

# Is Working From Home Easy or More Stressful?

ENTITY ACADEMY/WOZ U  
DATA SCIENCE FINAL GROUP PROJECT

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# Meet The A Team



## La-Vie

- Graduate of Dartmouth College class of 1997
- 4 years experience in Marketing Research & Consulting
- Transitioning from an At-Home Mom of 14 years to a thriving Data Scientist



## Kim

- Graduate of Eastern Michigan University with a Bachelors of Science in Nursing in 2003
- 18 years experience as a Registered Nurse
- Looking to transition from nursing to data science



## Vanessa

- 18+ yrs Insurance Industry
- Masters of Science in Cybersecurity
- I hope to obtain a position as a data scientist or a position in cybersecurity

# Introduction



- Discussed several topics
- Working from home was current topic
- Found research to back up the data

# Goal #1 - Data Search

- Check relevant websites
- Locate datasets
- Locate supporting research



# Goal #2 -

## Data Preparation



NULL VALUES

- Remove null values for purpose of analysis
- Multiple methods to remove null values
- Check to be certain all null values are removed

RECODE

- Cannot use string values in some analysis
- Different ways to change data
- Change from string to integer

REMOVE REDUNDANCY

- Unnecessary and/or Duplicate Data

# Goal # 3 -

# Exploration And Data Analysis

WHAT IS THE DATA SAYING?

