



UCD School of Social Policy, Social Work and Social Justice

Scoil an Pholasaí Shóisialta, na hOibre Sóisialta agus na Córa Sóisialta UCD

‘The flawed Old Age Dependency Ratio should be replaced by a dashboard of indicators based on the Labour Dependency Ratio to better inform policymakers concerned about population ageing and future costs’.

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NERI Labour Market Conference 2025

Outline

- What are we trying to do?
- The 'working age' population
- The 'dependency ratio' (DR)
 - Old Age DR
 - Child DR
 - "Total" DR
- Genuine Total DR = Labour Dependency Ratio
- Critique of dependency ratios
- Arguments for a dashboard
 - Modified LDR excluding low paid workers
 - Pension age LDR
 - Healthcare LDR
 - Child and Student LDR
 - Disability LDR
 - Welfare LDR

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What are we trying to understand?

Broadly, the carrying capacity that an economy has to support 'dependents'.

The focus in much of the literature has tended to be:

- Size of 'working age' population
- Number of dependent children and older people

Critiques in Bartram and Roe (2005), Sanderson and Scherbov (2015), WHO (2021) etc.

Yet the OADR remains dominant in the literature.

The 'working age' population

“The working-age population is a central concept in labour statistics. Changes in the size of the working-age population can impact significantly the labour market and the economy.”

– International Labour Organisation (ILO)

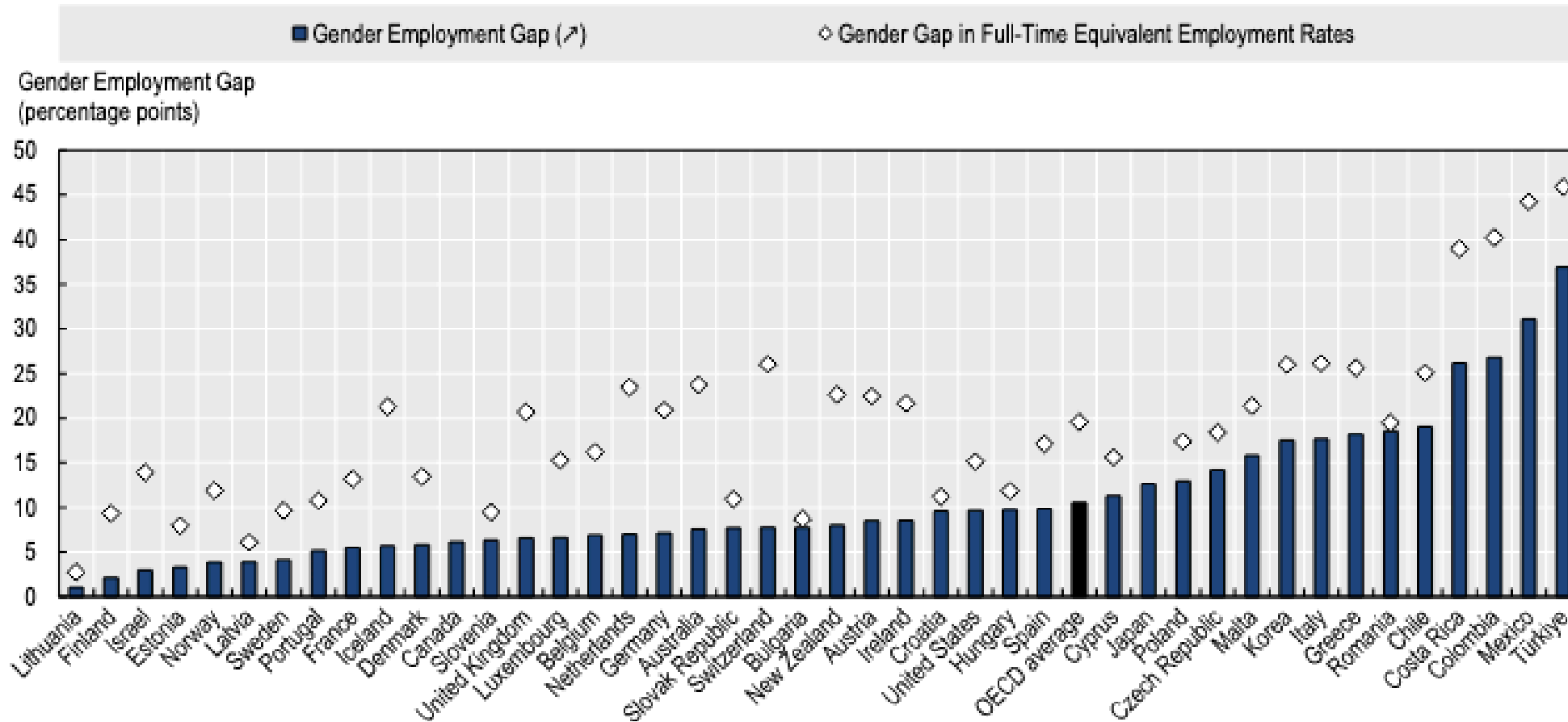
The working age population is typically defined as 15-64.

