality and various workplace factors such as schedules, stress levels, and workload. The data supports the implementation of comprehensive wellness programs that include sleep hygiene education, stress management resources and policies that respect employees' rest periods. Regular monitoring of sleep quality metrics could help evaluate the effectiveness of these specific measures and regulate the support programs accordingly.

5. Work Location Distribution:

The visualization is a donut chart that illustrates the distribution of employees across three work location categories: Remote, Hybrid, and Onsite. Each segment is color-coded—turquoise for Remote, purple for Hybrid, and yellow for Onsite, along with labels with both the percentage and count of employees for clarity. A legend to the right reinforces the color-coding. The data reveals a near-even distribution of work locations among employees. Remote work has the highest proportion, accounting for 34.3% (1,714 employees), followed closely by Hybrid at 33.0% (1,649 employees) and Onsite at 32.7% (1,637

employees). The differences between the categories are marginal, with less than 1.6 percentage points separating them.

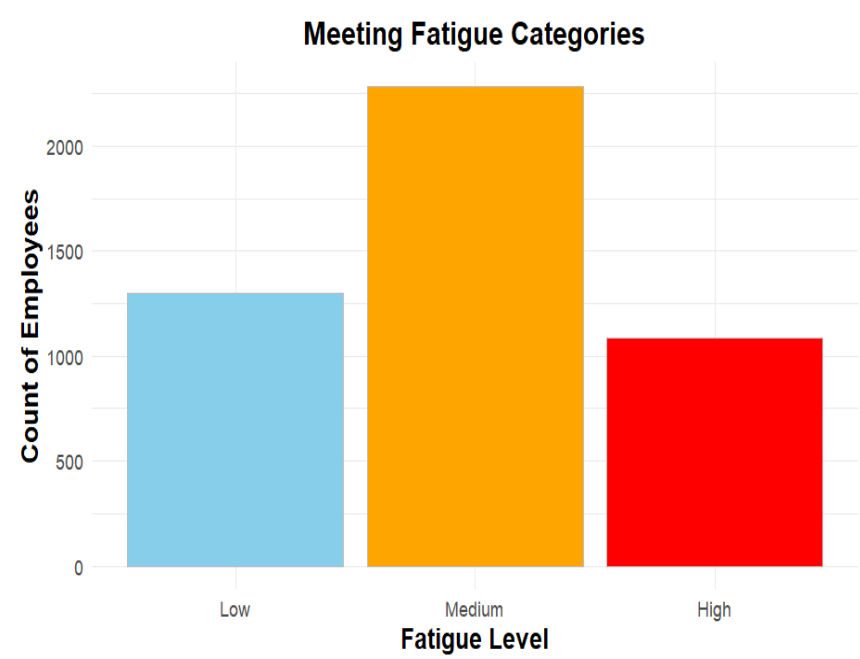


The findings suggest that the workforce is almost equally divided among the three work arrangements, highlighting diverse preferences or organizational policies regarding work location. The slightly higher preference for remote work could indicate the workforce's inclination toward flexibility. However, the balanced distribution shows that hybrid and onsite arrangements are also widely accepted.

These insights can inform workplace policies and infrastructure planning. For example, organizations might focus on optimizing resources for hybrid and remote setups, such as digital collaboration tools and flexible scheduling, while maintaining adequate support for onsite operations. Understanding the factors driving preferences in each category can help refine these strategies further.

6. Meeting Fatigue Categories

The bar chart illustrates meeting fatigue levels using three colors: light blue for Low, orange for Medium, and red for High fatigue, with the y-axis showing the number of employees in each category. Meeting fatigue is calculated by multiplying the number of meetings by their average duration per week, capturing the overall meeting burden on employees. Medium fatigue is the most prevalent, affecting around 2,300 employees, followed by 1,300 employees experiencing Low fatigue, and 1,100 reporting High fatigue. The bell curve-like distribution emphasizes the concentration around medium levels, indicating that most employees experience a moderate meeting burden.

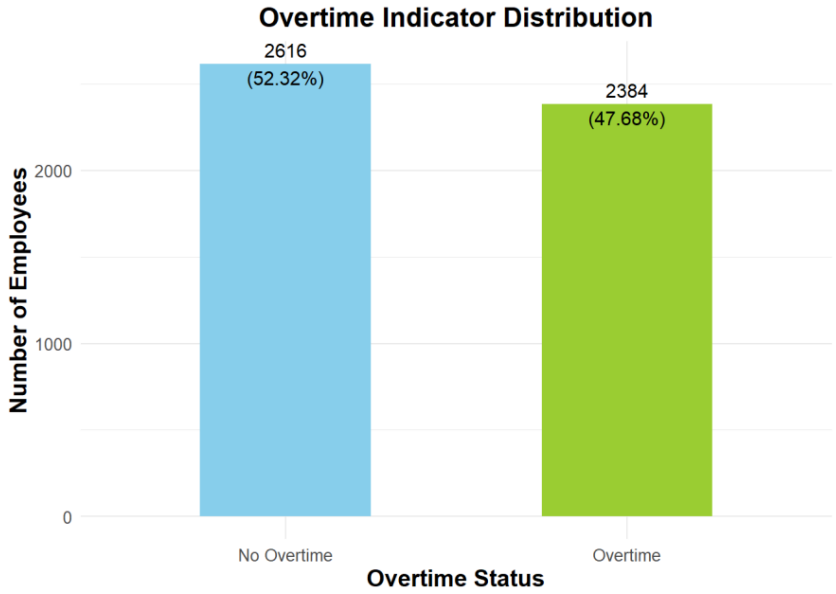


These insights highlight the impact of organizational meeting practices on employee well-being. While the majority report manageable fatigue, the significant number of employees reporting high fatigue raises concerns about potential productivity and well-being impacts for this group. The relatively large low-fatigue group might offer valuable insights into effective meeting management practices or role structures that minimize meeting burden.

