A New Estimation of Worklife Expectancy for Loss of Future Earnings:
Redefining Disability and Distributional Results

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What is Life Worth? A Transatlantic Dialogue on Compensation

(Joint Event with the 20th NAFE Conference)

Centre for Actuarial Compensation and Valuation of Life (CAVOL)
School for Business and Society
University of York

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Outline

1. A court-case example
2. UK framework
3. Data
4. Methodology and outputs
5. Example compensation calculation
6. The Impact?

1. A court-case example

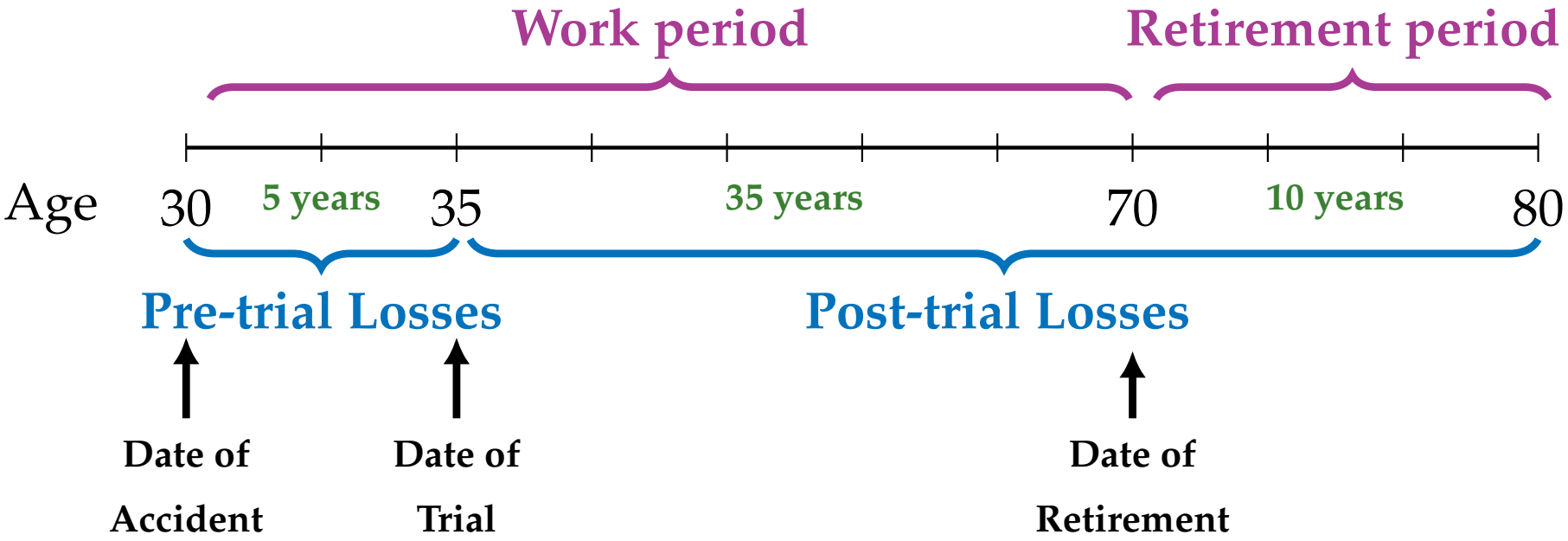
1.1. Case Details and Compensation

*A woman with **mid-level qualifications** (two A levels) was working in a full-time administrative role on a **net salary** of **£40,000** at the time of injury. She suffered some ongoing physical impairment following a **negligent medical procedure**. At the time of settlement, she is **35 years old**. She lost her job and the need for additional self-care precludes full-time employment. Her **potential future net salary** has been determined as **£20,000** at settlement.*

- **Compensation** for personal injury or death is a **legal matter**—but the **calculations** rely heavily on **actuarial methods**.
- In the context of personal injury and clinical negligence, compensation refers to the **monetary award** given to an injured individual, intended to **alleviate the financial impact** of their injury as fully as possible.

2. UK Framework

2.1. A Schematic Representation of Compensation Calculation



- **Future:** contingencies such as **mortality**, **work life expectancy**, **earning growth**, **discount rates**, etc.
- **Ogden Tables** (Government Actuary's Department)
- **Multiplier-Multiplicand** method

$$\underbrace{\textit{Estimated Annual Loss}}_{\textbf{multiplicand}} \; x \; \underbrace{\textit{Estimated Number of Years}}_{\textbf{multiplier}}$$

2.2. Funders of the Research

With sincere thanks for their support.

- Institute and Faculty of Actuaries (IFoA)
- Personal Injury Bar Association (PIBA)
- Professional Negligence Bar Association (PNBA)
- Association of Personal Injury Lawyers (APIL)
- Association of British Insurers (ABI)
- Society of Clinical Negligence Lawyers (SCIL)
- Forum of Complex Injury Solicitors (FOCIS)
- AccessAble
- Anthony Gold Solicitors
- Bevan Brittan LLP
- Capsticks Solicitors LLP
- Chase de Vere
- Cloisters
- DAC Beachcroft LLP
- Digby Brown LLP
- Evelyn Partners
- Freeths LLP
- Hill Dickinson
- Irwin Mitchell LLP
- Keoghs LLP
- Leigh Day
- Osbornes
- Paladin Group Ltd
- Personal Financial Planning
- Stewarts Law LLP
- William Chapman
- William Latimer-Sayer
- 12 King's Bench Walk
- 1 Crown Office Row
- 7 Barrister's Chambers
- 39 Essex Chambers

