Impact of Remote Work on Mental Health

1. Project Concept

Remote work has restructured workplaces all over the world. While remote arrangements provide greater flexibility and convenience, it has not been established whether it is better or worse for people's mental well-being in general. The project investigates how remote work influences employees' mental health, productivity and stress levels across different demographic groups, occupations and global regions. Exploratory data analysis and visual analytics were used to identify patterns related to burnout, depression, anxiety, stress levels, and work-life balance, and to assess how such factors relate to productivity outcomes.

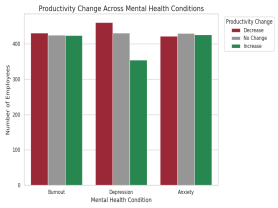
2. Data Source Description

The dataset we used in this project is from Kaggle: *"Impact of Remote Work on Mental Health"*. It has 5,000 employee records across 7 industries and 6 continents. The key variables are all related to work environment and employee well-being, such as work location, sleep quality, number of virtual meetings, productivity change, work–life balance, social isolation, occupation and region.

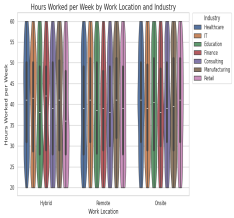
3. Analysis

The analysis started with basic data preparation to make the dataset easier to work with. This included fixing column names that didn't match well, removing repeated entries, adjusting data types that were incorrectly recorded, and dealing with missing values in several important variables. After the data was organized, an exploratory review was done to see how the main features were spread out, to notice any unusual or extreme values, and to get a general sense of the demographic, job-related, and regional patterns in the dataset. Several types of visualizations—such as histograms, boxplots, violin plots, and heatmaps—were then created to look more closely at how work arrangements connect to mental health indicators, stress levels, and changes in productivity. Through these visual checks, certain trends became clearer, especially differences across job roles and regions, which helped show how remote work may influence employees in different ways.

4. Visualization

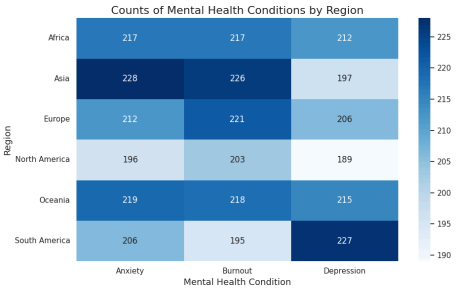


There is a marked decrease in productivity in respondents who have depression, and a slight decrease in productivity in those who have experienced burnout. This graph uses Gestalt principles symmetry and proximity and complementary colors with deep hue and saturation.



The violin plots show a significant number of employees across all seven industries putting in 50 to 55-hour work-weeks, with the highest ones being Hybrid Consultants, Finance and IT professionals. Hybrid retail industry employees worked the lowest median hours (36) while hybrid Finance professionals worked the highest median hours (43). Remote and onsite workers across all seven industries have almost identical patterns, suggesting the big picture lack of difference between remote and onsite arrangements, dismantling the myth of remote workers possibly not working as long as

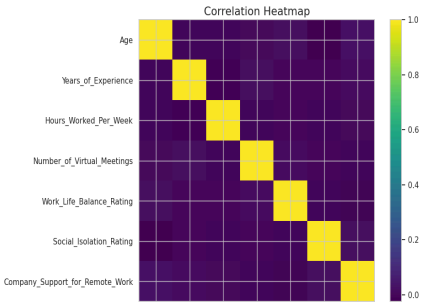
onsite workers. This violin plot utilizes Gestalt principles similarity, proximity, symmetry and closure through cool harmonic colors with medium saturation and subtle hues.

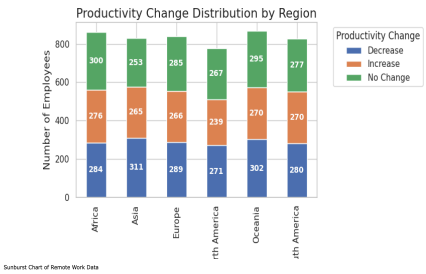


Our data says that depression is most prevalent in South America, while both burnout and anxiety are most prevalent in Asia. Burnout has the lowest prevalence in South America. This heatmap uses the cool color blue in a mix of juxtaposed shades of different saturation to emphasize the Gestalt principles of proximity and symmetry.