These results highlight the need for targeted organizational interventions in meeting management. The skew toward medium and high fatigue levels suggests that current meeting practices may need refinement. Policies like meeting-free days, mandatory buffer times, or caps on daily meeting hours could mitigate high fatigue. Developing differentiated approaches for various fatigue levels, potentially including meeting optimization strategies, calendar management tools, and policy adjustments are needed. Simultaneously, exploring the practices of low-fatigue groups may reveal scalable strategies to optimize meeting workloads. Regular monitoring of these metrics could help assess the effectiveness of interventions and guide ongoing improvements to reduce meeting fatigue across the workforce. Overall, the analysis highlights the importance of balancing frequency and duration of meetings to sustain productivity and employee well-being.

6. Overtime Indicator

The visualization employs a bar chart design the distribution of employees working overtime (more than 40 hours per week) versus those who do not, with contrasting colors (light blue for No Overtime and green for Overtime) to distinguish between the two categories. The y-axis displays the absolute count of employees, with precise numerical values and percentages shown above each bar. The data reveals a nearly even split in overtime patterns across the workforce, with a slight majority (2,616 employees or 52.32%) working regular hours and a substantial portion (2,384 employees or 47.68%) exceeding 40 hours per week. This small difference of 4.64 percentage points (232 employees) highlights that overtime work is not an isolated issue but a widespread phenomenon.



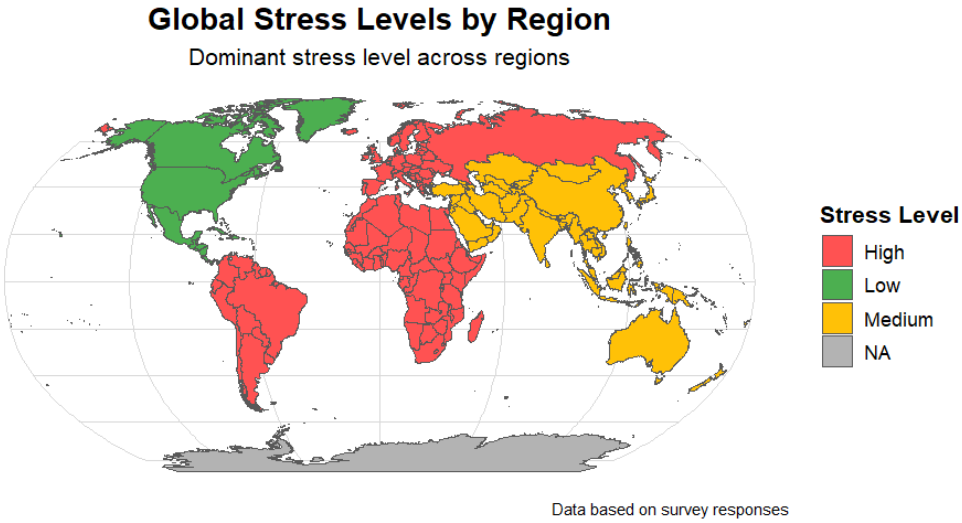
These findings present significant insights into organizational work patterns and potential wellness concerns. The fact that nearly half of all employees work overtime indicates this isn't a coincidence but rather a harsh pattern in work culture. This high proportion of overtime workers raises important questions about workload distribution, resource allocation, and potential understaffing in certain areas. Such patterns can lead to employee burnout, reduced productivity, and compromised work-life balance.

To address these issues, organizations should investigate the root causes of overtime, including additional hiring, workforce capacity planning, project timelines, and work distribution practices. Regular monitoring of overtime patterns, coupled with employee feedback, could help evaluate the effectiveness of these interventions and guide adjustments to support more sustainable work patterns. The goal should be to shift the distribution toward more employees maintaining regular working hours while ensuring business objectives are met efficiently.

7. Global Stress Levels by Region

This choropleth map illustrates dominant stress levels worldwide, with a clear color scheme (green for Low, yellow for Medium, red for High, gray for NA) and an informative legend. The subtitle "Dominant stress level across regions" provides helpful context for interpretation. The map's projection balances clarity and regional accuracy, while the subtitle provides useful context for interpretation.

The map suggests regional disparities in stress levels, with North America exhibiting lower stress levels, possibly indicative of established workplace wellness practices. Conversely, higher stress levels are seen across much of Africa, South America, and parts of Asia, and Europe potentially influenced by economic pressures, differing workplace norms, or limited access to mental health resources. We only have continent-level data, not country-level data, so it may not be intuitive to say that Switzerland has more stress than the USA. However, as a whole, Europe is experiencing higher stress levels. For instance, countries like Ukraine, Greece, and Italy, which are in Europe, have high unemployment and are suffering from war. The graph is calculated by the percentage of high-stress individuals in each region. Oceania and Southeast Asia show predominantly medium stress levels, reflecting transitional work environments.



It's important to view these patterns carefully. The stress levels might be affected by how the data was collected and whether it represents each region accurately. For example, while North America and western Europe show low stress levels, this could be influenced by how people report stress or how the survey was done. Similarly, surprising results, like higher stress in parts of Europe, need more research into local workplace policies or cultural differences. These findings provide valuable insights but should be approached with caution due to potential influencing factors.