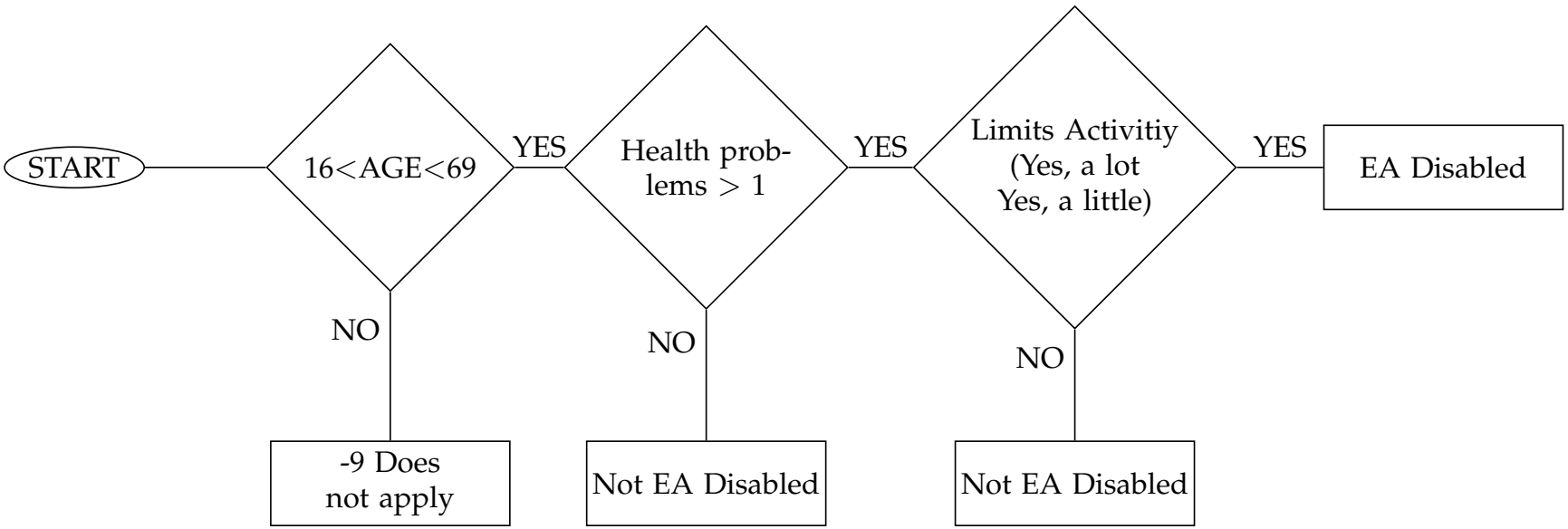
2.3. Background: Evidential Base

- Extended **working-age population** - (16-69)
- More detailed definition of disability - **"limited a little"** and **"limited a lot"**.
- More **recent Labour Force Survey (LFS)** data (2015-2020) compared to (1998-2003).
- Notable increase in reported **disability prevalence:**

Year	Percentage
1998	**14.5%**
2020	**20.2%**
2024	**24.4%**

- The increase in reported disability is more likely to reflect **behavioural**, **cultural**, and **social changes** instead of functional.

2.3. Current Disability Status



LFS classification algorithm to determine current disability status for Ogden analyses.

2.3. Background: Methodological Development

- Offering an approach to the **treatment of uncertainty**
- From a **point estimate** to a **prediction interval**
- **Distributions** of the *RF*s under the EA definition.

3. Data

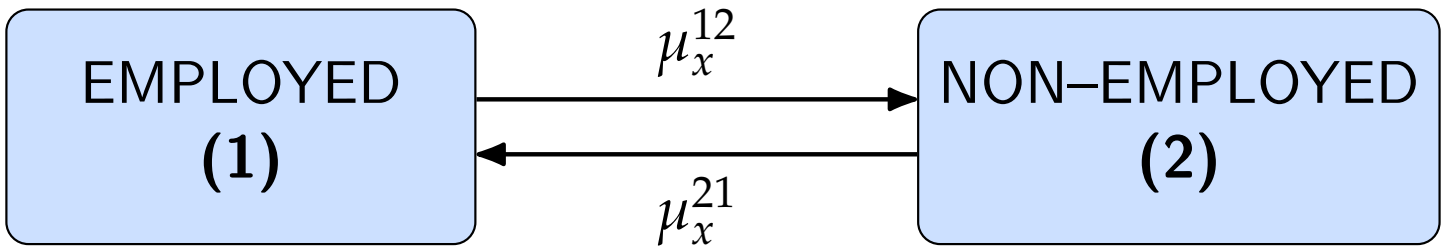
3.1. Longitudinal Labour Force Survey (LFS)

- **LFS** quarterly data **(2015–2020)**, 20 quarterly datasets.
- **71,363** working-age respondents (age 16–69).
- Respondents observed over **5 consecutive quarters**.
- **Employment status** categorised into:
  - **Employed**
  - **Non-employed** (unemployed and inactive).
- **Disability status:** EA-disabled vs non-EA-disabled.
- **Education levels** grouped into Level 1, 2, and 3.