However, this is not necessarily accurate (e.g. students, working age dependents, and older workers). E.G. 1 in 9 aged 65+ is at work.

The UN Department of Economic and Social Affairs Population Division uses five variants: 15-64, 20-64, 20-69, 25-64 or 25-69.

An important consideration: this data is not necessarily consistent over time, nor is it measuring the same thing in international comparison.

e.g. Gender Employment Gap (OECD)



The Dependency Ratio

In the early days of estimating dependency in the economy, the focus shifted to **counting the number of workers**, and then (in the context of the 1940s when data was less available) towards measuring and projecting **the population of 'working age'**.

The 'dependency ratio' approach seeks to quantify carrying capacity, by counting:

- The number of workers in a country's population.
- The number of dependents.

And expressing the carrying capacity as a ratio between workers and dependents.



Old Age Dependency Ratio (OADR)

$$\frac{\text{Population aged 65 and over}}{\text{Population aged 15-64}} = \text{Old Age Dep. Ratio}$$

Critiques: ageist assumptions (WHO); ignores older workers; and ignores child and working age dependents.

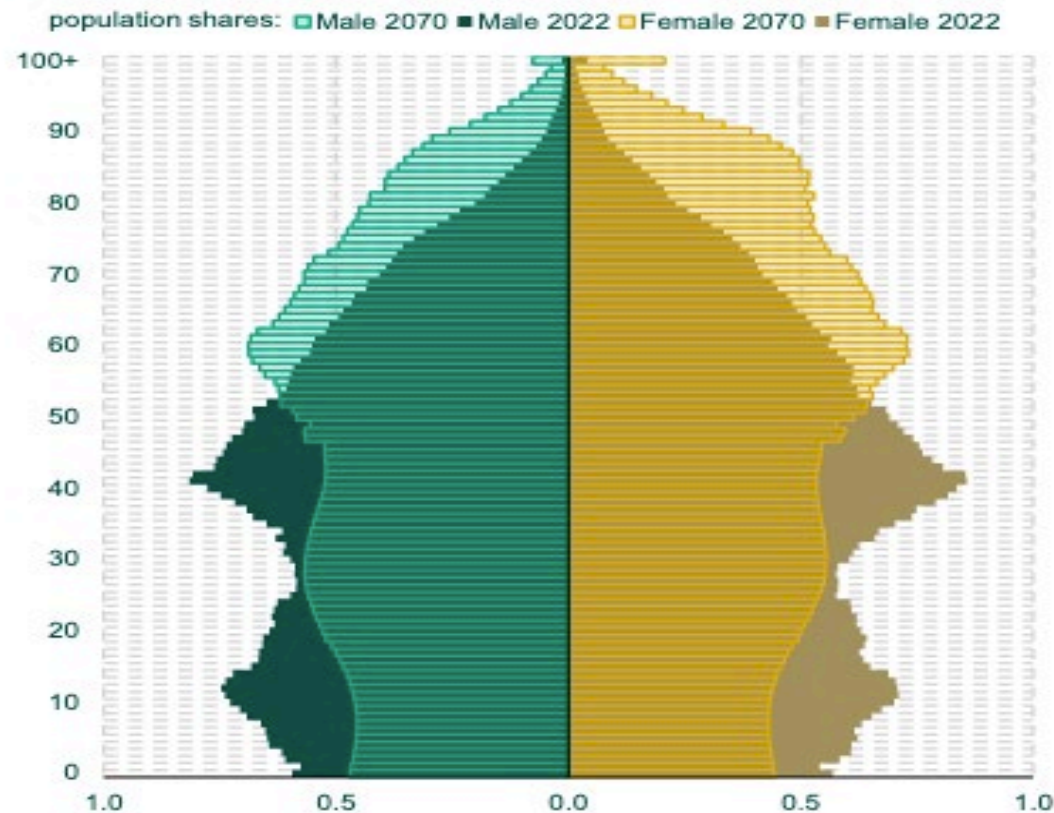
Inaccuracies in the OADR

- It does not take account of...
 - improvements in life expectancy
 - countries' differing state pension ages
 - working age employment rates
 - working age dependents
 - older workers
 - income levels (individual 'carrying capacity')
 - productivity
 - unpaid work
 - the economic self-sufficiency of some older persons
 - changes in family formation
- It does not correlate with more accurate measurements of dependency
- It is inconsistent over time
- It is inconsistent between countries

‘Demographics’ in the National Economic Dialogue 2023

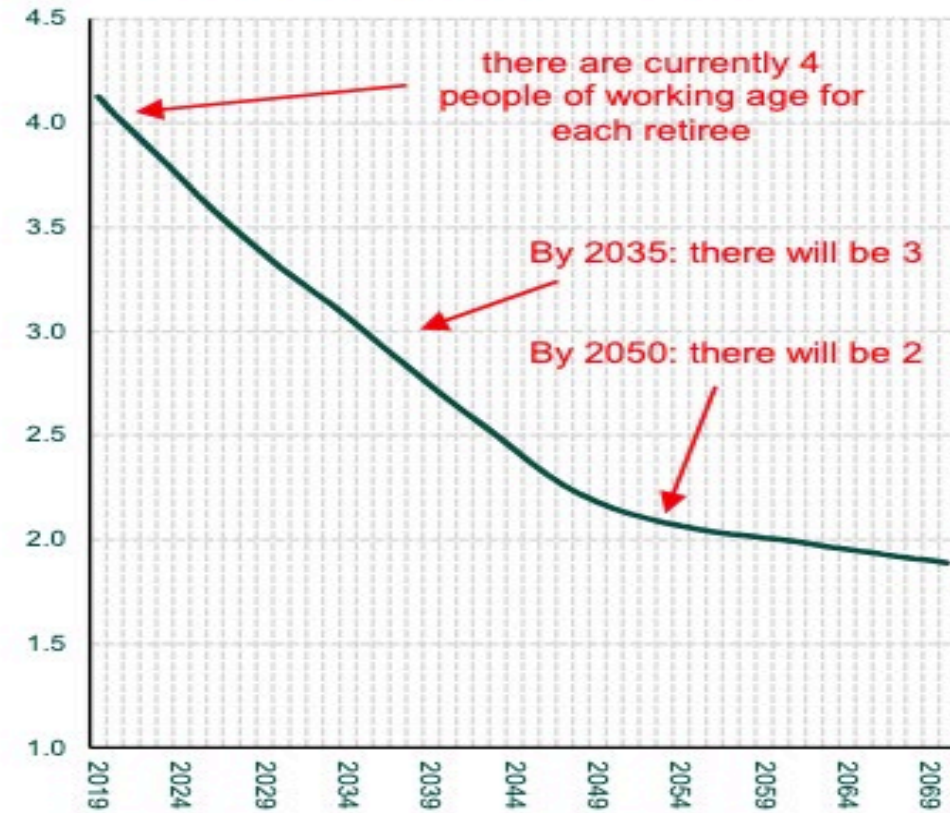
Figure 2: The Irish population is ageing

A: Ireland's demographic profile is changing



Source: Eurostat, Department of Finance.

B: fewer working age people for each retiree



Source: Eurostat, Department of Finance.

