

AI Burnout Risk

Are We Gaining Efficiency but Losing Stability?

Sector: Artificial Intelligence & HR Analytics

TEAM

G-13

FACULTY

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Context & Problem Statement

Sector Context

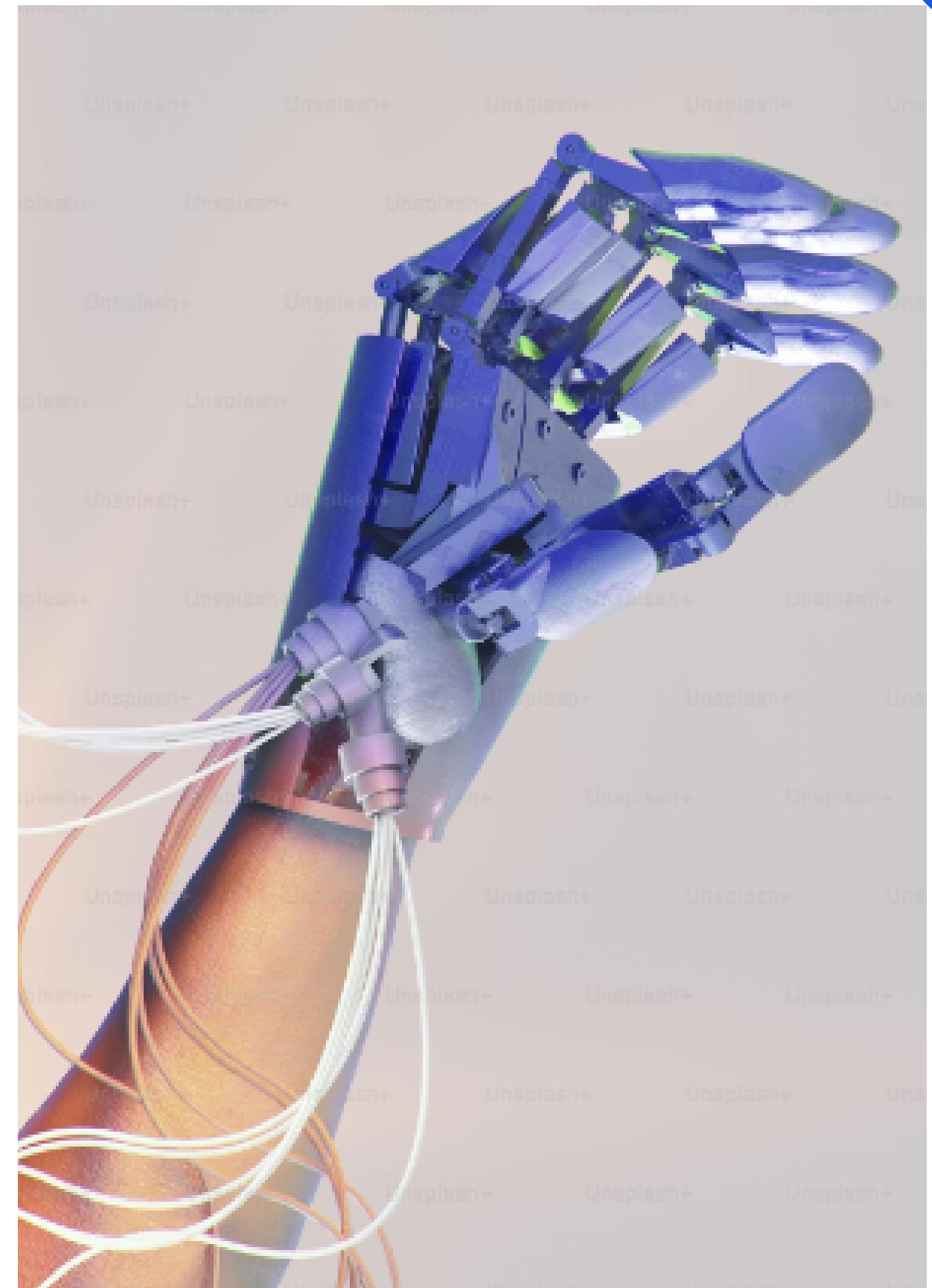
Today, almost every company is using AI tools to increase productivity and complete tasks faster. Decision-makers such as HR heads and managers want higher performance but also want employees to stay skilled, healthy, and stable.