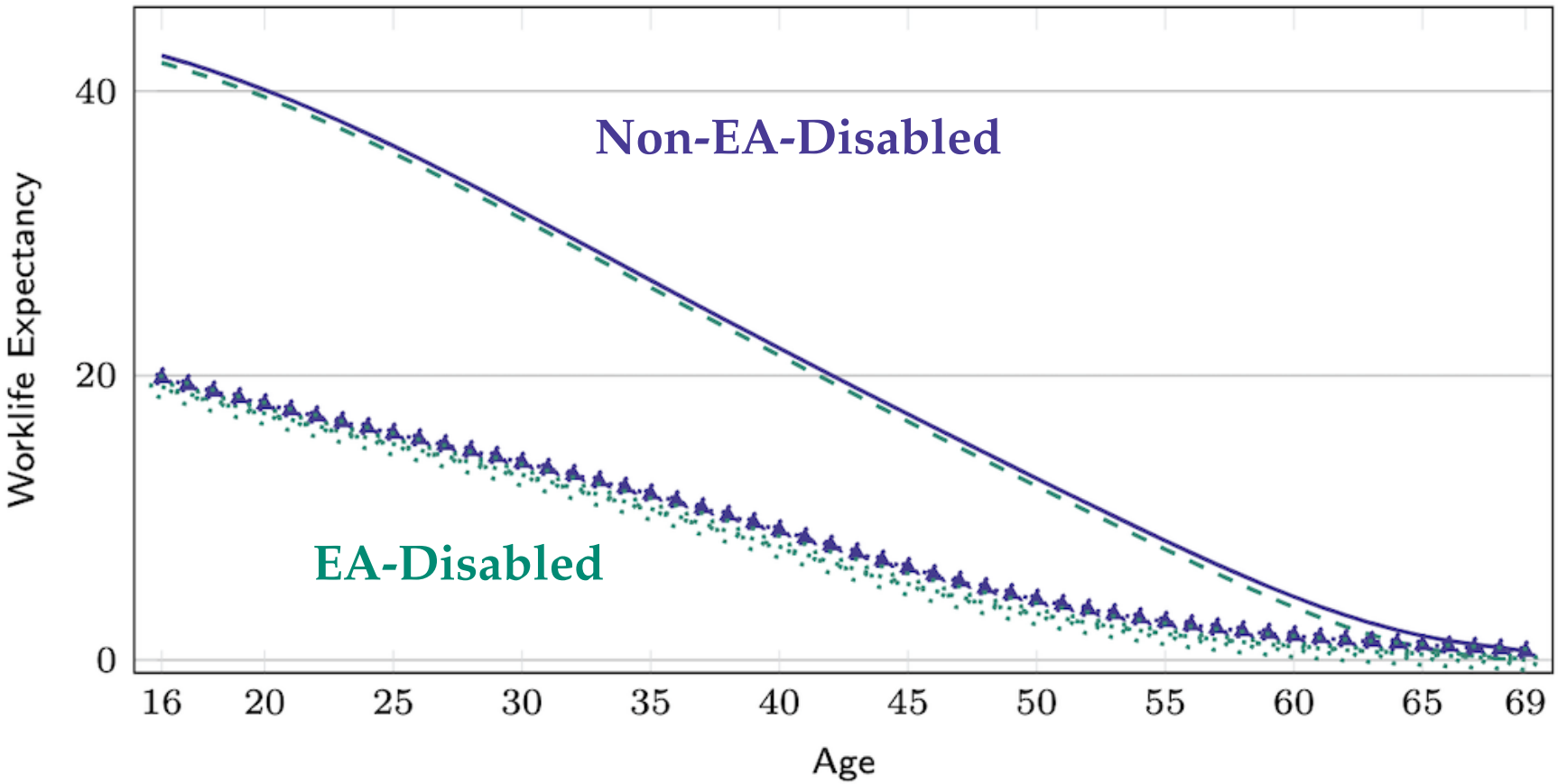
4. Methodology

4.1. 2-State Markov Model

- Follows the dynamic labour market modelling framework of Butt et al. (2008).
- Estimates expected future time in employment — **Worklife Expectancy (WLE)**.
- Uses a **2-state and 4-state continuous-time Markov model**:
- Built from longitudinal LFS data (2015–2020).