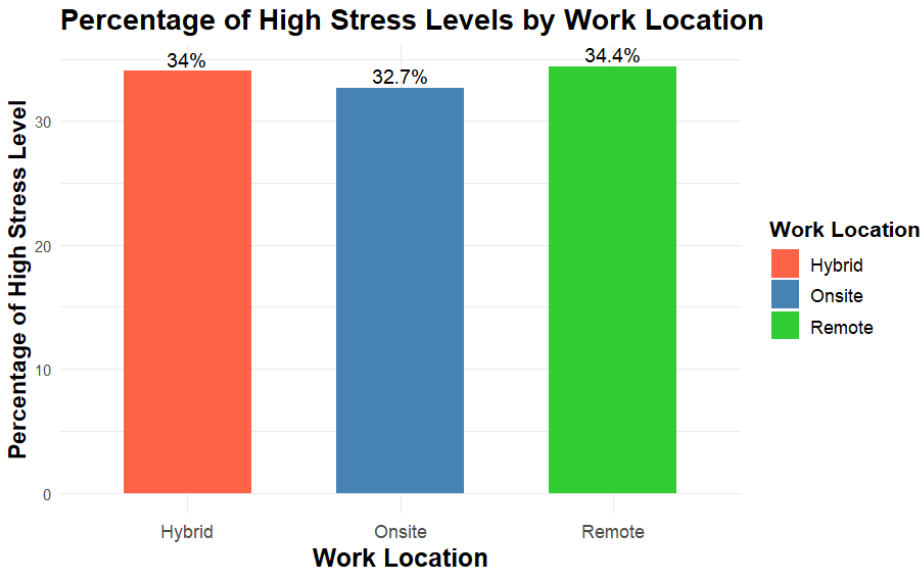
The interpretation of regional differences in workplace stress requires careful consideration of data collection methods. Survey approaches may have varied between regions, potentially affecting the results. For instance, an urban-focused sample in one region versus a broader geographical spread in another could create misleading comparisons in stress levels. The lack of information about when and how the stress data was collected limits the ability to draw firm conclusions. If certain industries or urban areas are overrepresented in particular regions, this could skew the findings. Cultural differences in how stress is understood and reported could also influence the regional patterns observed in the data.

Future research would benefit from accounting for regional variations in workplace culture, economic conditions, and access to mental health resources to better contextualize stress levels. Including detailed information about data collection methods and sources would enhance the transparency and reliability of the findings. Examining connections between reported stress levels and specific workplace policies could provide more meaningful insights into the observed patterns. Studies that explore correlations between stress rates and regional factors such as economic pressures, sector-specific challenges, and cultural attitudes toward mental health could offer valuable context for understanding these geographical variations. This additional context would help organizations develop more effective region-specific strategies for managing workplace stress.

8. Percentage of High Stress Levels by Work Location:

This bar chart depicts the percentage of employees experiencing high stress levels across three work location categories: Hybrid, Onsite, and Remote. Each category is represented by distinct colors - red for Hybrid, blue for Onsite, and green for Remote - enhancing visual clarity. The y-axis shows the percentage of employees reporting high stress levels in each group, with precise values labeled above each bar.

The data reveals comparable levels of high stress across the work locations. Remote employees report the highest percentage at 34.4%, closely followed by Hybrid employees at 34%, while Onsite employees exhibit the lowest percentage at 32.7%. The narrow variation between the categories suggests that high stress levels are prevalent across all work setups, while slightly more among Remote and Hybrid employees.



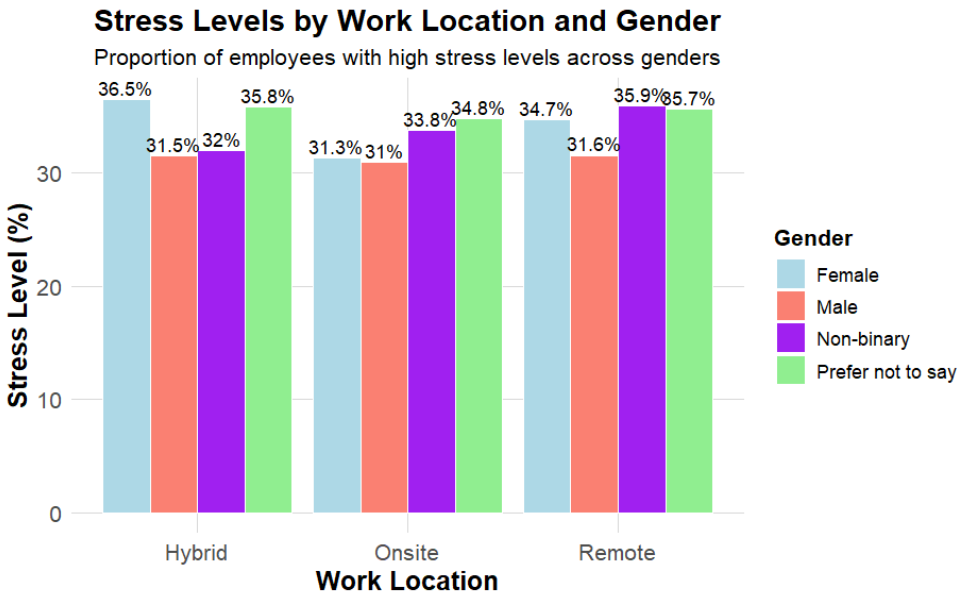
These findings underscore the need for stress mitigation strategies tailored to each work location. For remote employees, interventions like virtual social interactions and flexibility in schedules could be beneficial, while hybrid workers might benefit from streamlined transitions between home and office. Onsite stress could be addressed through workplace amenities and support systems. Understanding the unique challenges faced by employees in each work setting is critical to reducing high stress levels effectively.

9. Stress Levels distribution at Different Work Locations based on Gender

This grouped bar chart illustrates the proportion of employees reporting high stress levels across work locations (Hybrid, Onsite, Remote) segmented by gender categories: Female, Male, Non-binary, and "Prefer not to say." Each group is color-coded for differentiation: light blue for Female, red for Male, purple for Non-binary, and green for "Prefer not to say." The y-axis indicates the percentage of employees experiencing high stress levels, with the exact percentages displayed above each bar.

For Hybrid work locations, Females report the highest stress levels at 36.5%, followed closely by the "Prefer not to say" group at 35.8%. Males and Non-binary individuals report slightly lower levels, indicating significant gender-based variation. This highlights the need to address specific challenges faced

by Females and the "Prefer not to say" group in hybrid settings. In Onsite work settings, stress levels are more balanced across genders. Females report the highest stress at 33.8%, while Males and Non-binary employees report identical levels of 31%. This suggests onsite settings may reduce gender disparities seen in hybrid environments, though differences still persist. For Remote work locations, Non-binary individuals experience the highest stress at 35.9%, followed by the "Prefer not to say" group at 35.7%. Females report slightly lower levels at 34.8%, while Males exhibit the lowest stress at 31.6%. Elevated stress for Non-binary and "Prefer not to say" groups in remote settings suggests challenges like isolation or inadequate support.