Child Dependency Ratio

$$\frac{\text{Population aged 0-14}}{\text{Population aged 15-64}} = \text{Child Dependency Ratio}$$

‘Total’ dependency ratio (Child + Old Age)

$$\frac{\text{Population aged 0-14 and 65+}}{\text{Population aged 15-64}} = \text{‘Total’ Dependency Ratio}$$

‘Total’ is a misnomer as it excludes working age dependents and ignores older workers.

Many 'working age' dependents

- Total labour force was 82% of the population aged 15-64.
 - Ireland's employment rate (15-64) was 78.0% in Q4 2024.
 - Unemployment was 4.0%.
- That implies 18% 'working age' dependents.
- For example:
 - Students
 - Parents on parental/maternity/paternity/adoptive leave
 - People unable to work due to disability or illness
 - Carers
 - Early retirees (<65)

Genuine total dependency ratio = 'Labour Dependency Ratio'

$$\frac{\text{Population not in work}}{\text{Population in work}} = \text{Labour Dependency Ratio}$$

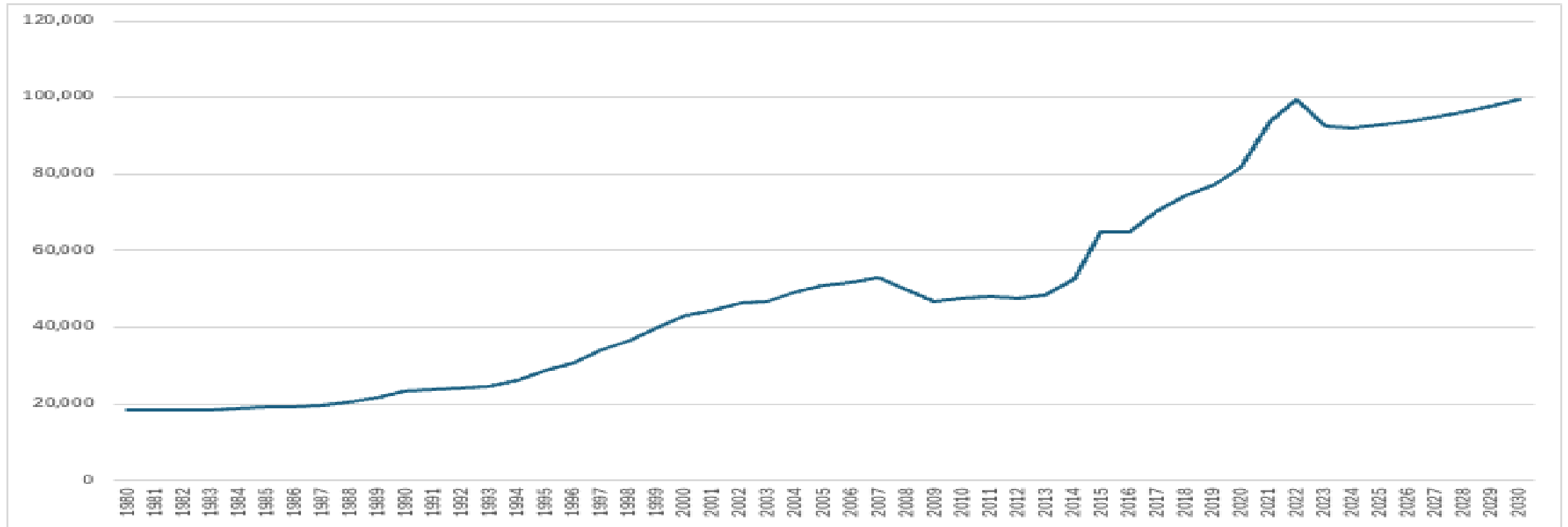
Pro: more accurate than the OADR etc. Reflects the tax base from the labour force.

Con: harder to estimate future labour force (versus population).