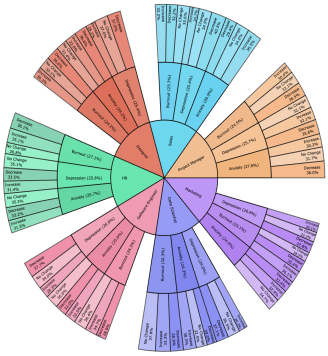
To establish whether working remotely has an effect on the number of hours worked, we isolated only the North American respondents of all professions. The strip plot clearly shows that remote work has no advantage over hybrid or onsite work, with high and medium stress levels appearing on all three work locations at similar levels. For this strip plot we utilized split-complementary cooler colors with desaturated shades and Gestalt principles proximity, continuity, and figure/ground.

In the heatmap, most of the selected variables show a weak to moderate correlation. Work_Life_Balance_Rating and Satisfaction_with_Remote_Work are mildly positively correlated; good work-life balance associates with high remote-work satisfaction. On the other hand, Social_Isolation_Rating is related to remote-work satisfaction, whereas the demographic factors of Gender, Age, and Region indicate very low correlation with the feelings in the workplace. Generally speaking, most variables look highly independent. The heatmap applies Gestalt principles such as similarity and proximity, using color intensity to group correlated variables and make patterns in the data visually perceptible.



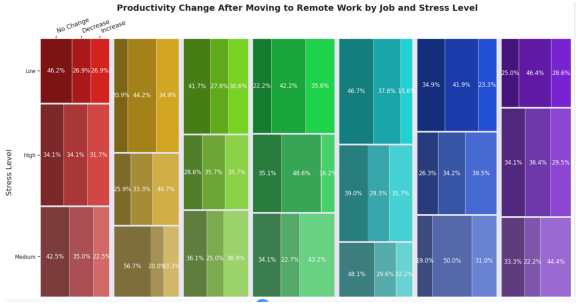


Productivity declined in six regions (Asia, Europe, North America, Oceania, and South America). Only Africa reported productivity increase. This visual uses similarity, and symmetry and secondary colors with medium saturation.



Data Scientists in North America have the highest incidence of mental health issues, with 80.6% of responders reporting one. The highest percentage of any mental health condition are again, the Data Scientists reporting Burnout (32.3%). The lowest percentage is from Marketing who reported depression at the lowest rate of 20.9%, with the highest

percentage of 37.8% decrease in productivity. Marketing reported only 68.9% with a mental health condition, the lowest of all seven jobs. Three out of 4 persons in Project Management, Design, Software Engineering, HR, Marketing and Data Science have an existing mental health condition. This sunburst utilizes Gestalt principles similarity, symmetry and closure using color wheel colors with medium hue and medium saturation and combines warm and medium cool colors.



Marketing, Project Managers and HR employees had the highest stress levels coinciding with decreased productivity levels. Marketing, Sales and Data Scientists have the lowest stress levels coinciding with increased productivity levels. Data Scientists have the highest increase in productivity levels among everyone reporting all levels of stress (low, medium, high).The highest decrease in productivity was reported by Designers, Project Managers and Sales. This mosaic plot uses symmetry, proximity and similarity with bright hues of primary and complementary colors.

5. Conclusion

Taking note that our respondents belong to only 7 professions and 7 industries over 6 continents, these are our findings:

Globally, productivity went down in 6 continents: Asia, North America, South America, Europe and Oceania. Only Africa' s productivity did not change.
Globally, anxiety is highest in Asia, depression is highest in South America, burnout is highest in Asia. Lowest burnout rates are reported in South America.
Similarly, across all continents, remote and onsite professionals in these jobs are all working similar hours, which are significantly high (some up to 60 or 70 hours), showing that when it comes to work location, one has no advantage over the other. We can rest assured that our colleagues who are virtually dialing in are working as hard as those of us who are in the office.
The jobs with the highest stress levels and lowest productivities are Project Managers, HR and Marketing. The least productive regardless of stress level are the Designers, Project Managers and Salespeople.
There is an alarming prevalence of mental health conditions throughout 6 professions (Project Management, Software Engineering, HR, Marketing, Design and Data Science), wherein 3 out of 4 reported an existing condition. The healthiest mentally is the Marketing segment (20.9%).
Notably, Data Scientists in North America have the highest incidence rate of mental health conditions, with a whopping 80.6% reporting it, out of which 32.3% (the highest percentage) suffered from Burnout (with 24.3% Anxiety and 24% Depression). On the bright side, Data Scientists have the highest productivity levels in general, with 35.7% reporting increased productivity despite having the highest stress levels.
Finally, our data reveals that remote work is in fact, a high stressor, with stress levels strikingly higher among people working remotely than both those onsite and hybrid. It might be time to rethink its benefits.