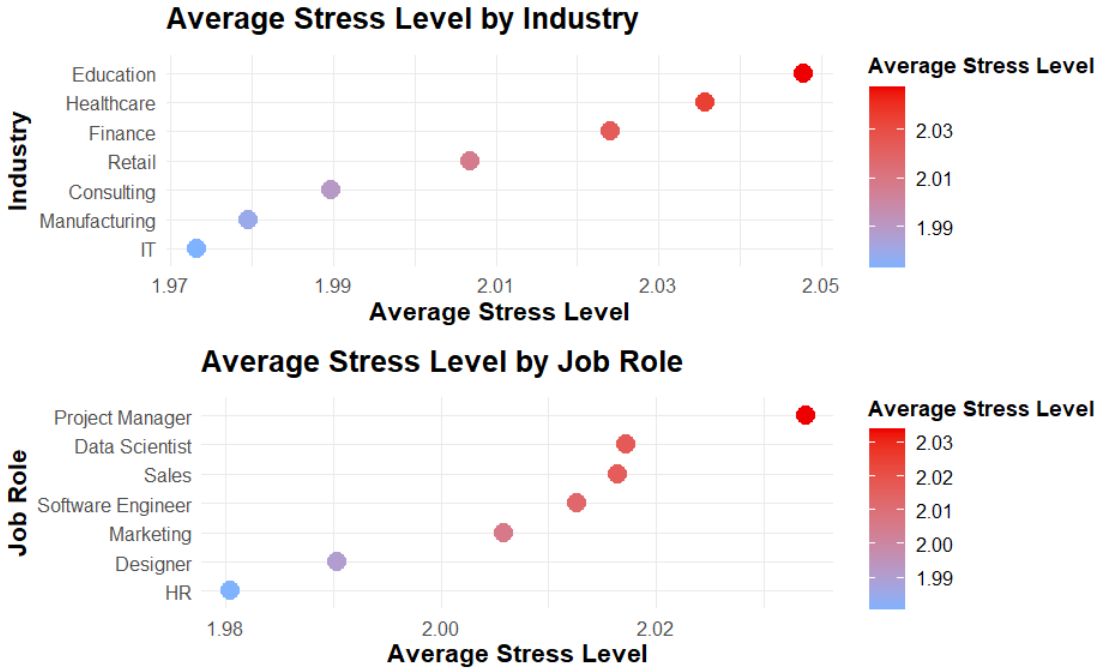
The graph provides valuable insights into how work settings and gender influence stress levels. The findings suggest that tailored policies are needed for specific groups to reduce stress, particularly in hybrid and remote work environments. For example, organizations could explore the sources of stress for Females and Non-binary individuals and develop targeted support programs, such as mentorship opportunities, better communication tools, and mental health resources. The design and analysis of this plot align with the overall goal of improving workplace conditions by identifying and addressing disparities in employee well-being.

10. Average Stress Level by Industry and Job Role

The visualizations depict **average stress levels across industries** (top graph) and **job roles** (bottom graph), utilizing a color gradient from blue to red to represent increasing stress levels. Each point represents the average stress level for a particular category, with larger, redder points highlighting higher stress levels. The x-axis shows the average stress level, ranging from approximately 1.97 to 2.05 for industries and 1.98 to 2.03 for job roles. Categories are arranged vertically to enable straightforward comparison, while the color intensity and size effectively draw attention to significant patterns in the data.

In the industry-level graph, Education stands out as the most stressful industry, represented by a large red dot. This likely reflects the high demands placed on educators, such as managing students, administrative responsibilities, and long working hours. Following closely are Healthcare and Finance, which show

slightly lower stress levels but still high enough to fall into the reddish range. This is understandable given the critical, often high-stakes nature of work in these fields, whether it's saving lives or managing financial risks. In contrast, industries like IT and Manufacturing exhibit the lowest average stress levels, marked by blue points. Retail and Consulting fall in the mid-range, indicating moderate stress levels potentially caused by sales targets or client demands.



The job-role graph reveals that Project Managers experience the highest stress levels, denoted by a prominent red point. This aligns with the demanding nature of project management, which involves multitasking, decision-making, and accountability for project success. Sales and Data Scientist roles also exhibit higher stress levels, represented by darker red points, tight deadlines, performance pressures, or complex problem-solving demands. In contrast, HR and Designer roles report the lowest average stress levels, marked by smaller blue dots suggesting a more balanced workload or less time-sensitive tasks. Software Engineers and Marketing Specialists fall into the mid-range, reflecting varying workloads or project pressures depending on specific organizational contexts.