PYTHON

- Histograms
- Scatterplots
- Bar Graphs
- Heat maps

R

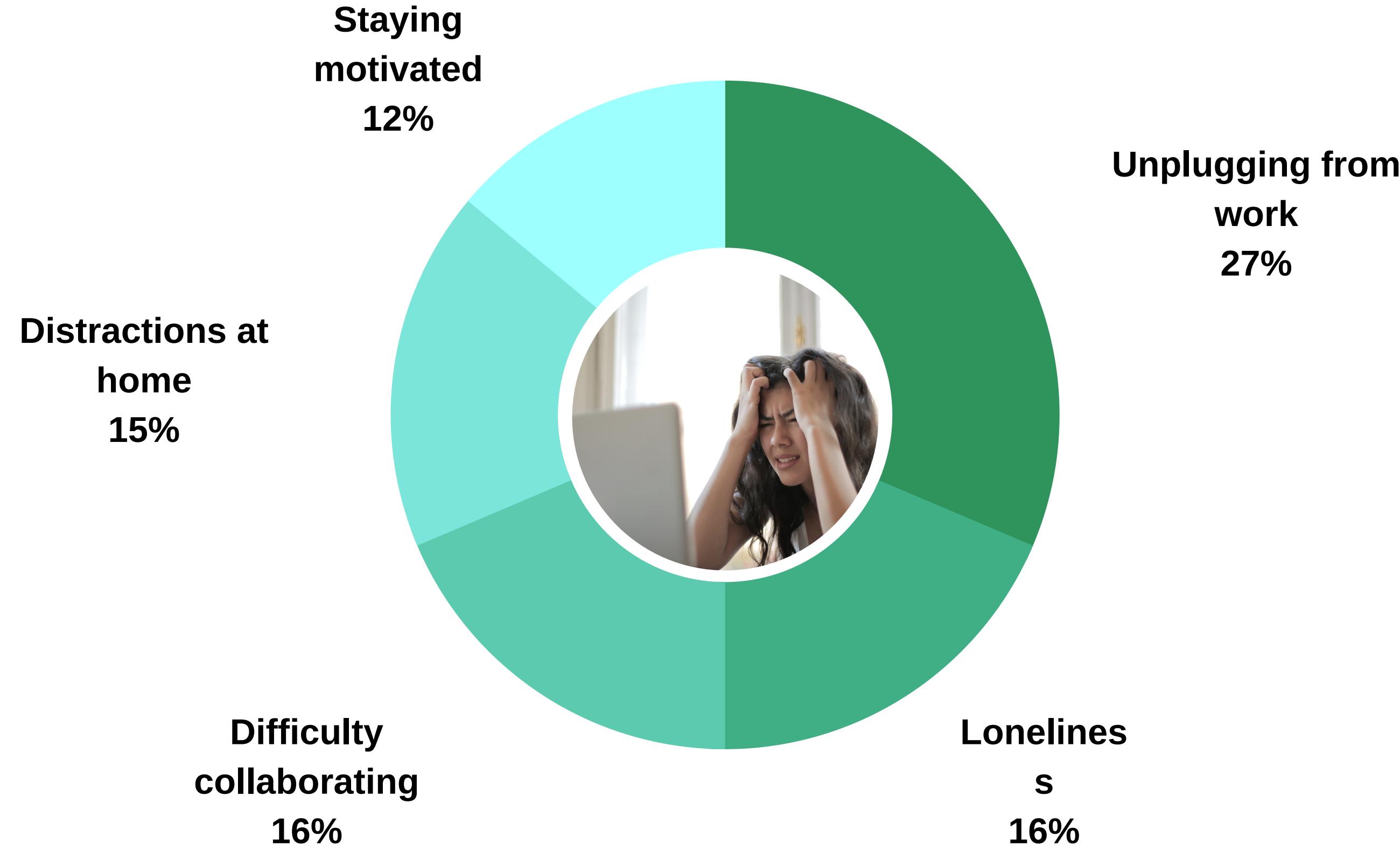
- Chi-Square
- Manova

TABLEAU

- Scatterplots
- Bar graphs

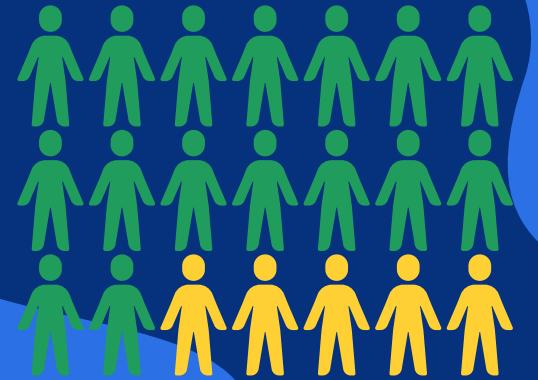


# Top 5 Struggles/Remote Workers



# Burnout in People Who Work From Home

76%  
of people say that workplace  
stress affects their mental  
health



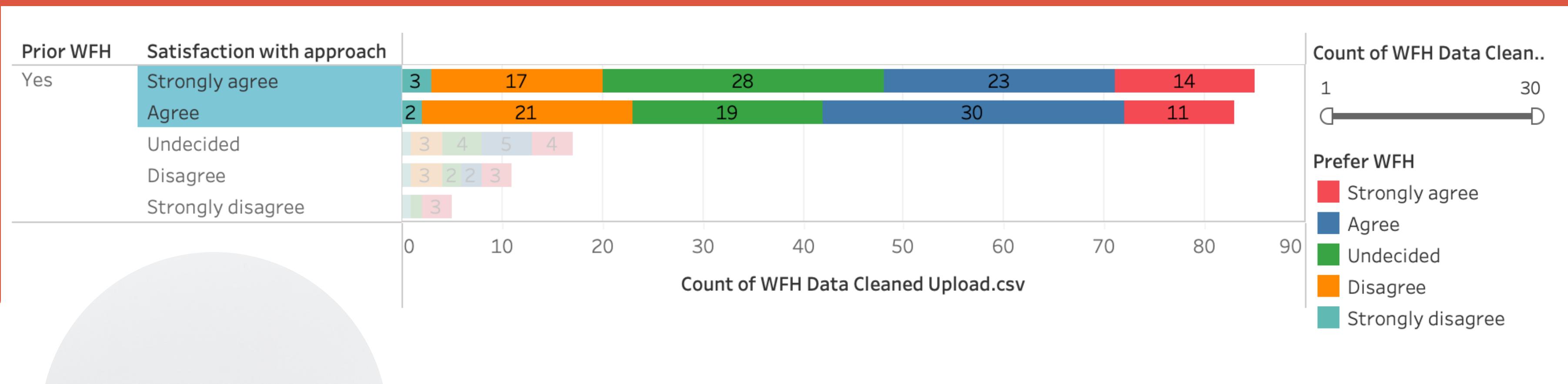
48%  
OF PEOPLE  
Say they lack emotional  
support at work