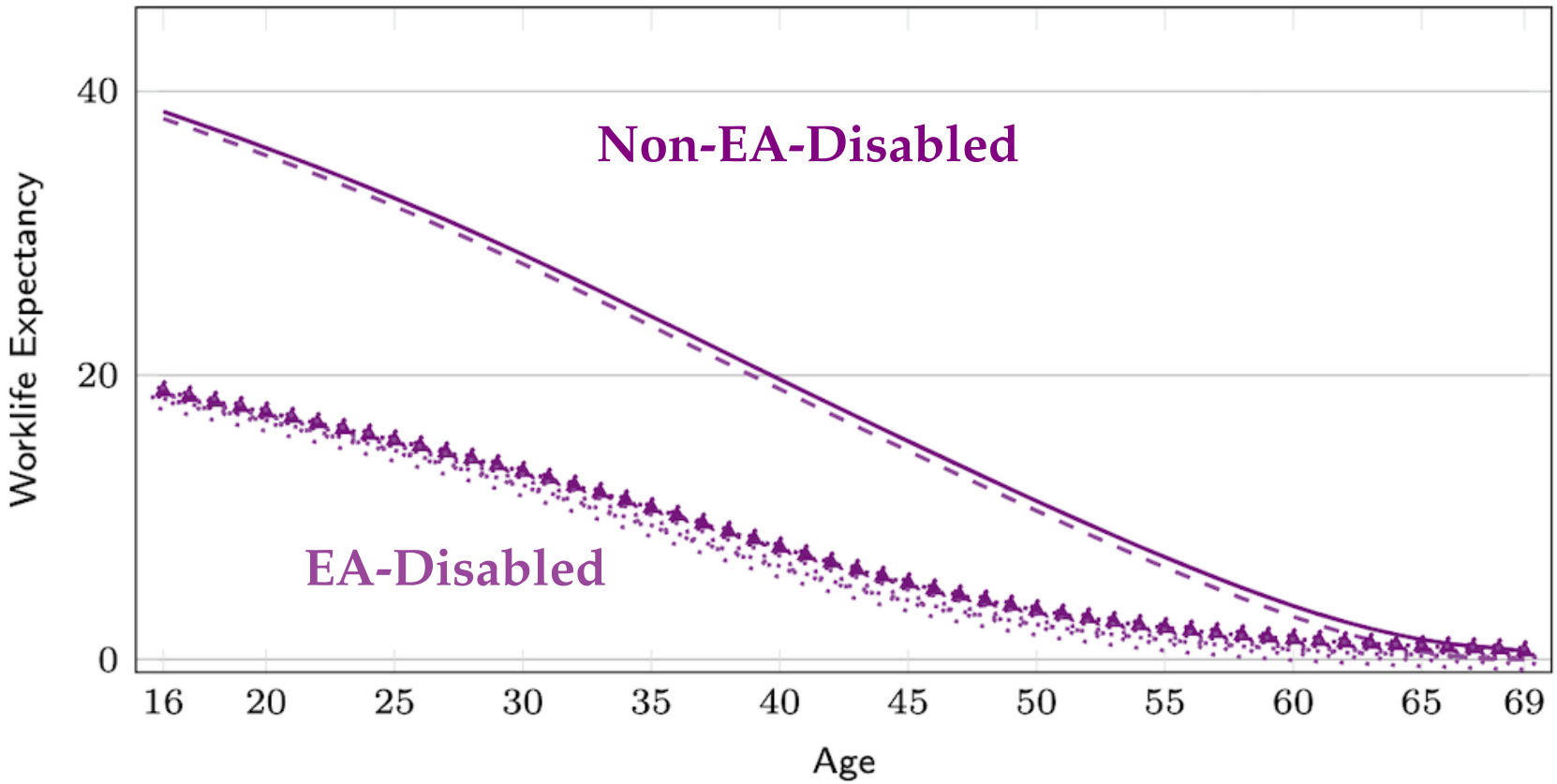


4.2. WLE – EA vs Non-EA Disabled Males



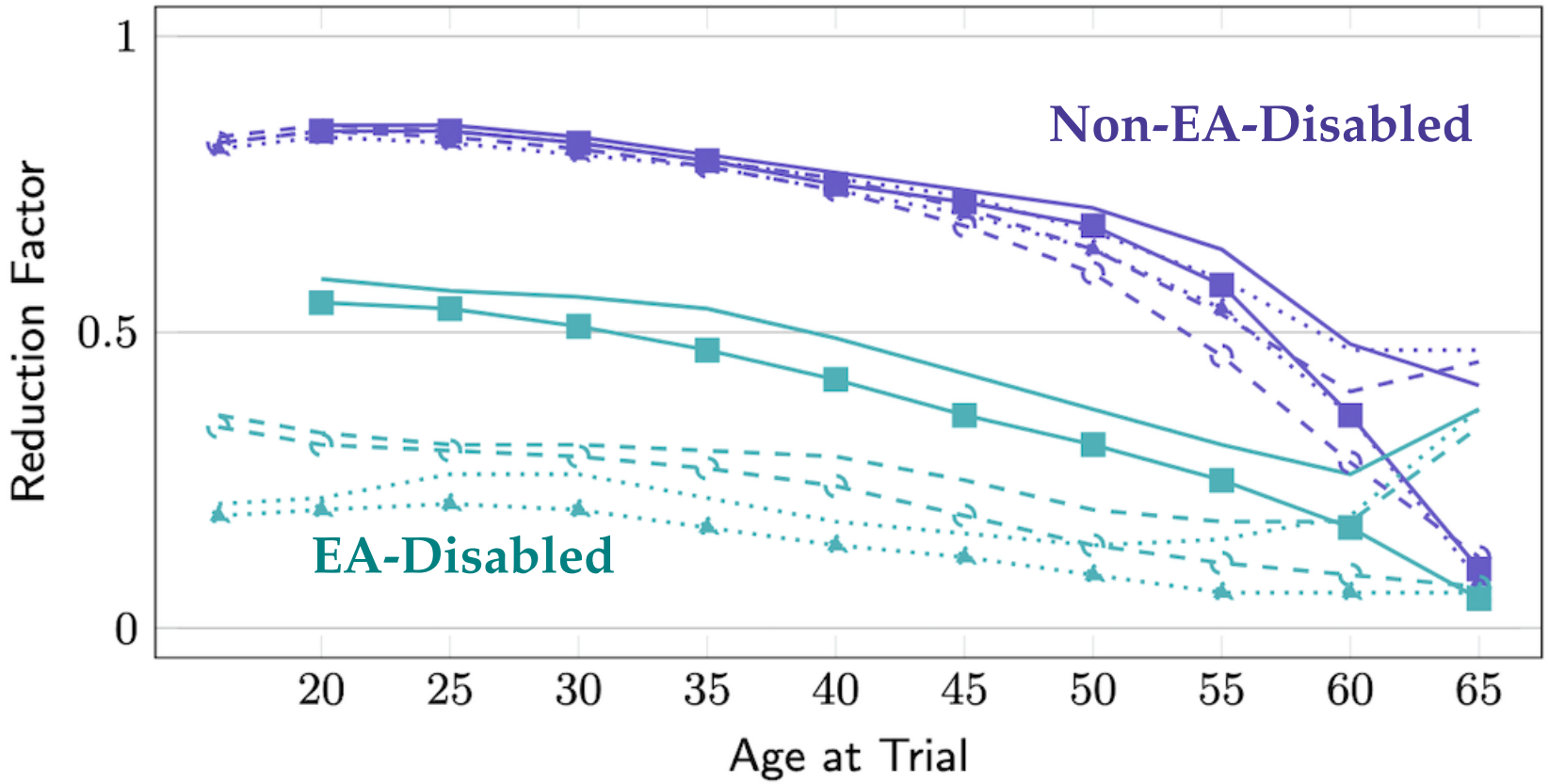
Worklife expectancies to pension age 70 conditional on being in the employed state (solid curves) and non-employed state (dashed/dotted curves).