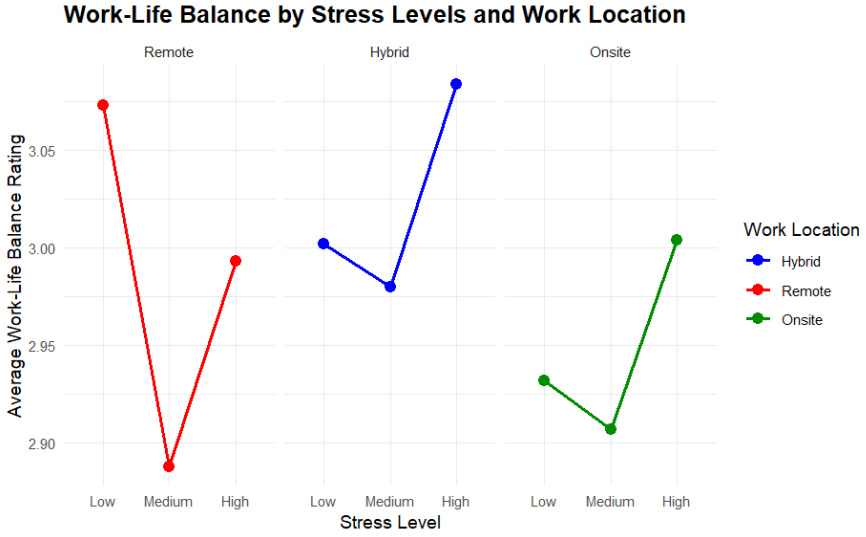
These findings highlight critical insights for organizational stress management. Industries like Education, Healthcare, and Finance, as well as roles like Project Managers and Sales Professionals, may benefit from targeted interventions such as stress management programs, more flexible work schedules, and better workload balancing. Additionally, organizations could consider adopting best practices from lower-stress industries, such as IT and Manufacturing, to improve workplace environments. Regular employee surveys and wellness programs can help monitor stress levels and assess the effectiveness of these measures. The graphs provide actionable insights for organizations looking to enhance employee well-being. By identifying the most stressful industries and roles, leaders can implement tailored strategies to address these challenges, fostering a healthier, more productive workforce.

11. Work Life Balance and Stress level by Work Location

The chart examines the relationship between work-life balance ratings and stress levels across three types of work arrangements: Remote, Hybrid, and Onsite. Each work location is represented by a distinct color - red for remote workers, blue for hybrid workers, and green for onsite workers. The x-axis categorizes stress levels as Low, Medium, and High, while the y-axis measures the average work-life balance rating. This visualization aims to highlight how work-life balance is impacted by varying stress levels in each work setup.

For remote workers, represented by the red line, the work-life balance rating is highest when stress levels are low. However, as stress levels increase to medium, the rating drops sharply, marking the lowest work-life balance across all groups and stress levels. Interestingly, when stress levels reach high, the balance rating recovers. This suggests that while remote workers may initially struggle to cope with increasing stress, they adapt better when stress becomes more intense, likely due to the inherent flexibility of remote work setups.

Hybrid workers, shown with the blue line, display a unique trend. Their work-life balance rating starts low at low stress levels, indicating that balancing the demands of both remote and onsite work may initially be challenging. The rating remains steady at medium stress levels, showing little fluctuation. At high stress levels, however, hybrid workers reach the highest work-life balance rating across all groups, suggesting that this group may effectively hold the benefits of both remote and onsite arrangements under stressful conditions.



For onsite workers, represented by the green line, work-life balance is slightly higher at low stress levels. However, it dips at medium stress levels, indicating that workplace constraints, such as fixed schedules or lack of flexibility, may exacerbate stress. Interestingly, as stress levels rise to high, onsite workers' balance rating improves, potentially reflecting the role of workplace support structures or camaraderie in helping employees manage stress in high-pressure situations.

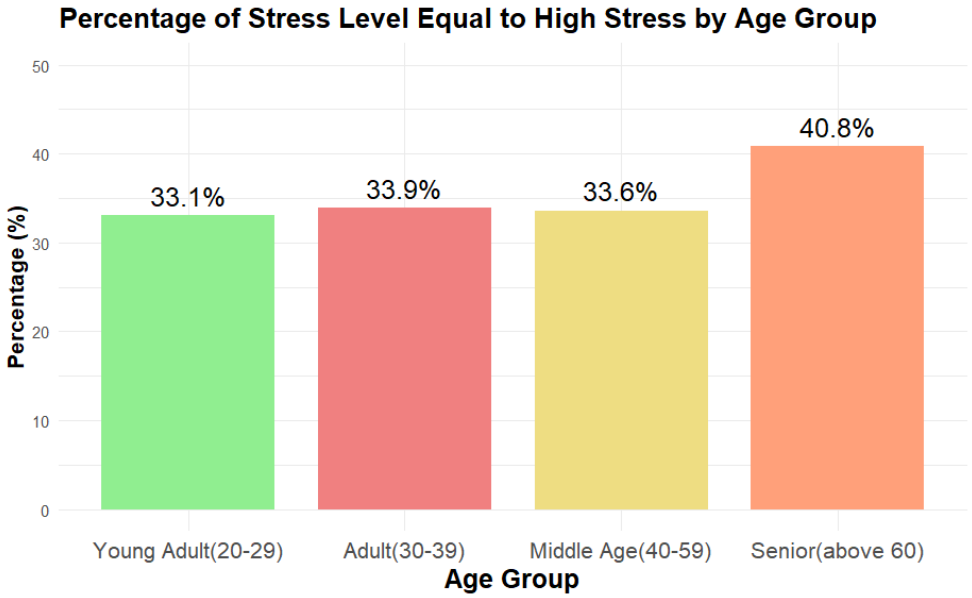
These observations reveal distinct patterns in how work-life balance affected with stress levels across work settings. These findings highlight several actionable insights for organizations. For remote workers, introducing structured routines and mental health support systems could lower the sharp decline in balance at medium stress levels. For hybrid workers, maintaining the flexibility and communication that foster adaptability under stress is essential. For onsite workers, offering flexible schedules or providing

additional stress management training could address the dip in balance at medium stress levels. Tailoring workplace policies to these insights can improve employee well-being and overall productivity across different work arrangements.

14. Percentage of Stress Levels Equal to High Stress by Age Group

The bar chart illustrates the percentage of individuals experiencing high stress levels across four age groups: Young Adult (20–29), Adult (30–39), Middle Age (40–59), and Senior (above 60). The x-axis represents the age groups, while the y-axis shows the percentage of individuals reporting high stress levels.

The Senior group (above 60) reports the highest percentage of individuals experiencing high stress (40.8%), indicating that older adults may face unique stressors, such as health challenges or reduced workplace flexibility. The remaining three groups show relatively similar percentages, with Adults (30–39) experiencing slightly more stress (33.9%), followed closely by Middle Age (40–59) at 33.6%, and Young Adults (20–29) at 33.1%.



