Consequences on measuring adequacy and sustainability in Social Security after pandemic

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About the authors

- **Raffaello Marcelloni –** *Actuary, Inail*

  Brief bio

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  Brief bio

- Inail – National Institute for Insurance against Accidents at Work

Agenda

- I.N.A.I.L.
- Sustainability and Adequacy
- Indicators of Adequacy and Data Sources
- A Case Study on the Adequacy of Italian Disabled's benefits

I.N.A.I.L.

1933

I.N.A.I.L.

2024

Sustainability and Adequacy

Indicators of Adequacy

Theoretical Replacement Rate

$$TRR = \frac{B_{spa}}{S_{r-1}}$$

TRR = **T**heoretical **R**eplacement **R**ate;

B_{spa} = annual **B**enefit in the first year of retirement at age **r** (disabled pension);

S_{r-1} = pre-retirement annual **S**alary (at age **r-1**)

How many SALARIES can you purchase with the present value of your life pension?

Indicators of Adequacy

Pension Wealth

$$PW = \frac{\sum_{k=1}^{\omega} v^k \; p_{spa,k} \; B_{spa+k}}{S_{spa-1}}$$

PW = **P**ension **W**ealth;

spa = **s**tandard **p**ensionable **a**ge;

υ = discount factor;

$p_{spa,k}$ = **P**robability that an individual who retired at **spa** will survive **k** years;

B_{r+k} = annual **B**enefit of an individual who retired at age **spa** surviving after **k** years (disabled pension);

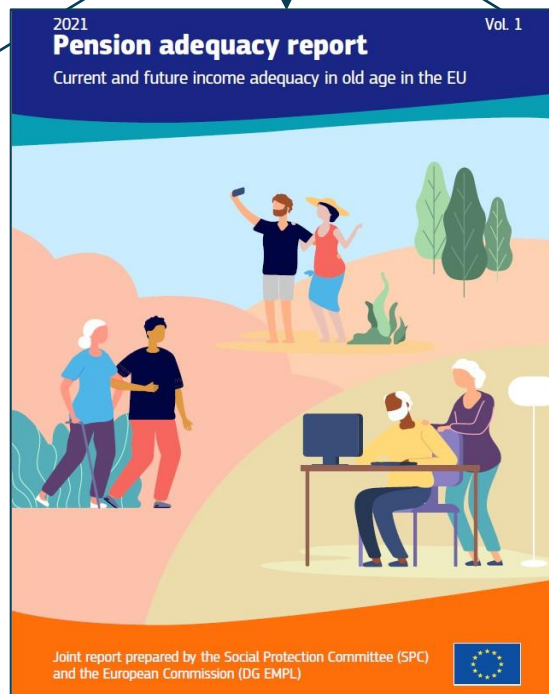S_{spa-1} = pre-retirement annual **S**alary (at age **spa-1**)

**How many SALARIES can you purchase
with the present value of your life pension?**

Indicators of Adequacy - Data Sources

OLD AGE PWs INDICATORS

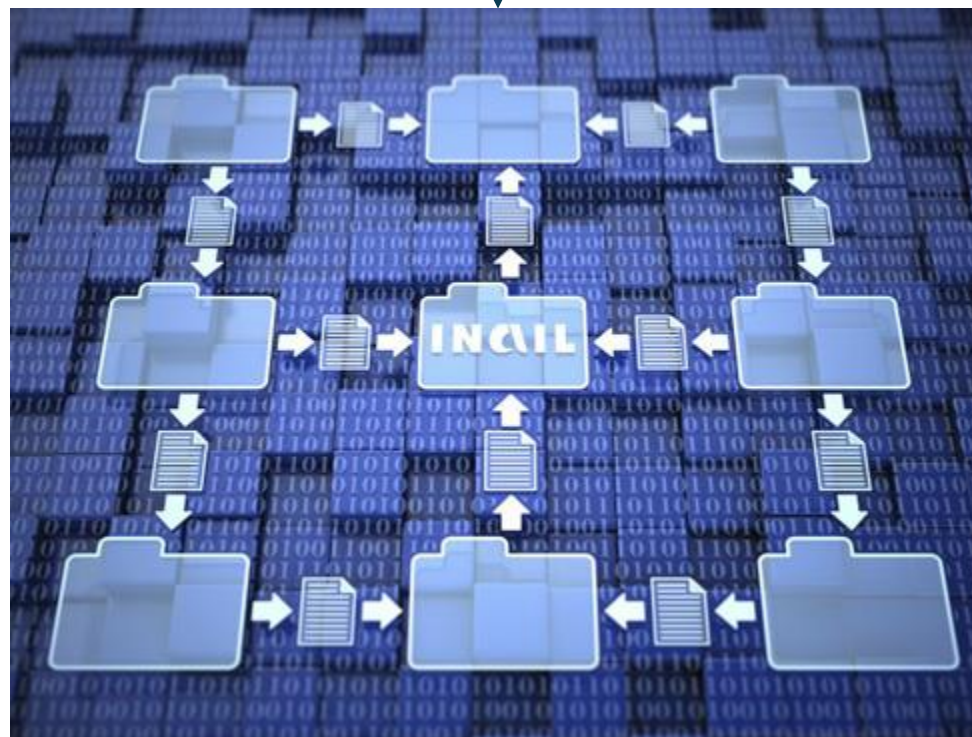**Gross and Net PWs**

Detailed TRR's Italy

TRRs features;
Hp on Careers (Base Case)