The Problem

While AI improves efficiency, too much reliance on it may weaken human thinking, skills, and decision-making.

Project Objective

Today, almost every company is using AI tools to increase productivity and complete tasks faster. Decision-makers such as HR heads and managers want higher performance but also want employees to stay skilled, healthy, and stable.



Data Engineering (Source to Sink)

Total Records: 5,600

Pipeline Overview: From Raw Kaggle Dataset to Engineered Insights

STEP 01

Data Ingestion

SOURCE & ORIGIN

Kaggle Dataset: "AI Productivity Tools & Feature Impact"

DATASET STRUCTURE

Rows: 5,600 Employees | Columns: 27(15 raw columns + 12 engineered) Features

DATA TYPE

Cross-sectional snapshot (Single time period observation)

Represents diverse roles across tech & business sectors.

STEP 02

Data Cleaning

MISSING VALUES TREATMENT

Median Imputation applied to numeric fields (e.g., Burnout Score) to preserve distribution.

TEXT STANDARDIZATION

Standardized casing for Role & Category columns (e.g., "Manager" vs "manager").

OUTLIER HANDLING

Validated extreme values; retained plausible outliers (e.g., high AI usage) as real edge cases.

Data integrity verified for all 5,600 records.

STEP 03

Feature Engineering

RAW COLUMNS UTILIZED

AI Usage Hrs · Tasks Automated % · Burnout Score · Focus Hrs/Day · Meeting Hrs

NEW DERIVED KPIs

- Efficiency Leverage
- Burnout Risk Score
- Deep Work Balance
- Error Rate %
- Sustainability Rating
- Employee Persona

Engineered features enable 'Performance vs. Health' analysis.

KPI & Metrics Framework

AI → Productivity → Quality → Burnout → Sustainability

Efficiency Leverage

PRODUCTIVITY METRIC

```
= IF(AI_Hours=0, 0, Output / AI_Hours)
```

BUSINESS PURPOSE

Measures the ROI of automation. Higher values indicate stronger productivity generated per hour of AI usage.

Deep Work Balance

FOCUS QUALITY METRIC

```
= (Focus_Hrs_Day * 5) - (Meetings + Collab)
```

BUSINESS PURPOSE

Evaluates if employees have sufficient uninterrupted time for critical thinking after administrative overhead.

Learning Zone

SKILL GROWTH METRIC

```
IF(Hrs < 2, "Risk", IF(Hrs > 9, "Overload", "Stable"))
```

BUSINESS PURPOSE

Categorizes learning intensity to identify employees who are stagnant (Risk) or facing cognitive overload.

Sustainability Rating

COMPOSITE HEALTH METRIC

```
= IF(Burnout=0, 0, (Output * (10 - Error_Rate)) / (Burnout_Score ^ 2))
```

BUSINESS PURPOSE

A holistic score that heavily penalizes high burnout. Ensures high output isn't celebrated if it comes at the cost of long-term stability.

AI Leverage Classification

SEGMENTATION METRIC

```
= IF(AI < 5, "Low", IF(AI ≤ 12, "Medium", "High"))
```

BUSINESS PURPOSE

Segments the workforce by AI usage intensity. Essential for comparing performance and stress levels across adoption behaviors.

Key Insights (EDA)

Major Findings from Exploratory Data Analysis

AI Has a Productivity Ceiling

Using AI helps improve productivity — but only up to around 12 hours per week.

After that, the improvement slows down or even drops.

Quality vs. Quantity Trade-off

When AI usage is very high, error rates also increase (around 2.1% on average in heavy users).

If employees rely too much on automation without checking the work, quality suffers.

The "Toxic High Performer"

Some employees produce very high results but also have very high burnout levels (above 8 out of 10). They perform well now — but they are at high risk of exhaustion or leaving the company.