4.2. WLE – EA vs Non-EA Disabled Females

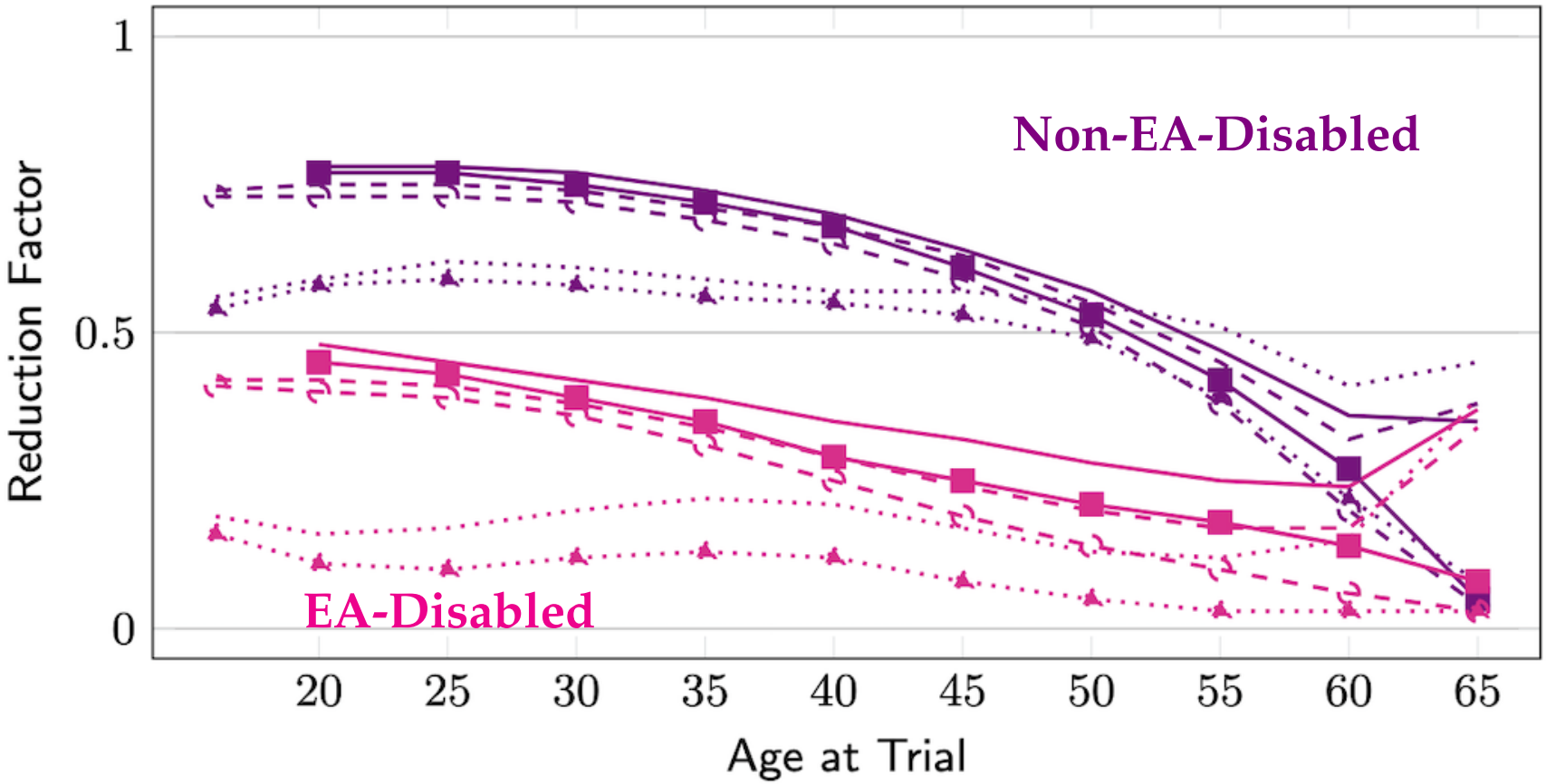


Worklife expectancies to pension age 70 conditional on being in the employed state (solid curves) and non-employed state (dashed/dotted curves).

