KEMENTERIAN EKONOMI
JABATAN PERANGKAAN MALAYSIA

# Assessing AI-Induced Job Displacement in Malaysia

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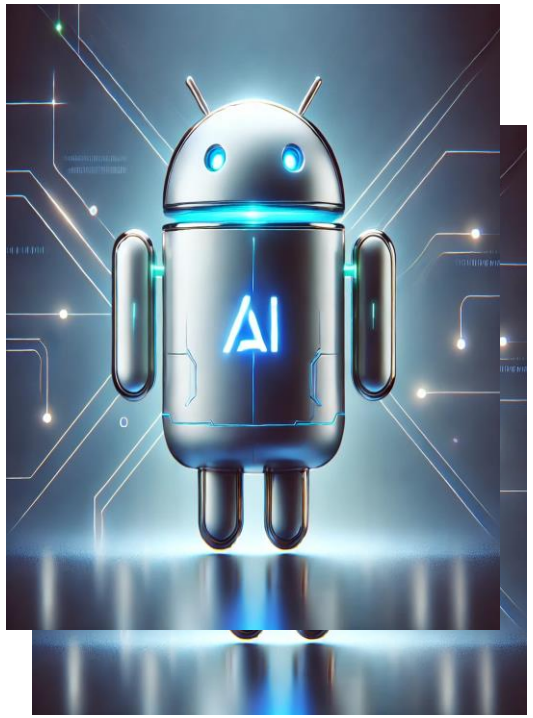
# Background

- Objective - to estimate the impact of AI-induced job displacement
- AI revolution
  - Computing power
  - Data and data analytics
  - Machine learning
  - Generative AI
- Debates: Robots taking over our jobs

# Job-displacement

- Job-displacement:
  - Elimination or reduction of jobs due to AI adoption and automation
  - Effects: Frictional and structural unemployment
  - Unknown: New human roles and new jobs
- Characteristics of the jobs
  - Repetitive, routine, manual, low cognitive tasks
  - Data processing e.g. entry and analysis
  - Predictable environment
  - Low complexity
  - High-degree of standardization