Indicators of Adequacy - Data Sources

DISABLED PWs INDICATORS

Inail Databases

A Case Study on the Adequacy of Italian Disabled's benefits

INAIL

ACCIDENTS
An accident due to a violent cause during work

OCCUPATIONAL DISEASE
A work related illness contracted at work over time

Impairment degree from 16%
INAIL provides life annuities.
From July 25th, 2000

A Case Study on the Adequacy of Italian Disabled's benefits

Distribution of annuitants by classes of impairment

Type of Event		Classes of impairment degree	
		16% - 60%	61% - 100%
Accident		59.1%	1.8%
Occupational Disease		38.8%	0,3%

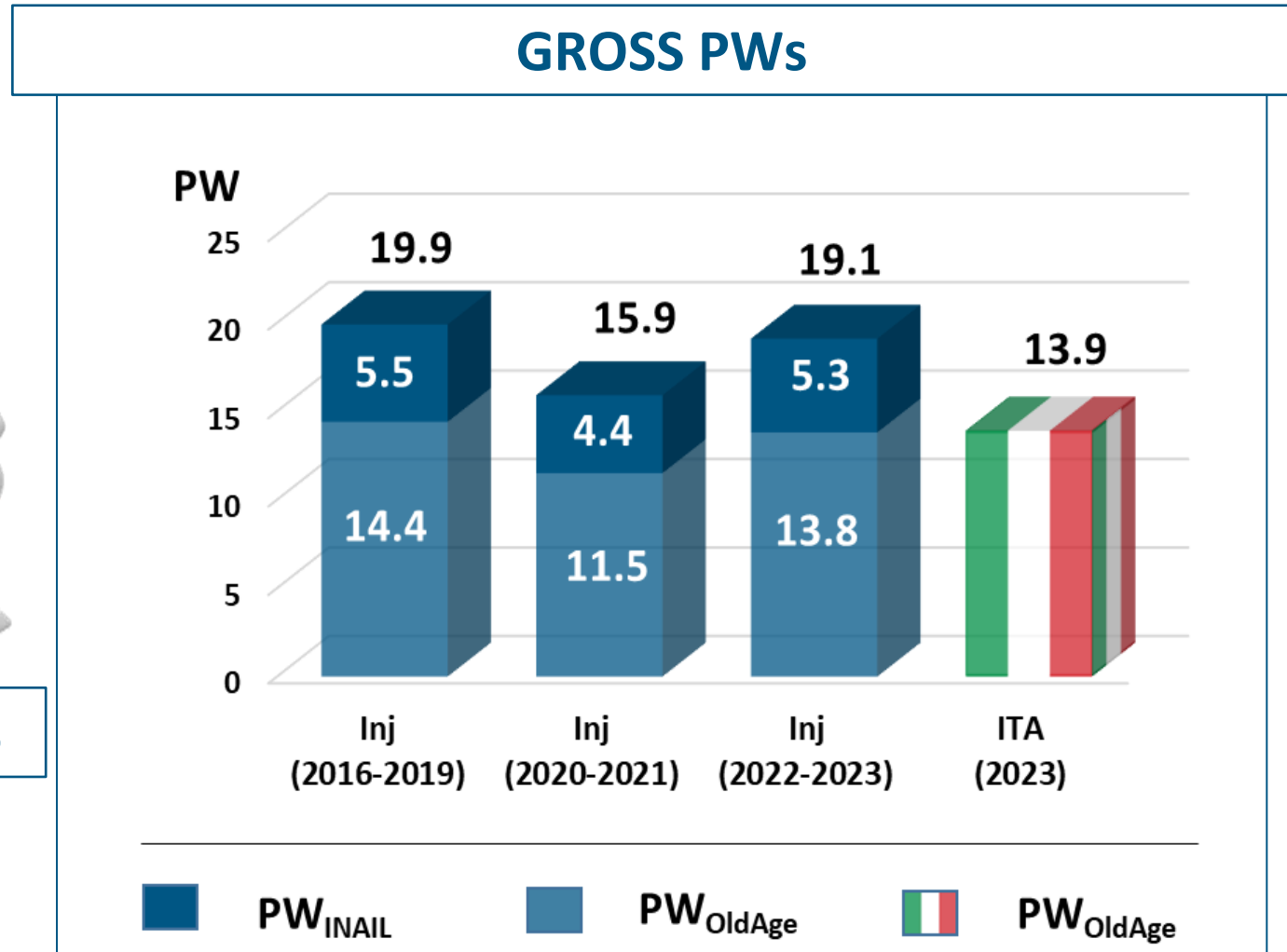# A Case Study on the Adequacy of Italian Disabled's benefits