## REASONS FOR BURNOUT

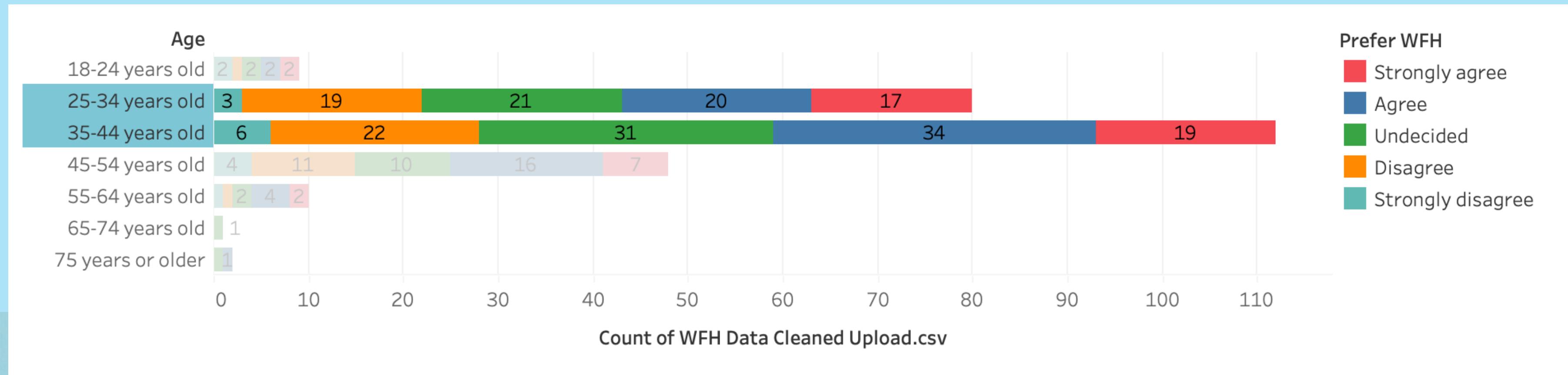
- Job Expectations Are Unclear
- Working Too Many Hours
- Dysfunctional Workplace Dynamics
- Lack of Social Support
- Not taking Vacations
- Lack of Control
- Lack of Communication

75%  
Have Experienced  
Burnout  
40% have experienced it  
during the pandemic

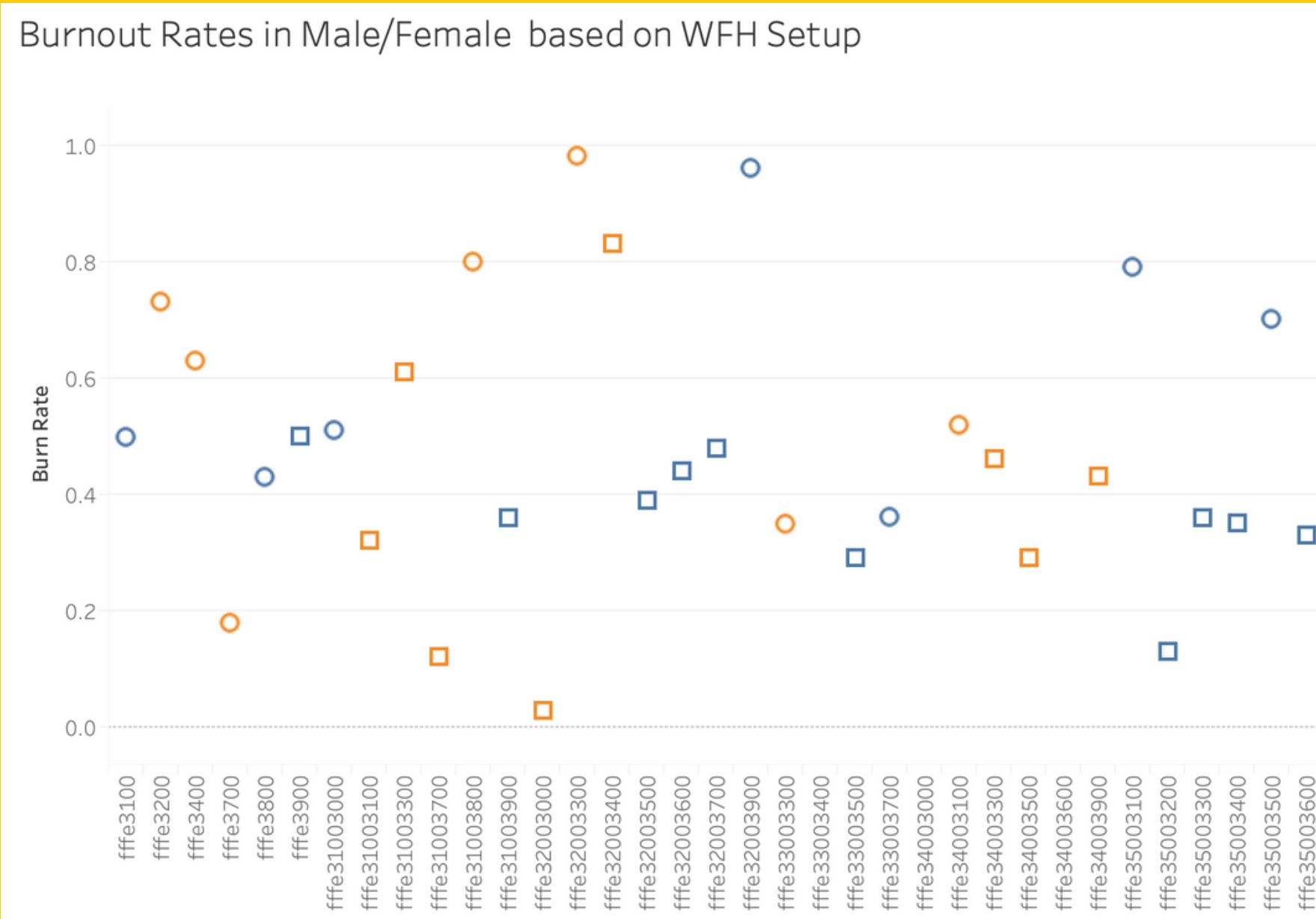
# High Satisfaction With How The Organization Handled The Pandemic Among Employees With Prior Work From Home Experience