# The Model

$$D_i(t) = L_i \cdot \delta_i \cdot r \cdot t$$

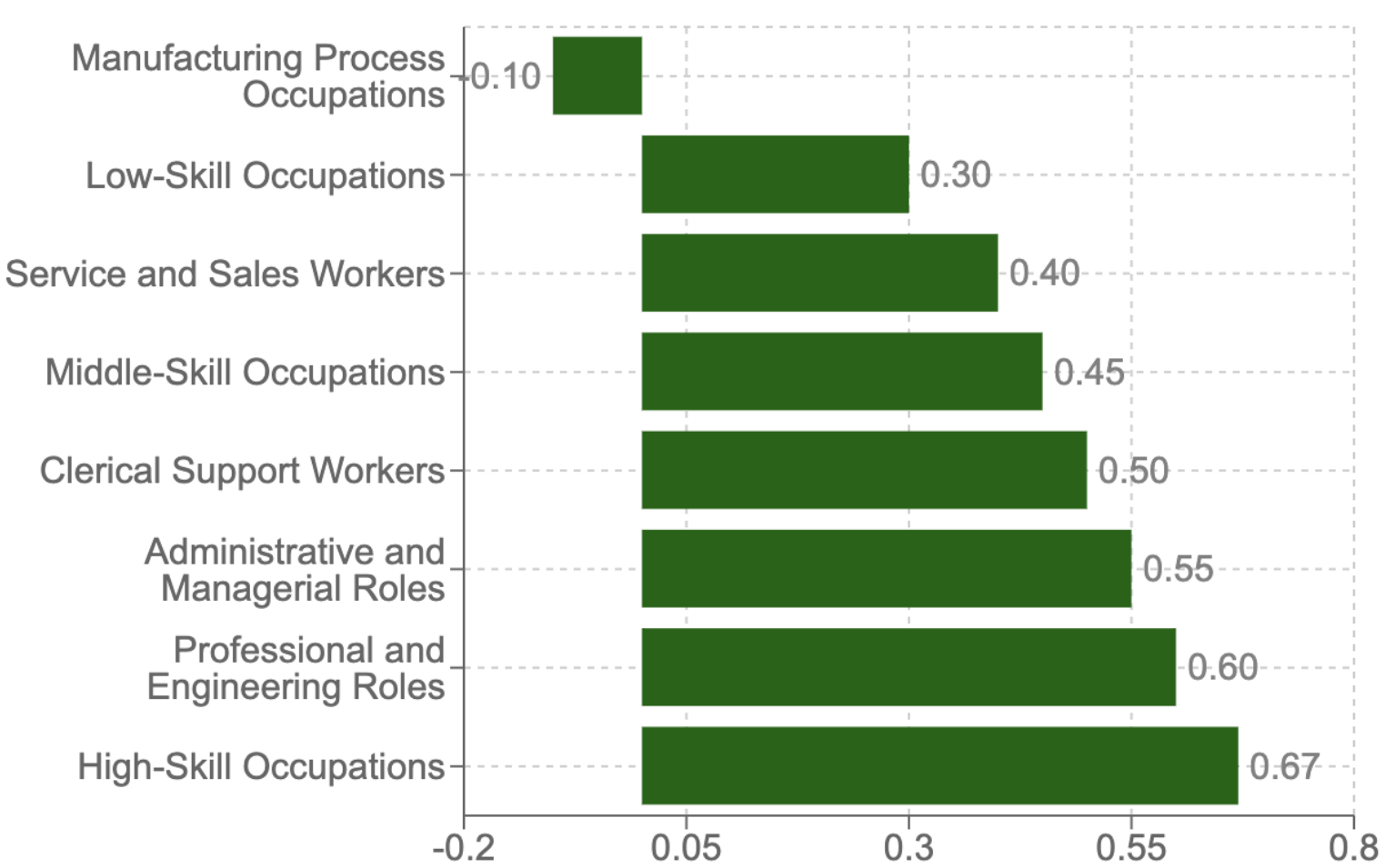
where:

- $D_i$(t) is the number of displaced workers in occupation category $i$ ($i$ = 1, 2, ..., $I$)
- $L_i$ is total initial number of workers in occupation category i
- $\delta_i$ is the AI-induced job displacement rate for occupation category $i$ (refer to Table 2)
- $r$ is the rate of AI technologic change (assumed at 0.05 per year in this study
- $t$ is the period of AI adoption (in this study, $t$ = 5).

# Key Assumptions

- The rate of AI adoption ($\delta i$) is constant over time for each occupation category.
- The impact of AI on job displacement is linear and directly proportional to the rate of AI technological change ($r$), and the rate of job displacement.
- There is no delay between AI adoption and its impact on job displacement.
- The total number of workers in each occupation category remains constant over the period of analysis.