Critique of Dependency Ratios

- Our goal is to understand the strain on the economy from 'dependents'. But the dependency ratios focus exclusively on the carrying capacity of workers and labour income.
- Important considerations:
 - Overall size of economy
 - Future growth
 - Productivity
 - Wealth
- **Productivity** changes the carrying capacity of workers, and that is not reflected in the dependency ratios.
- The focus on working age or labour ignores **the carrying capacity of capital** (and the important role of capital taxation).

e.g. Ireland's GDP/capita 1980-2030 (projected)



Data source: IMF World Economic Outlook Database

Argument for a LDR Dashboard

- Despite its limitations the LDR (more so than the OADR) provides meaningful information about the economy's capacity to support dependents.
- But not all dependents imply the same cost to the economy. It makes sense to differentiate different dependents (e.g. Sanderson and Scherbov, 2015).
- Variants of the LDR allow for fine-tuning the relative carrying capacity of workers, or the relative cost of different dependents.

Modified LDR excluding low income workers

Not all workers have the same carrying capacity.

Dependency ratios can't expect significant fiscal contributions from:

- Low income workers (e.g. minimum wage, <60% median)
- Most part-time workers

Harasty and Ostermeier (2020) propose several modifications to the OADR that could equally apply to the LDR, including the Labour Underutilisation DR, Working Poor DR and Vulnerable Employment DR.

<https://webapps.ilo.org/static/english/intserv/working-papers/wp005/index.html>

Pension Age LDR

- The OADR assumes dependency from age 65, however the Irish state pension age is 66, and can be deferred up to 70.
- Pension dependency can be expressed as follows:

$$\frac{\text{Population not in work aged 66+}}{\text{Population in work}} = \text{Pension LDR}$$

Source: CSO PEA11 2024 (780,244 aged 66+)

Healthcare LDR

- The major healthcare users are typically those in the last five years of life.
- One way to estimate this is to take the average life expectancy, and to count the population aged five years younger than average life expectancy and upwards.
 - e.g. Ireland: average life expectancy from age 65 is 83.3 for men and 86 for women, which adds up to 212,957 people (men aged 78+ and women aged 81+).

Older Healthcare User Population

= Healthcare LDR

Population in work

Source: CSO PEA11 2024 (100,016 women aged 81+ and 112,941 men aged 78+ = 212,957)

Child and Student LDR

- A separate Child and Student LDR can be calculated based on the number of children and young adults not at work.

Population in Childhood or Education

= Child and Student LDR

Population in work

Source: CSO QLF19 Q4 2024 (484,900) plus CSO PEA01 2024 (1,010,300 aged 0-14) = 1,495,200

Disability LDR

- Standard labour market statistics include people unable to work due to illness or disability.
- Note, this overlaps at oldest ages with healthcare LDR.

Population with Disability or LT Illness

= Disability LDR

Population in work

Source: DSP Quarterly Statistical Report Q4 2024 (Disability Allowance, Illness Benefit and Invalidity Pension combined)

Welfare LDR

- Welfare statistics inform us of the number of people reliant on a core weekly social protection payment as their primary income.

Population reliant on Weekly Welfare

= Welfare LDR

Population in work

Source: DSP Quarterly Statistical Report Q4 2024

Dashboard of Labour Dependency Ratios

Pension Age LDR	Healthcare LDR
$\frac{780,244}{2,776,400} = 0.28 \quad [3.57 \text{ workers per p.}]$	$\frac{212,957}{2,776,400} = 0.08 \quad [12.50 \text{ workers per p.}]$
Child and Student LDR	Disability LDR
$\frac{1,495,200}{2,776,400} = 0.54 \quad [1.85 \text{ workers per p.}]$	$\frac{338,478}{2,776,400} = 0.12 \quad [8.33 \text{ workers per p.}]$
Welfare LDR	Total LDR
$\frac{1,446,747}{2,776,400} = 0.52 \quad [1.92 \text{ workers per p.}]$	$\frac{2,603,913}{2,776,400} = 0.94 \quad [1.06 \text{ workers per p.}]$

Advantages of a Dashboard

- **Accuracy: based on LDR, not OADR**
- **Precision: certain indicators will change over time**
(e.g. changing state pension age; changing life expectancy; changing disability rates)
- **Focuses policies on more specific issues**
(e.g. numbers of people with disabilities unable to work; age at which very old people become heavy users of healthcare; birth rates; etc.)
- **But not a complete picture**
 - Labour 'carrying capacity' needs to be factored in, including low income employment and productivity changes.
 - Unpaid work and family formation changes need to be factored in.
 - Also wealth taxation may play an important role in funding dependents.