# Different Ages = Varying Work Life Stages



# Higher Male Burnout Rates



## WFH Setup Available

○ No

□ Yes

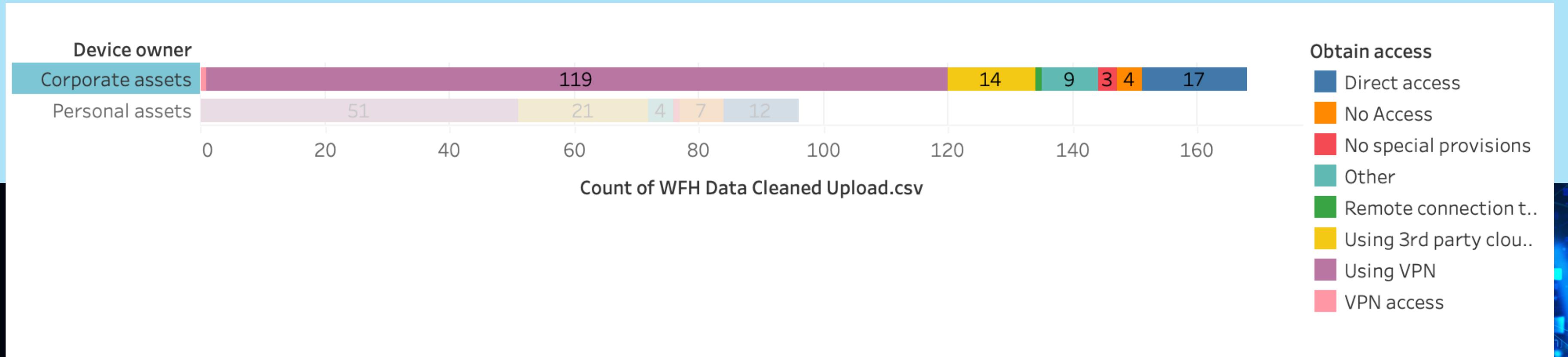
## Gender

■ Female

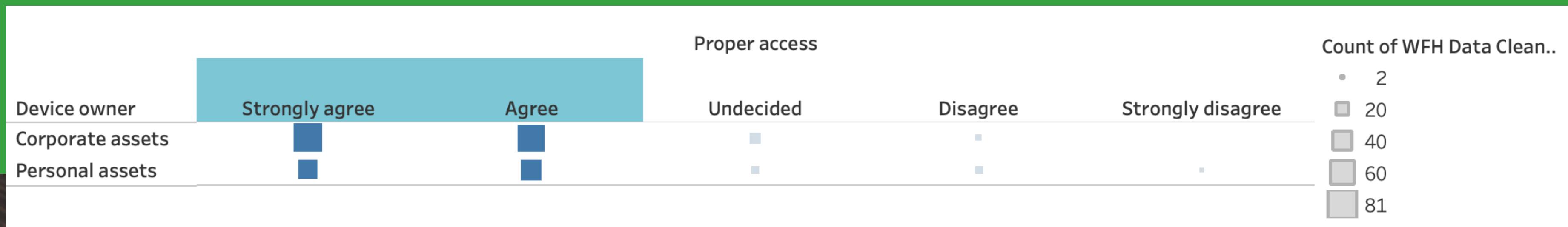
■ Male

- Work from home setup
- Gender role