Manager Workload Compression

Managers spend about 13.8 hours per week in meetings.

They only get around 2.7 hours per day for focused work.

Too many meetings reduce their ability to think deeply and make good decisions.

Deep Work Drives Sustainability

Employees who have protected focus time (deep work hours) show much better long-term sustainability.

Deep work is more important for long-term success than just using AI tools.

Developer's AI Sweet Spot

Developers use AI heavily but still maintain good sustainability scores.

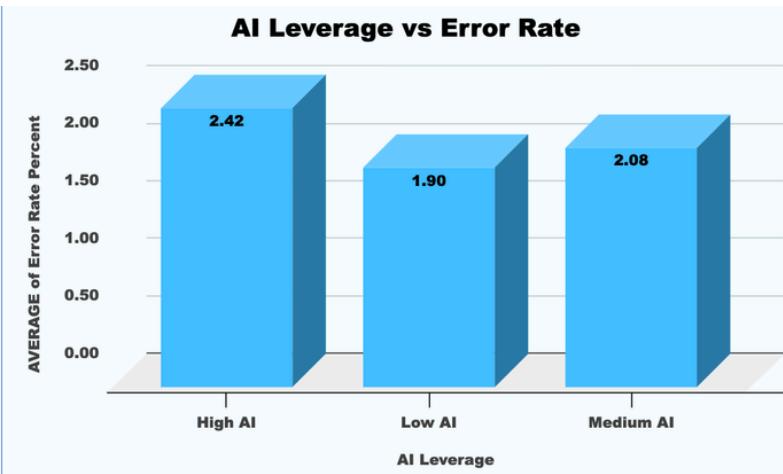
This suggests that structured technical work benefits more safely from AI support.

Advanced Analysis

Segmentation, Correlation & Workforce Risk Modeling

AI Leverage Segmentation

Employees segmented by AI Leverage Intensity reveals distinct sustainability profiles.



Low AI (<5 hrs) → Lower output, lower burnout
Medium AI (5–12 hrs) → Highest sustainability
High AI (>12 hrs) → Higher error & burnout

KEY FINDING

Medium AI users consistently demonstrate the strongest long-term stability.

Comparison

Statistical relationships identifying primary drivers of output vs. burnout.

AI vs Output **+0.45**

Meetings vs Focus **-0.72**

AI vs Burnout **+0.38**

Learning vs Stress **+0.41**

STRUCTURAL FRICTION

Higher meeting loads significantly degrade Deep Work balance (-0.72), which is a leading indicator for burnout.

Workforce Risk Modeling

Composite risk scoring identifies hidden pockets of instability.

RISK SEGMENTS IDENTIFIED

Toxic High Performers (12%)

Overloaded Learners (18%)

