

02-perception-percentages-blackbox-discrimination

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0.1 02-perception-percentages-blackbox-discrimination.ipynb

This notebook summarizes two key perception indicators from the survey dataset (`data.csv`):

- Computes the percentage of respondents who **Agree/Strongly agree** that AI recruitment feels like a “**black box**.”
- Computes the percentage of respondents who **Agree/Strongly agree** that AI recruitment may **discriminate** against certain groups.

It converts Likert responses to numeric values (1-5) and visualizes both results using simple horizontal bar charts.

```
[1]: import pandas as pd
import numpy as np
import matplotlib.pyplot as plt

from scipy.stats import pearsonr

df = pd.read_csv("data.csv") #reads data from the same repository
df.shape
```

[1]: (84, 28)

```
[2]: aware_col = "Before this survey, were you aware that some companies use
    ↵AI-based systems in recruitment and selection (e.g., automated CV screening,
    ↵AI ranking of candidates, AI video interview analysis)?"

pref_col = "If you had two similar job opportunities, and the only difference
    ↵was the recruitment process, which would you prefer?"

screen_col = "For the initial screening of applications (deciding who is
    ↵invited to the first interview), which option would you feel most
    ↵comfortable with?"

likelihood_col = "If a company clearly states that it uses AI tools as part of
    ↵its recruitment process, how likely would you be to apply for a job or
    ↵internship there?"

# Likert items for constructs
```

```
same_criteria = "Please indicate how strongly you agree or disagree with the  
↳following statements about AI-based recruitment systems.\n(AI-based  
↳recruitment includes tools such as automated CV screening, AI ranking of  
↳candidates, AI video interview analysis, etc.) [AI-based recruitment treats  
↳all candidates according to the same criteria.]"

reduce_bias = "Please indicate how strongly you agree or disagree with the  
↳following statements about AI-based recruitment systems.\n(AI-based  
↳recruitment includes tools such as automated CV screening, AI ranking of  
↳candidates, AI video interview analysis, etc.) [Using AI in recruitment can  
↳help reduce human bias in hiring decisions.]"

unfair_rev = "Please indicate how strongly you agree or disagree with the  
↳following statements about AI-based recruitment systems.\n(AI-based  
↳recruitment includes tools such as automated CV screening, AI ranking of  
↳candidates, AI video interview analysis, etc.) [AI-based recruitment systems  
↳are inherently unfair. (reverse-coded)]"

understand = "Please indicate how strongly you agree or disagree with the  
↳following statements about AI-based recruitment systems.\n(AI-based  
↳recruitment includes tools such as automated CV screening, AI ranking of  
↳candidates, AI video interview analysis, etc.) [I understand, at least in  
↳general terms, how AI recruitment systems evaluate candidates.]"

explain = "Please indicate how strongly you agree or disagree with the  
↳following statements about AI-based recruitment systems.\n(AI-based  
↳recruitment includes tools such as automated CV screening, AI ranking of  
↳candidates, AI video interview analysis, etc.) [Companies clearly explain  
↳when and how they use AI in their recruitment process.]"

blackbox_rev = "Please indicate how strongly you agree or disagree with the  
↳following statements about AI-based recruitment systems.\n(AI-based  
↳recruitment includes tools such as automated CV screening, AI ranking of  
↳candidates, AI video interview analysis, etc.) [AI-based recruitment systems  
↳feel like a "black box" to me. (reverse-coded)]"

trust_item = "Please indicate how strongly you agree or disagree with the  
↳following statements about AI-based recruitment systems.\n(AI-based  
↳recruitment includes tools such as automated CV screening, AI ranking of  
↳candidates, AI video interview analysis, etc.) [I trust AI systems to  
↳evaluate candidates fairly.]"
```

```

discrim_rev = "Please indicate how strongly you agree or disagree with the
↳following statements about AI-based recruitment systems.\n(AI-based
↳recruitment includes tools such as automated CV screening, AI ranking of
↳candidates, AI video interview analysis, etc.) [I worry that AI recruitment
↳systems might discriminate against certain groups of applicants.]"
↳(reverse-coded)]"

apply_item = "Please indicate how strongly you agree or disagree with the
↳following statements about AI-based recruitment systems.\n(AI-based
↳recruitment includes tools such as automated CV screening, AI ranking of
↳candidates, AI video interview analysis, etc.) [I would apply to a company
↳that uses AI in its recruitment process.]"

discourage_rev = "Please indicate how strongly you agree or disagree with the
↳following statements about AI-based recruitment systems.\n(AI-based
↳recruitment includes tools such as automated CV screening, AI ranking of
↳candidates, AI video interview analysis, etc.) [Knowing that a company uses
↳AI to screen applications would discourage me from applying.]"
↳(reverse-coded)]"

```

```

[3]: likert_map = {
    "Strongly disagree": 1,
    "Disagree": 2,
    "Neither agree nor disagree": 3,
    "Agree": 4,
    "Strongly agree": 5
}

def to_num(s):
    return s.map(likert_map)

def reverse_1to5(x):
    return 6 - x

```

```

[4]: #this is not reversed (or in raw) so it matches the statement meaning
black_raw = to_num(df[blackbox_rev])           # higher = more "black box"
discrim_raw = to_num(df[discrim_rev])          # higher = more worry discrimination

black_pct = (black_raw >= 4).mean() * 100
discrim_pct = (discrim_raw >= 4).mean() * 100

print(f"% agreeing AI feels like a black box (Agree/Strongly agree): {black_pct:.1f}%")
print(f"% fearing discrimination (Agree/Strongly agree): {discrim_pct:.1f}%")

# 100% bar visualization (clean)
def percent_bar(title, pct_agree):

```

```

plt.figure(figsize=(8,1.8))
plt.barh([title], [pct_agree])
plt.barh([title], [100-pct_agree], left=[pct_agree])
plt.xlim(0,100)
plt.xlabel("Percentage (%)")
plt.title(title)
plt.text(pct_agree/2, 0, f"{pct_agree:.1f}%", ha="center", va="center", fontsize=11)
plt.text(pct_agree + (100-pct_agree)/2, 0, f"{100-pct_agree:.1f}%", ha="center", va="center", fontsize=11)
plt.show()

percent_bar("AI recruitment feels like a 'black box'", black_pct)
percent_bar("Fear that AI may discriminate", discrim_pct)

```

% agreeing AI feels like a black box (Agree/Strongly agree): 61.9%
% fearing discrimination (Agree/Strongly agree): 59.5%