- Burn rates higher for males

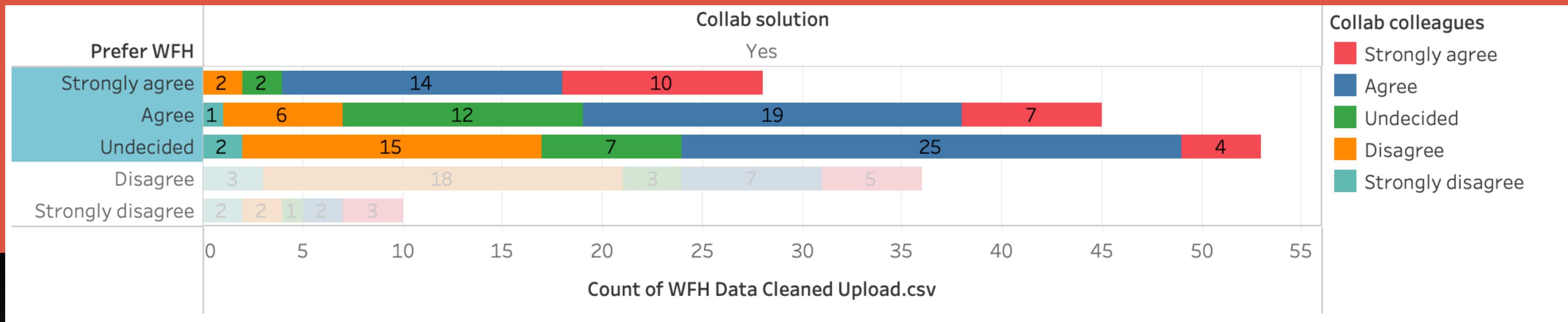
# Employees are Using Company-Provided Devices to Connect Via a Virtual Private Network (VPN)



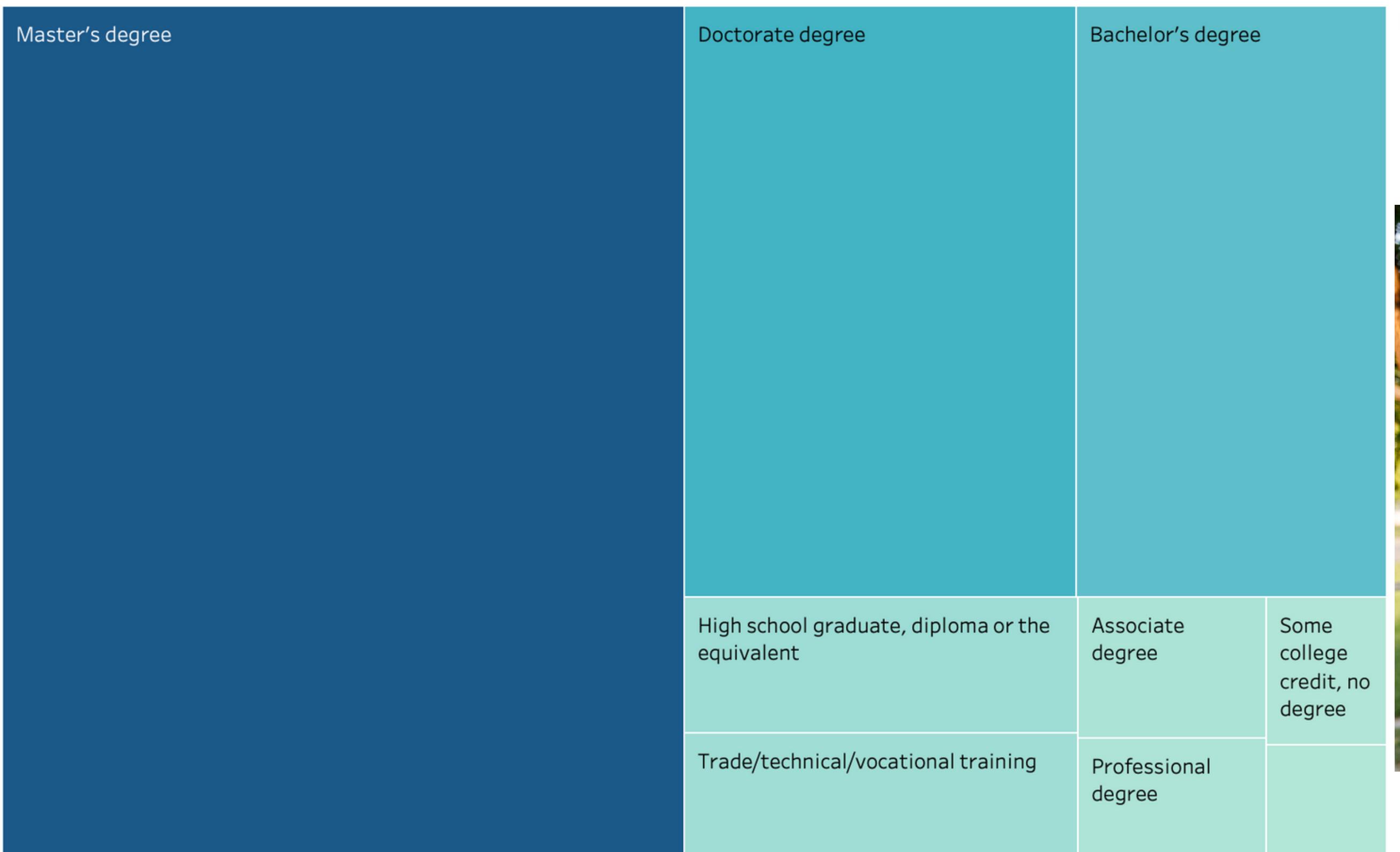
# Organizations Provide Proper Access to the Work Environment