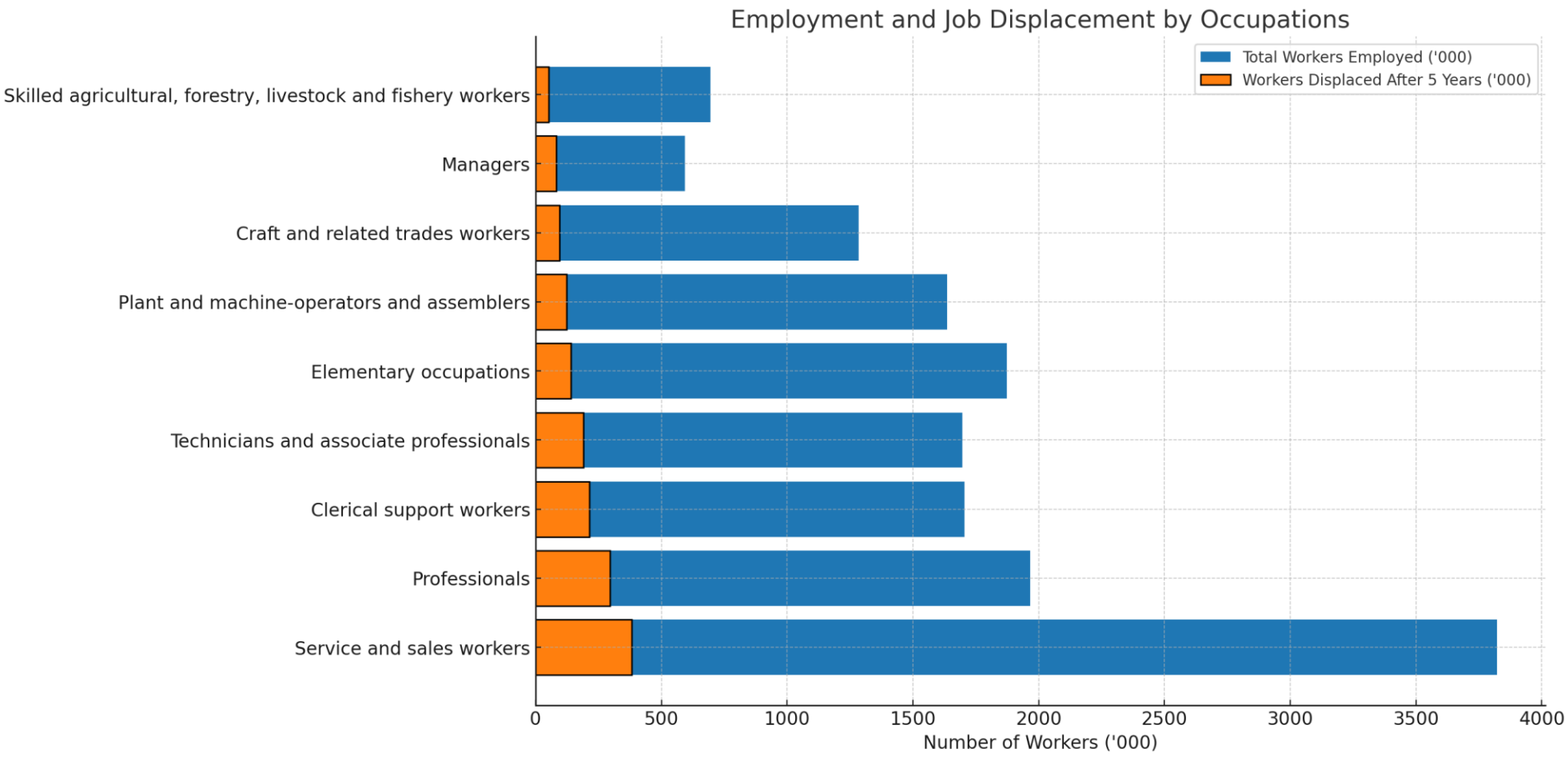
# Displacement Rates



# Estimation Results

| Occupation | Total Number of Workers Employed (2021) ('000) | Job Displacement Rates | Workers Displaced After 5 Years ('000) |
|---|---|---|---|
| Managers | 594.10 | 0.55 | 81.98 |
| Professionals | 1,967.00 | 0.60 | 295.05 |
| Technicians and associate professionals | 1,695.60 | 0.45 | 190.77 |
| Clerical support workers | 1,704.60 | 0.50 | 213.08 |
| Service and sales workers | 3,822.80 | 0.40 | 382.28 |
| Skilled agricultural, forestry, livestock and fishery workers | 695.10 | 0.30 | 52.13 |
| Craft and related trades workers | 1,284.80 | 0.30 | 96.36 |
| Plant and machine-operators and assemblers | 1,637.10 | 0.30 | 122.78 |
| Elementary occupations | 1,873.80 | 0.30 | 140.54 |
| **TOTAL** | **15,274.90** | | **1,575.97** |

# Estimation Results



# Key Takeaways

- The model
  - Simple and flexible
- Wide-spread job displacement
  - Varying degrees, across all sectors
  - Estimated 1.58 million displaced workers
- AI threatens white-collar jobs, while automation impacts blue-collar jobs.
- Urgent need for proactive policies
  - AI investment
  - AI education and training
  - Social safety net

# Thank you