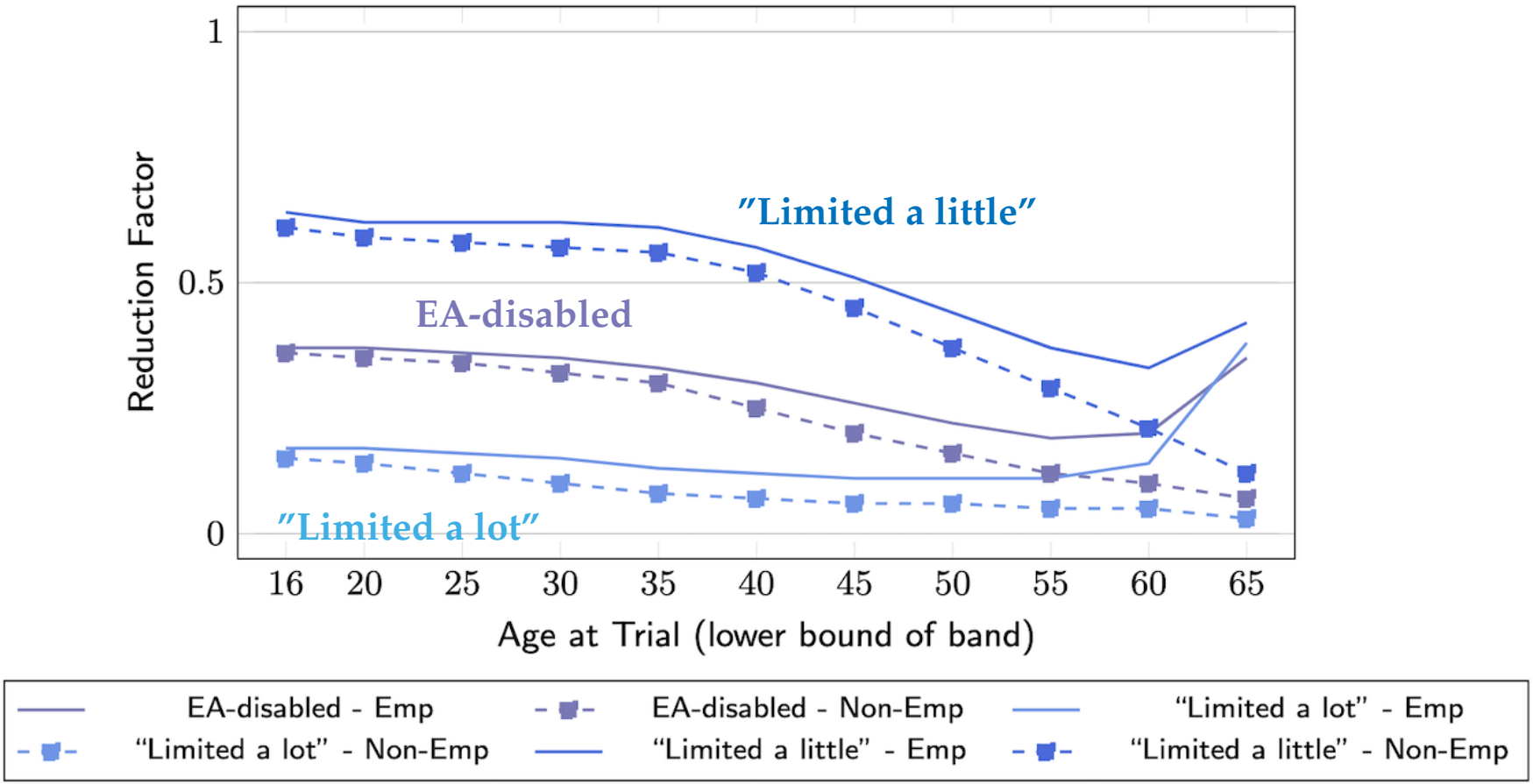
4.3. Reduction Factors for Males



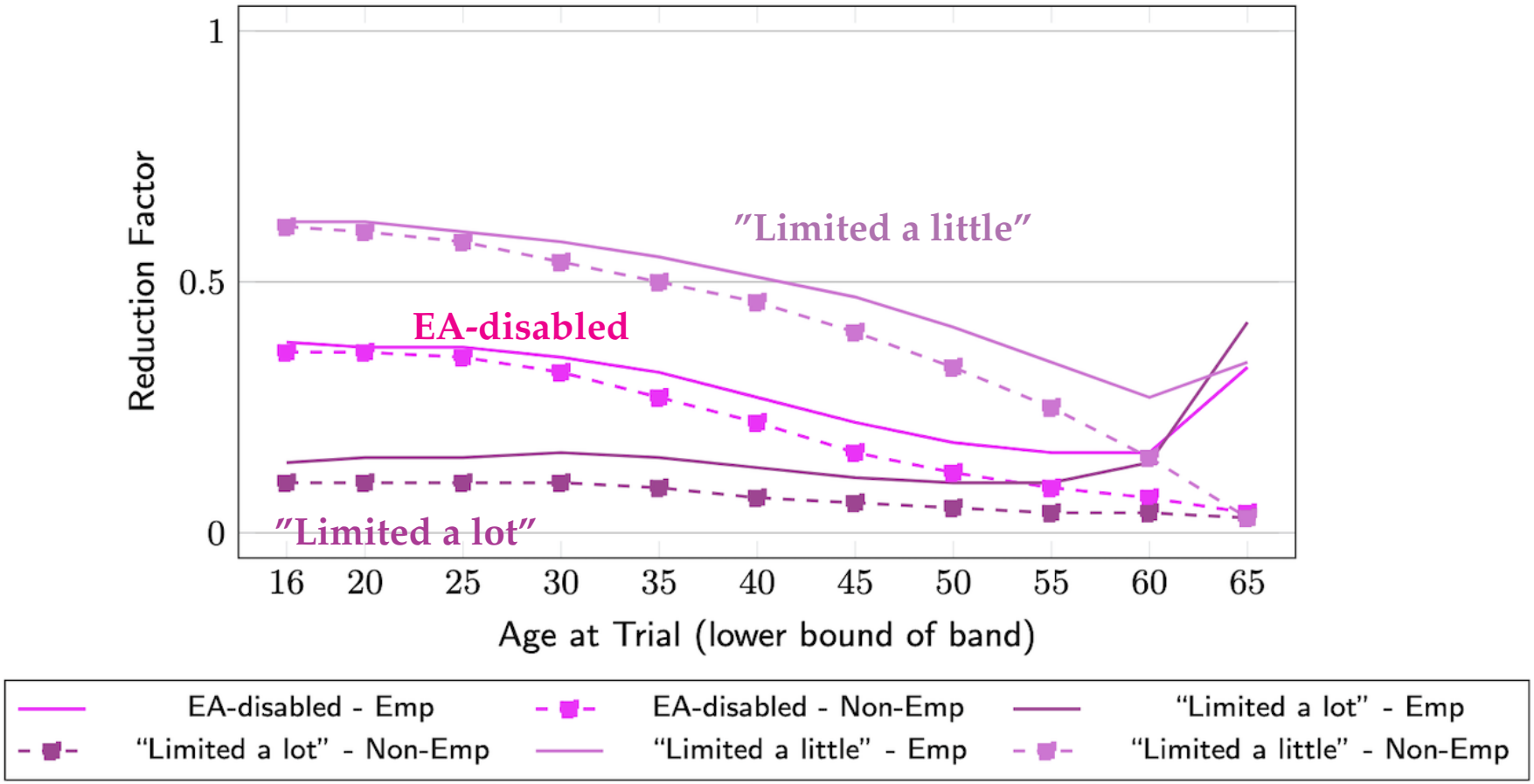
4.3. Reduction Factors for Females



4.4. EA-Disabled vs ”Limited a lot” vs ”Limited a little” (Males)



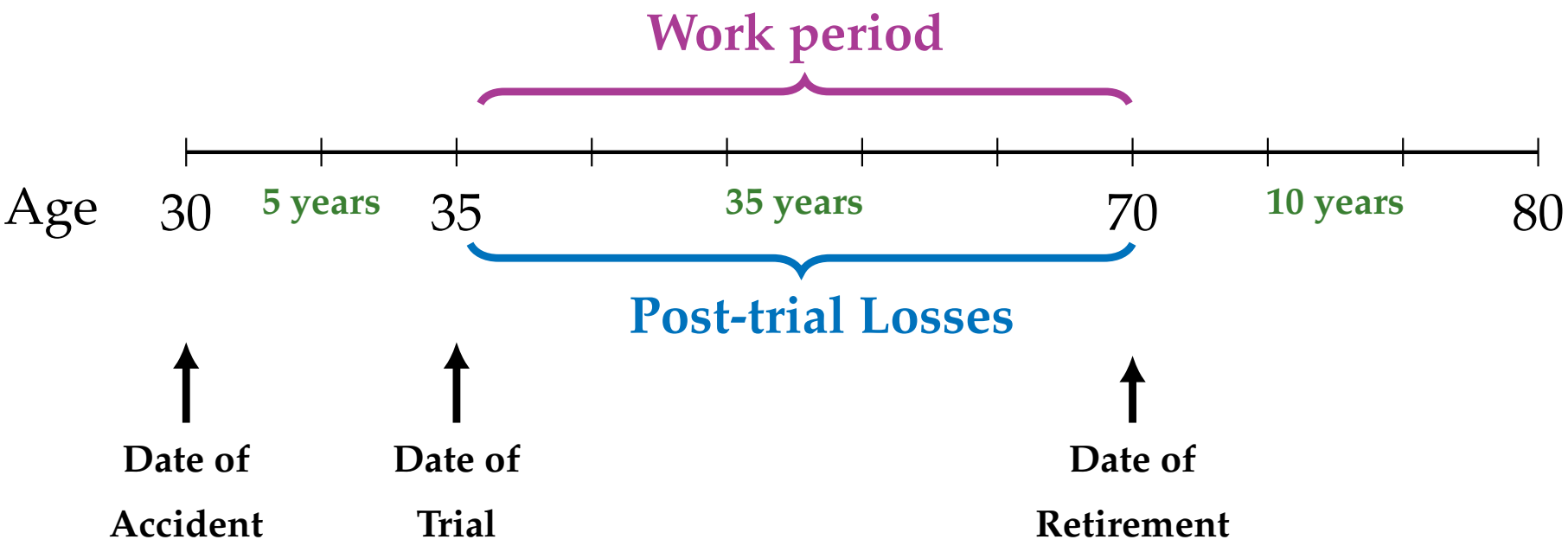
4.4. EA-Disabled vs ”Limited a lot” vs ”Limited a little” (Femles)



5. Example Compensation Calculation

*A woman with **mid-level qualifications** (two A levels) was working in a full-time administrative role on a **net salary** of **£40,000** at the time of injury. She suffered some ongoing physical impairment following a **negligent medical procedure**. At the time of settlement, she is **35 years old**. She lost her job and the need for additional self-care precludes full-time employment. Her **potential future net salary** has been determined as **£20,000** at settlement.*

5.1. A Schematic Representation of Compensation Calculation



5.2. Example: Using RF_3 (EA definition)

- Using RF_3 on the EA definition of disability (Şahin and Wass, 2026) and multipliers to retirement at 70 with a PIDR of 0.5% (31.30; Table 14, Ogden Tables 8th Edition, GAD (2022)), her future loss of earnings is calculated as follows:

$$\text{Pre-injury calculation: } 31.30 \times 0.71 \times £40{,}000 = £888{,}920$$
$$\text{Post-injury calculation: } 31.30 \times 0.31 \times £20{,}000 = £194{,}060$$