# Employees Agree They Were Given Well-Working, Home-Based Collaboration Solutions



# Employees Have Advanced Degrees

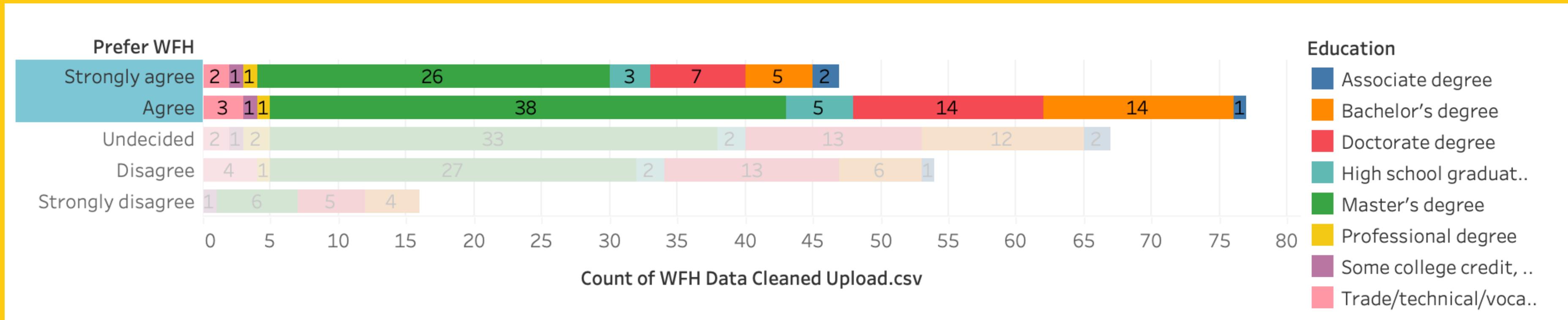


Count of WFH Data Clean..  
3 130

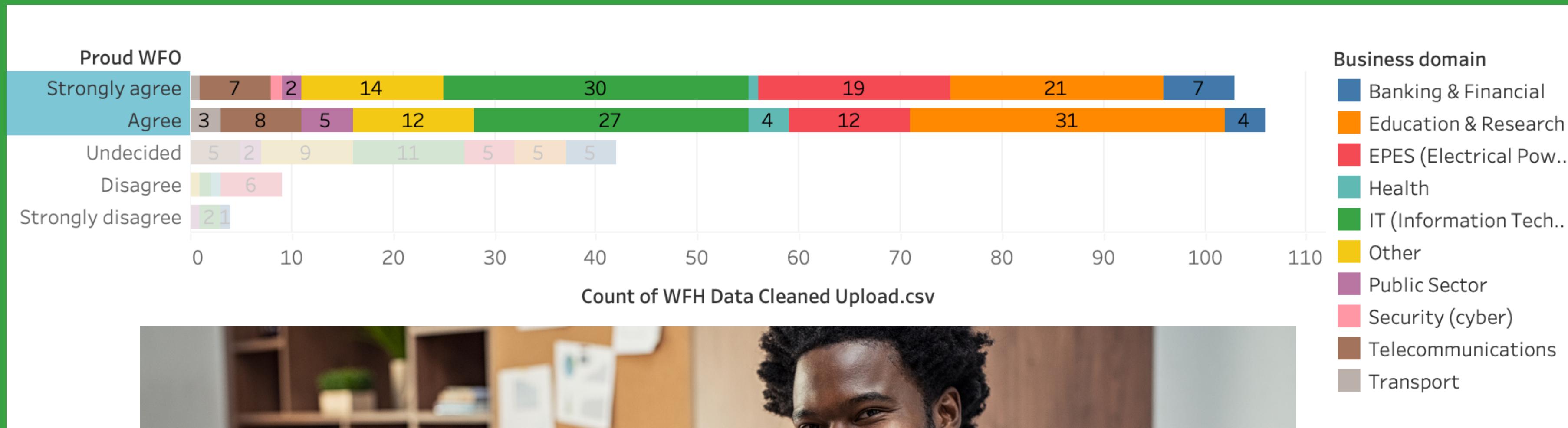


M B A

# Employees with Master's Degrees Dominate Preference for Working From Home



# Which Business Domains Take The Most Pride in Working for their Organizations?



# Goal #4

## Statistical Testing

● MANOVA

### TEST ASSUMPTIONS

- MET - Assumption of sample size, Homogeneity of Variance, Absence of Multicollinearity
- FAILED - Assumptions of Multivariate Normality,