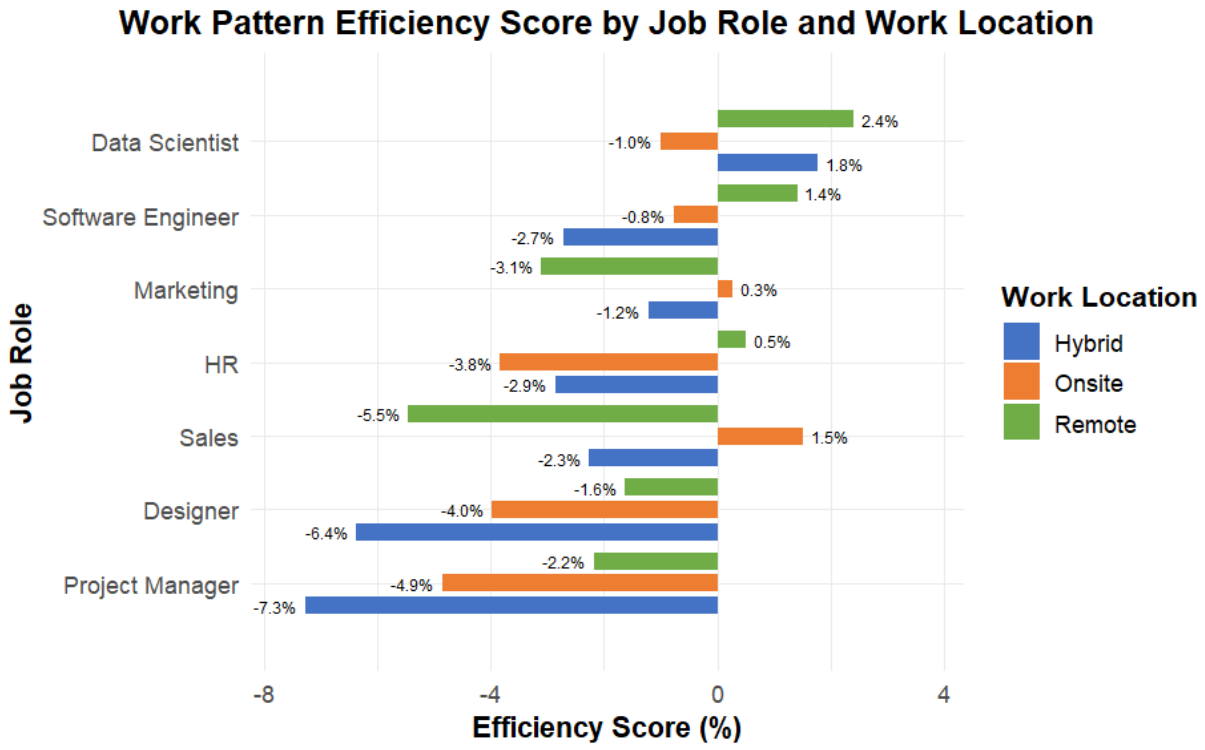
These findings suggest that stress is most prevalent among seniors and relatively consistent across younger age groups. Organizations and policymakers might consider tailored interventions, such as stress management programs for seniors and proactive strategies to address stress at early career stages for younger groups.

15. Work Pattern Efficiency Score by Job Role and Work Location

The chart examines Work Pattern Efficiency Scores across job roles and work locations, providing insights into how specific work arrangements impact productivity. The y-axis represents job roles, and the x-axis shows changes in efficiency scores (%). Each bar is color-coded by work location: red for Remote, blue for Hybrid, and green for Onsite. The percentage changes (positive or negative) indicate how efficiency varies relative to the baseline for each role. The use of distinct colors and a consistent scale allows for easy comparison across roles and work arrangements.

Remote work shows a distinct advantage for technical roles such as Data Scientists (+2.4%) and Software Engineers (+1.4%), likely due to fewer interruptions and the ability to focus on isolated environments. Conversely, onsite work benefits roles that rely heavily on interpersonal interaction, such as Sales (+1.5%) and Marketing (+0.3%), where face-to-face collaboration may enhance productivity.

However, hybrid work presents challenges for certain roles, with significant efficiency declines observed for Designers (-6.4%) and Project Managers (-7.3%). This suggests that balancing remote and onsite demands may be disruptive for roles requiring consistent workflows or direct engagement. Notably, Data Scientists show a positive efficiency gain of +1.8% in hybrid work, indicating that the flexibility of this arrangement may better suit their needs compared to other roles.



The findings emphasize the importance of customizing work arrangements based on the unique needs of each job role. For technical roles, such as Data Scientists and Software Engineers, remote or hybrid work arrangements seem to be more effective, allowing for uninterrupted focus and flexible working conditions. Collaborative roles, such as Sales and Marketing, perform better when onsite, where in-person interactions can promote better communication and quicker decision-making.

The results also indicate that Hybrid work, while popular, might not be suitable for all roles, particularly those that require a balance between independent work and collaboration, like Designers and Project Managers. These roles may benefit from clearer boundaries between remote and onsite work or structured schedules to avoid disruptions in efficiency. Organizations should move away from a one-size-fits-all approach to work arrangements and instead design work models tailored to the specific needs and tasks of each job role. Such customization could lead to better productivity and employee satisfaction, ensuring that both individual and collaborative tasks are supported by the most effective work environment.