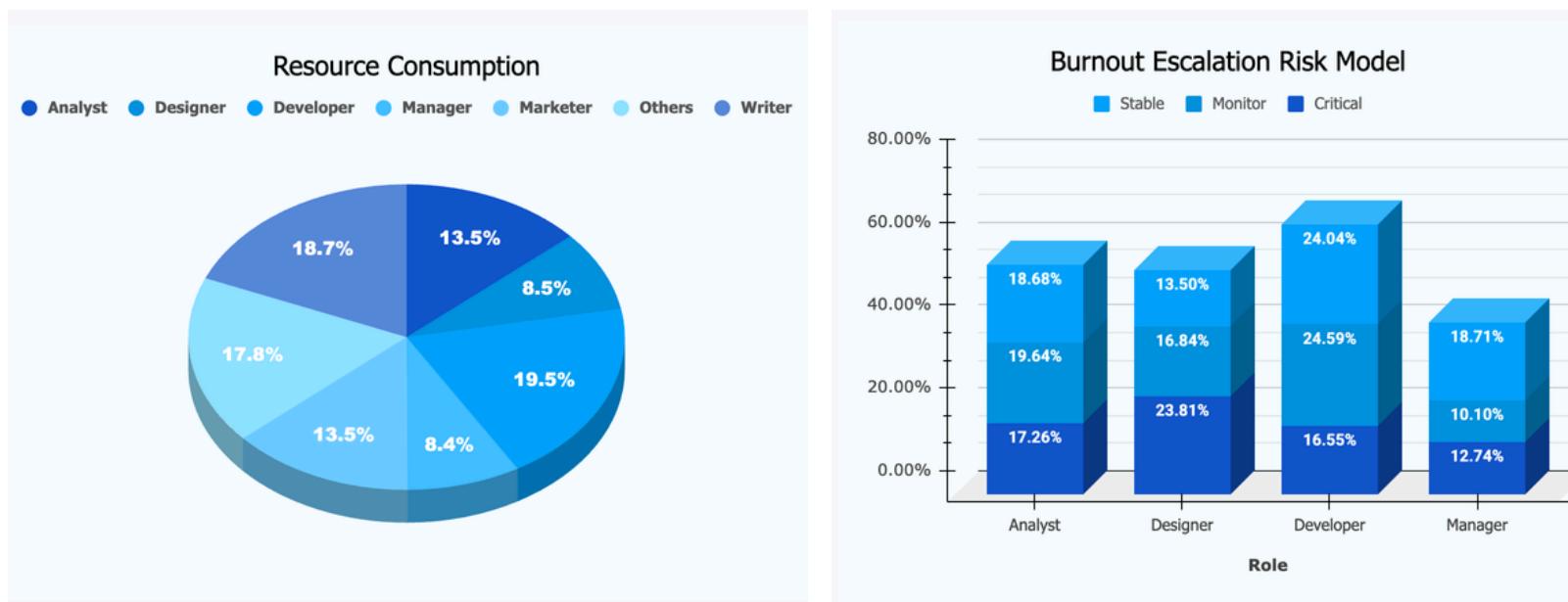
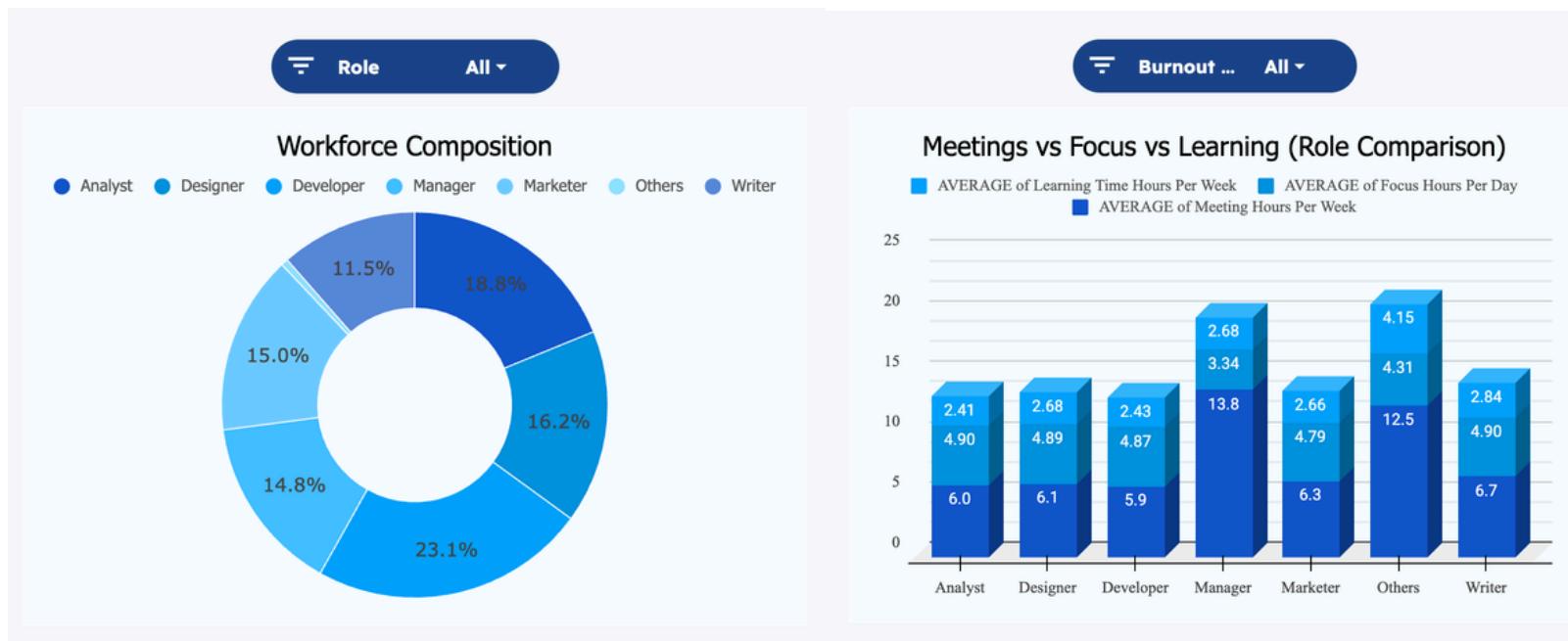
Steady Workers (45%)