### TWO- WAY MANOVA

- Independent variables:  
Work From Home Setup Available and Gender
- Dependent variables: Mental Fatigue Score and Burn Rate

# Goal #4

## Statistical Testing Continued

● MANOVA

### CONCLUSIONS

- The result was **significant**
- Independent variables:

Work From Home Setup Available and Gender  
**Influence** Dependent variables: Mental Fatigue  
Score and Burn Rate

# Goal #4.1

## Statistical Testing

• CHI-SQUARE

### Test Assumptions

- **First analysis:** Working more productively from home and preference to work from home, met the assumption of Expected Frequencies.
- **Second analysis:** satisfaction with the amount of technical support provided and the company's approach to the crisis, did not meet the assumption of Expected Frequencies.

# Goal #4.1

## Statistical Testing Continued

● CHI-SQUARE

RUN ANALYSIS

- Independent Chi-Squares were run for both sets of variables

CONCLUSIONS

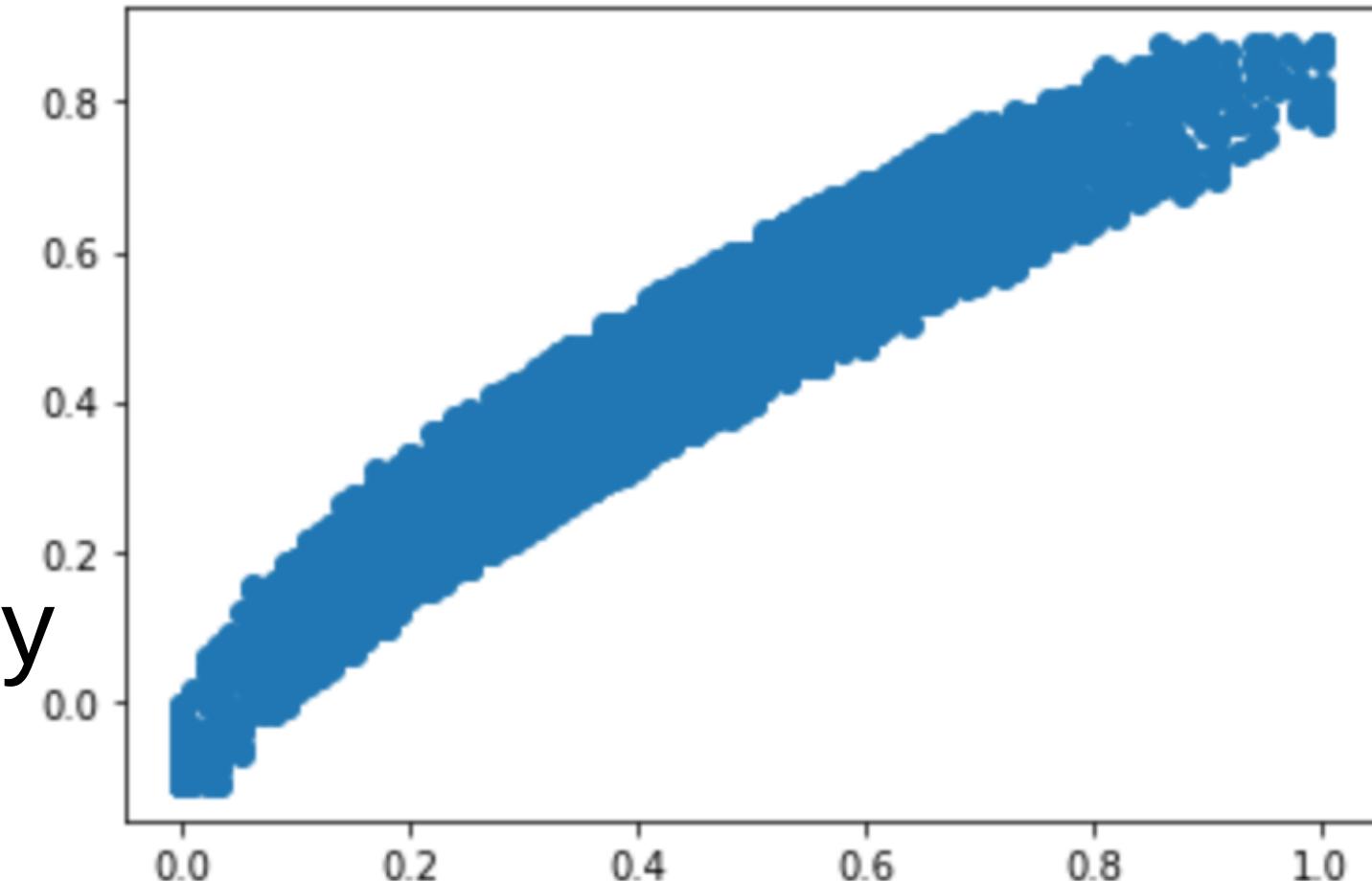
- Since the analyses were both **significant**, this suggests productivity is influenced by preferring to work from home
- Having proper technical support influences employees level of satisfaction with the company's approach to the crisis; although it did not meet the assumptions.