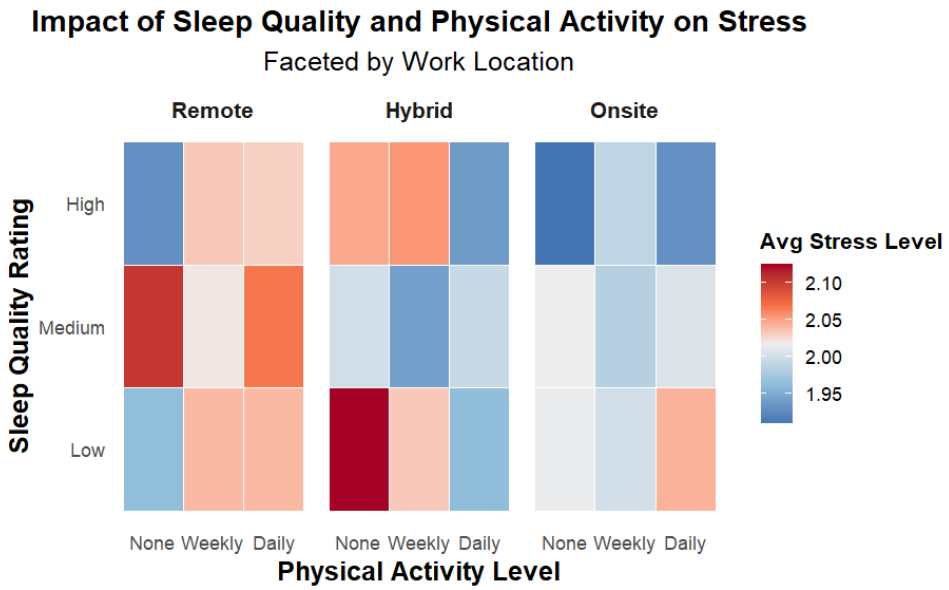
16. Impact of Sleep Quality and Physical Activity on Stress

The heatmap illustrates the impact of sleep quality and physical activity on stress levels, with color intensity representing average stress levels. The y-axis categorizes sleep quality into Low, Medium, and High, while the x-axis divides physical activity into None, Weekly, and Daily. Stress levels are color-coded, ranging from blue (lower stress) to red (higher stress), and the data is segmented by work location: Remote, Hybrid, and Onsite. Stress levels are calculated based on self-reported measures, reflecting the combined effects of sleep quality and physical activity on employee well-being. High sleep quality and regular physical activity correspond to lower stress levels across all work locations, while low sleep quality and inactivity contribute to higher stress.

For remote workers, stress levels appear highly dependent on a combination of sleep quality and physical activity. Low physical activity (None) is associated with the highest stress levels, particularly when paired with Medium sleep quality, as indicated by the dark red shade. Conversely, remote workers with high sleep quality and no physical activity report significantly lower stress, denoted by the light blue shades. This pattern suggests that prioritizing sleep quality can greatly mitigate stress for those working remotely, where boundaries between work and personal life often blur.

In the hybrid work setting, the stress pattern is more varied, reflecting the complex dynamics of alternating between remote and onsite work. High stress levels are observed when both sleep quality and physical activity are low, as seen in the dark red shades under Low sleep quality and no physical activity. However, even with high sleep quality, stress does not decrease as consistently as in the remote or onsite settings. This variability indicates that hybrid workers may face unique stressors, such as adjusting to two work environments, which could dilute the positive effects of physical activity and sleep.

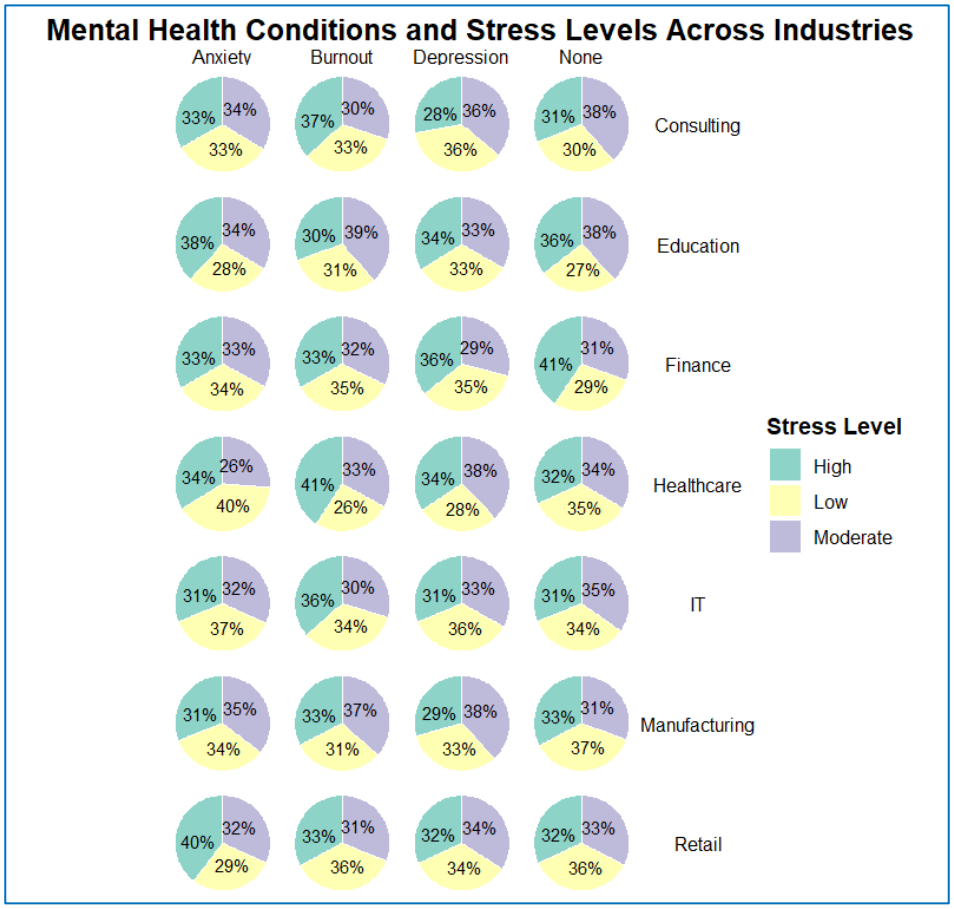
For onsite workers, sleep quality appears to be the most influential factor in determining stress levels. High sleep quality consistently corresponds to lower stress across all physical activity levels, as shown by the prevalence of blue shades in the top row. However, when sleep quality is low, even daily physical activity does not fully reduce stress, as indicated by the lighter red shades. This suggests that onsite work may involve stressors (e.g., commuting, rigid schedules) that are less easily counterbalanced by physical activity compared to other work settings.