Critical Risk Profile

"Toxic High Performers" combine top-decile output with bottom-decile stability. Without intervention.

Dashboard Walkthrough

Interactive Tools for Monitoring Workforce Stability



Dashboard- [Click Here](#)

View 1: Summary / Hero

High-level executive snapshot anchoring all analysis on measurable organizational scale.

KPI Scorecards Total Headcount Aggregates

View 2: AI Adoption & Productivity

Deep dive into role-based AI usage, automation efficiency, and the critical "Performance vs. Health" scatter plot.

Role Comparison Manual vs AI Error Rates

View 3: Sustainability Risk

Surfaces structural risks: error rates by experience, meeting compression, and resource concentration.

Experience Bands Focus Time Resource Mix

Recommendations

Strategic Actions to Balance Efficiency & Stability

1. Monitor High Performers for Burnout Risk:

RECOMMENDATION 01

- Give Support Sessions to Employees.
- Control Extra Workload

2. Improve Deep Work Balance :

RECOMMENDATION 01

- Reduce meeting hours.
- Introduce dedicated focus time blocks.
- Use AI tools to reduce workload, not to increase it.

3. High AI automation leads to Error:

RECOMMENDATION 01

- Set up a quality review system for automated tasks.
- Do random audits of AI outputs.
- Provide AI training to employees.



Impact & Value



How can this analysis benefit the organization?

Cost Impact

- Reducing burnout will lower employee turnover.
- This will save hiring and training costs.

Time Impact

- Improving deep work will help tasks get completed faster.
- Reducing meetings will increase productive hours.

Efficiency Impact

- Balanced use of AI will keep productivity stable.
- Avoiding overload will help maintain steady performance in the long term.

Why Should Stakeholders Approve This?

This approach helps management identify problems early and take action before performance drops or employees burn out.

Limitations & Next Steps

Data Gaps / Limitations

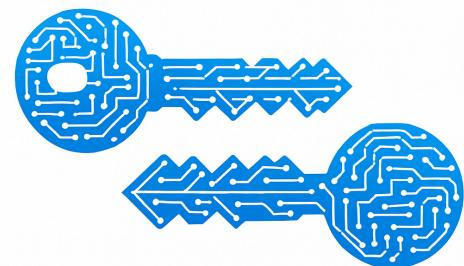
- 1 The data shows one time period only. It does not track changes over time.
- 2 We did not measure emotional or mental health directly.
- 3 Factors like company culture, salary, or leadership style are not included.
- 4 Burnout scores may have some bias because they are self-reported.

Future Improvements

- 1 Add employee surveys to measure stress and job satisfaction.
- 2 Compare departments to identify best and worst-performing teams.
- 3 In the future, it can be improved by tracking data regularly and adding employee feedback to better understand stress levels.

The most efficient organization is not the one that uses AI the most.

It is the one that uses AI wisely enough to keep its people capable, engaged, and sustainable over time.



Thank You