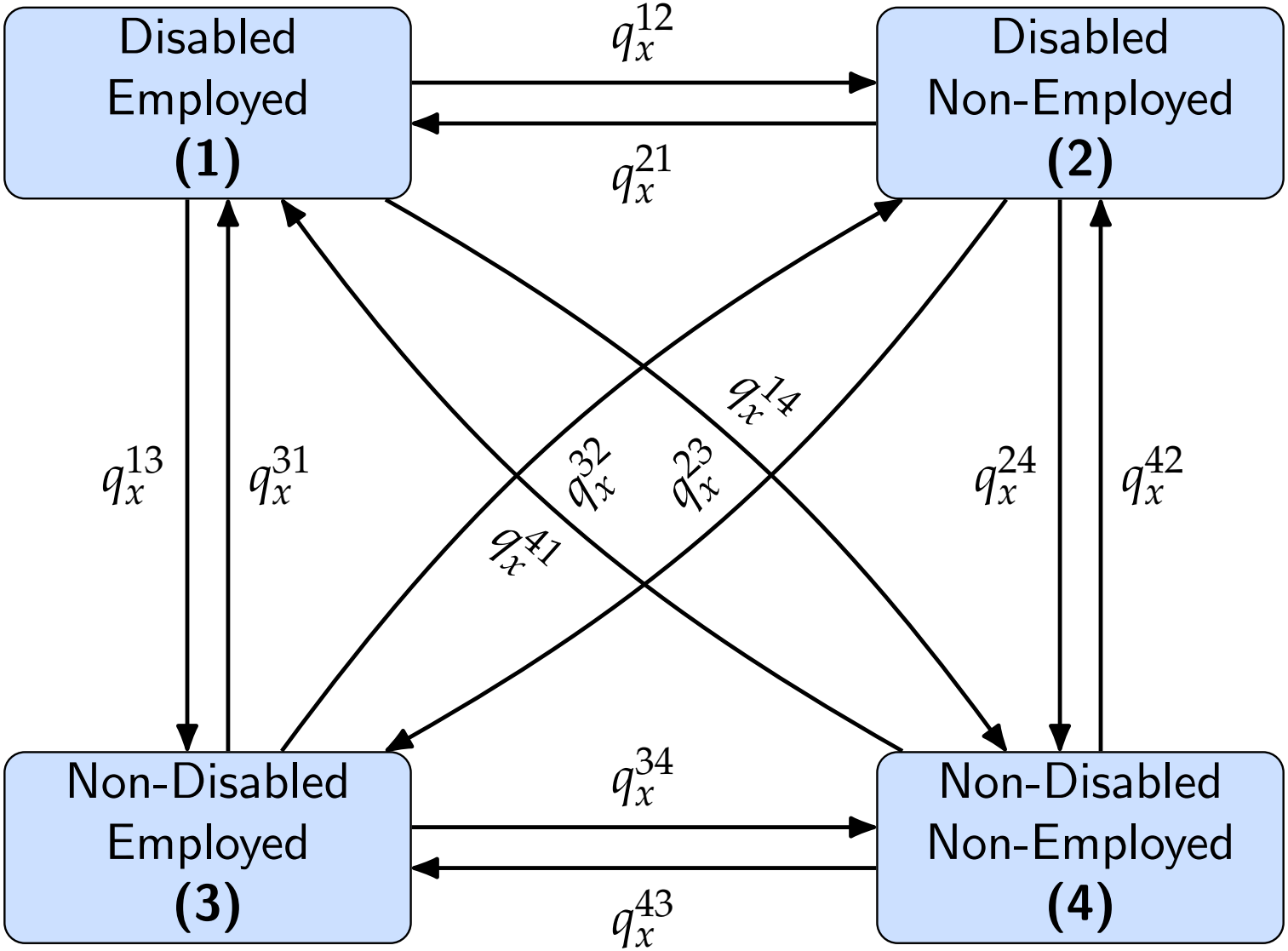
The sum for future loss of earnings is given by subtracting the post-injury sum from the pre-injury sum: £694,860.

5.2. **Example:** Using the RF_3 distribution (IQR approach

- Using the distribution of RF_3 summarised by its quantiles at age 35 (Şahin and Wass, 2026)—specifically the first and third quartiles, Q_{25} and Q_{75}—and applying the multipliers to retirement at 70 with a PIDR of 0.5% (31.30; Table 14, Ogden Tables 8th Edition, GAD (2022)), the interquartile range for future loss of earnings is calculated as follows:

	Pre-injury			**Post-injury**		
	Q_{25}	Q_{50}	Q_{75}	Q_{25}	Q_{50}	Q_{75}
RF	0.70	0.73	0.75	0.25	0.30	0.36
OM$(= 31.30 \times RF)$	21.91	22.85	23.48	7.83	9.39	11.27
Income $\times$ **OM**	£876,400	£914,000	£939,200	£156,500	£187,800	£225,360

5.3. 4-State Markov Model



6. *The Impact?*

6. The *Impact*?

- ***William Latimer-Sayer KC**, the Chair of the Ogden Working Party*

  *... The **impact** and **reach** is **very significant**. The valuation of nearly **all future loss of earnings claims** in the UK **will be improved** by these revised estimates. The data is relied upon by everyone involved in the assessment of future loss of earnings in personal injury claims, including **lawyers, insurers, judges, and institutions such as the NHS, MoJ, and MoD**.*

Thank You

Questions?

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