These findings offer valuable insights for organizational wellness initiatives aimed at reducing employee stress. For remote workers, interventions could focus on encouraging physical activity, such as promoting exercise challenges or subsidizing fitness memberships. For onsite workers, improving sleep hygiene through education on sleep habits and flexible shift scheduling could yield significant benefits. Hybrid workers may require a more comprehensive approach, addressing both physical activity and stress management techniques to navigate the dual nature of their work environment. Policies such as meeting-free times, flexible schedules to allow for exercise, and educational campaigns on sleep hygiene can have targeted impacts. Additionally, monitoring stress levels over time and identifying successful strategies within low-stress groups could provide scalable solutions for the broader workforce. Overall, balancing sleep quality and physical activity with the demands of different work arrangements is critical to improving employee well-being and productivity.

17. Mental Health Conditions and Stress Levels Across Industries

The plot displays the distribution of stress levels - High, Moderate, and Low - across different mental health conditions (Anxiety, Burnout, Depression, and None) in a variety of industries, including Consulting, Education, Finance, Healthcare, IT, Manufacturing, and Retail. Each cell in the grid represents a pie chart where the proportions of stress levels are visually segmented and color-coded: teal for High stress, purple for Moderate stress, and yellow for Low stress. Percentages within each slice provide a detailed breakdown of the stress distribution in relation to specific mental health conditions across industries.



A key trend observed across industries is that employees experiencing Anxiety, Burnout, or Depression report higher levels of Moderate and High stress compared to those with no reported mental health conditions. For instance, in Healthcare and Consulting, Burnout is particularly associated with elevated High stress levels (41% and 37%, respectively). Similarly, Education and Finance exhibit a greater concentration of Moderate stress for conditions like Anxiety and Depression, reflecting the pressures of these industries.

Industries like Retail and Manufacturing stand out for having a relatively higher proportion of Low stress, especially among employees with Anxiety or Burnout. For example, 40% of Retail employees experiencing Anxiety report Low stress. This trend suggests that certain workplace practices or support systems in these industries may be more effective at mitigating stress compared to others.

Overall, the findings highlight clear links between mental health conditions and stress levels, with Anxiety, Burnout, and Depression contributing to elevated stress across industries. Industries such as Healthcare, Consulting, and Education show more pronounced levels of stress, suggesting the need for targeted interventions to support employee well-being. Organizations in these sectors could benefit from implementing mental health support programs, flexible work arrangements, and stress management resources.

On the other hand, industries like Retail provide a potential opportunity to examine practices that contribute to lower stress levels and apply these strategies to more stressful work environments. These

insights emphasize the importance of addressing mental health challenges to create healthier, more productive workplaces while tailoring interventions to specific industry needs.

Discussion:

Our study provides a comprehensive look at how workplace stress and modern work arrangements influence employee mental health and well-being. By examining data from 5,000 employees across diverse industries, we uncovered significant insights that align with our goal of understanding the complex dynamics of work-life balance, stress levels, meeting fatigue, sleep quality, and physical activity in different work environments."

"The results revealed that stress significantly impacts work-life balance, with remote workers demonstrating better work efficiency rates than onsite and hybrid workers. This is likely due to fewer interruptions, greater flexibility, and the ability to create personalized work environments that cater to individual needs. However, onsite and hybrid workers also benefit from social interactions and structured schedules, which can provide their own advantages in certain roles."

"Industries such as Education, Healthcare, and Retail were identified as particularly high-stress environments due to their demanding workloads, while job roles like Project Managers and Sales Professionals also faced elevated stress levels, underscoring the need for targeted support in these areas. An important takeaway is the critical role of physical activity and sleep quality in mitigating stress. Employees with higher sleep quality and regular physical activity consistently reported lower stress levels, suggesting that wellness initiatives focused on these factors can be highly effective. At the same time, the analysis of mental health conditions showed that challenges like anxiety, depression, and burnout affect 76% of employees, highlighting the systemic nature of workplace stressors and the urgent need for holistic mental health programs. Interestingly, the nearly 24% of employees who reported no mental health conditions offer a potential avenue for identifying protective factors and successful coping strategies."

"Despite these findings, certain challenges emerged. For example, the regional disparities in stress levels raise questions about the consistency of data collection methods and cultural differences in self-reporting stress. Additionally, the near-uniform distribution of mental health conditions across categories suggests that workplace factors might be driving these outcomes, emphasizing the need for deeper investigation into organizational policies and practices that contribute to these trends."

"Looking forward, several areas for future research could expand on these findings. Longitudinal studies would help track stress levels over time and evaluate the long-term impact of workplace interventions. Cross-cultural studies could provide insights into how workplace conditions and mental health challenges differ globally, enabling the development of culturally sensitive policies. Further, machine learning tools could enhance predictive modeling to identify early warning signs of burnout or high stress, empowering organizations to take proactive action. Examining factors behind the success of employees with no reported mental health conditions could also offer valuable strategies for fostering resilience across the workforce."

"The broader implications of this work highlight the critical need for organizations to prioritize employee well-being. By tailoring interventions to specific industries, roles, and work arrangements, businesses can address the unique challenges their employees face. Incorporating wellness initiatives like flexible

scheduling, meeting management strategies, and sleep hygiene education can reduce stress and improve overall workplace productivity. This study underscores that managing workplace stress is not just a matter of individual effort—it requires systemic, organizational change to create healthier, more sustainable work environments."

"In conclusion, while this study offers actionable insights, it also identifies opportunities for further exploration. By addressing limitations, refining data collection methods, and continuously evaluating interventions, organizations can better support their employees' mental health, ultimately fostering a more resilient and productive workforce.

Reference:

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https://www.kaggle.com/code/mikhthadtt/mental-health-remote-work