# Predict Burnout Rates With Machine Learning



SET UP

- Data clean up
  - Determine X Y for training and testing
  - Linear Regression
- 
- Scatterplot shows prediction was very strong.
  - The model was accurate approximately 89.3% of the time!



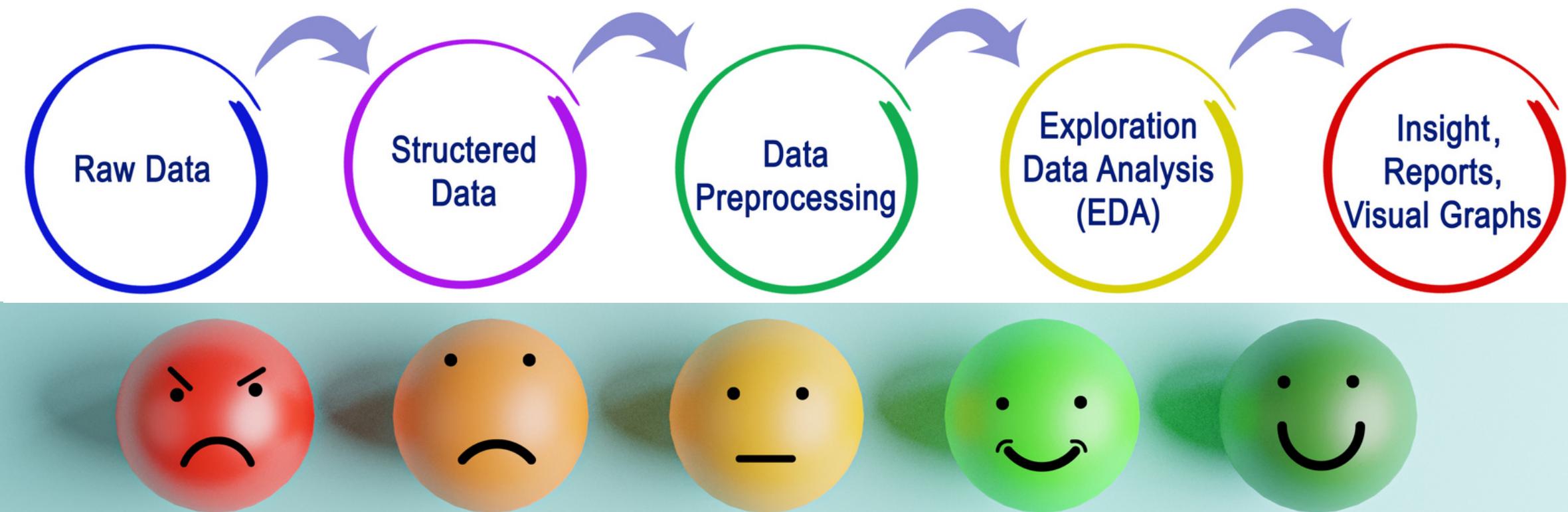
# Prediction Validation

- Validate Prediction
- Mean Absolute Error
- Result was 0.05
- K-fold cross validation
- All 3 interations were 89.4%



# Conclusions

- Burnout rates higher in males
- Satisfaction differed by age and education
- Middle-aged prefer working from home
- Satisfaction significantly effected productivity



# Sources

Georgiadou, Anna; Mouzakitis, Spiros; Askounis, Dimitrios (2020),  
“Working from home during COVID-19 crisis – A Cyber-Security Culture  
Assessment Survey”, Mendeley Data, V2, doi: 10.17632/59tp8sdgr8.2

kaggle kernels output blurredmachine/employee-burn-rate-analysis-eda-viz-pred -p /path/to/dest

Remote Work Burnout Statistics Explained, Apollo Technical, accessed  
30 January 2022, <<http://www.apollotechnical.com/remote-work-burnout-statistics/>> a little bit of body text



# Thank you!

Do you have any questions?