Assumptions

❑ **Career Length:** 41 years (entry: 26y – retire: 67y)

❑ **Population:** Italian injured workers included in the mandatory compensation program

❑ **Demographic assumptions:** Inail disabled life tables, updated at **2019, 2021, 2023**

❑ **Economic assumptions:**
Price inflation = 2% per year
Real earnings =1.25% per year on average
Discount rate = 2%
Average salaries

❑ **Taxes and Social security contributions:** As for by law respectively in **2019, 2021,** *2023*

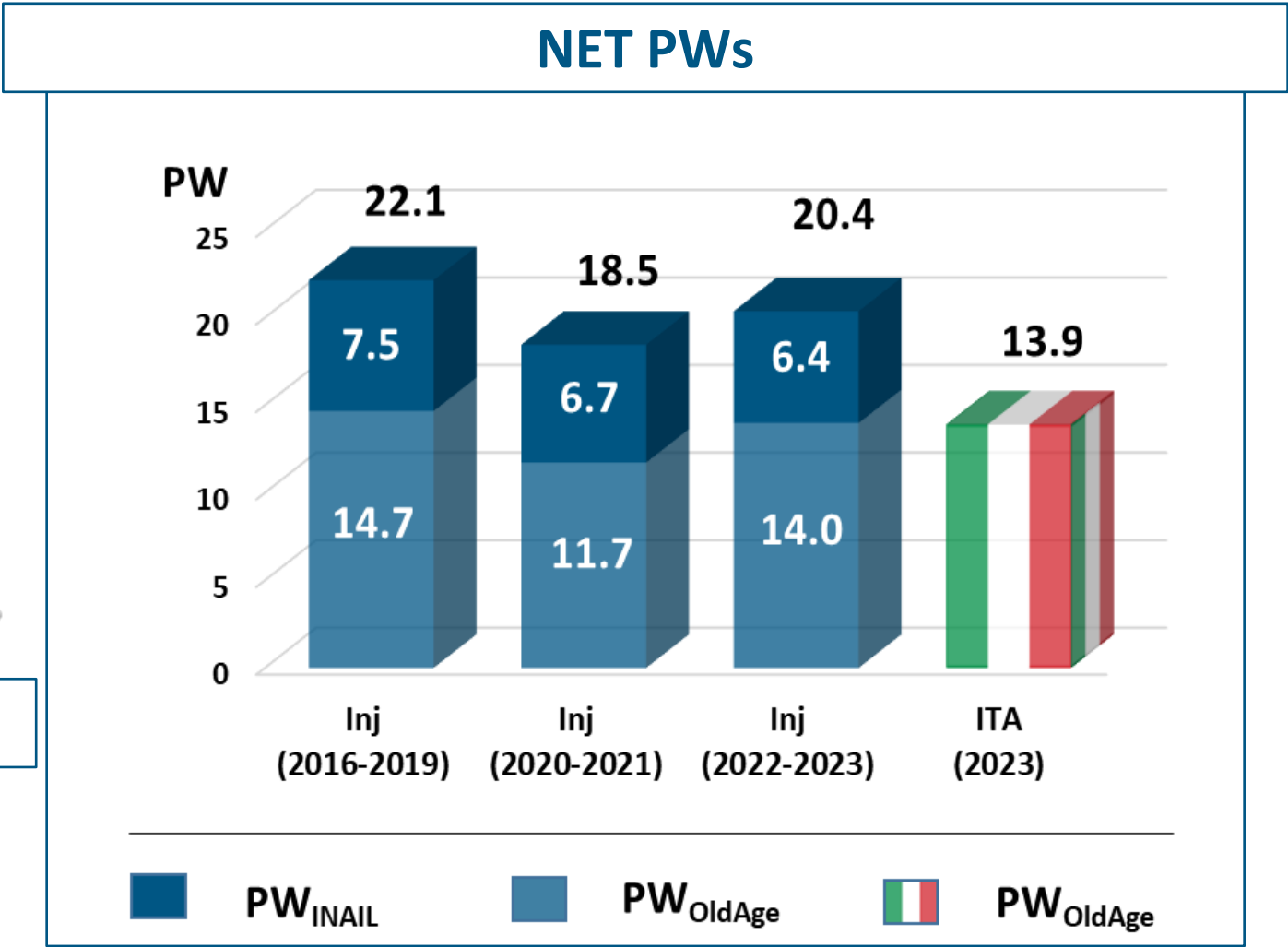# A Case Study on the Adequacy of Italian Disabled's benefits

16%-60%

GROSS PWs

Bar chart showing PW values:
- Inj (2016-2019): 19.9 total — PW_OldAge 14.4, PW_INAIL 5.5
- Inj (2020-2021): 15.9 total — PW_OldAge 11.5, PW_INAIL 4.4
- Inj (2022-2023): 19.1 total — PW_OldAge 13.8, PW_INAIL 5.3
- ITA (2023): 13.9 — PW_OldAge

Legend: PW_{INAIL} | PW_{OldAge} | PW_{OldAge}

A Case Study on the Adequacy of Italian Disabled's benefits

16%-60%

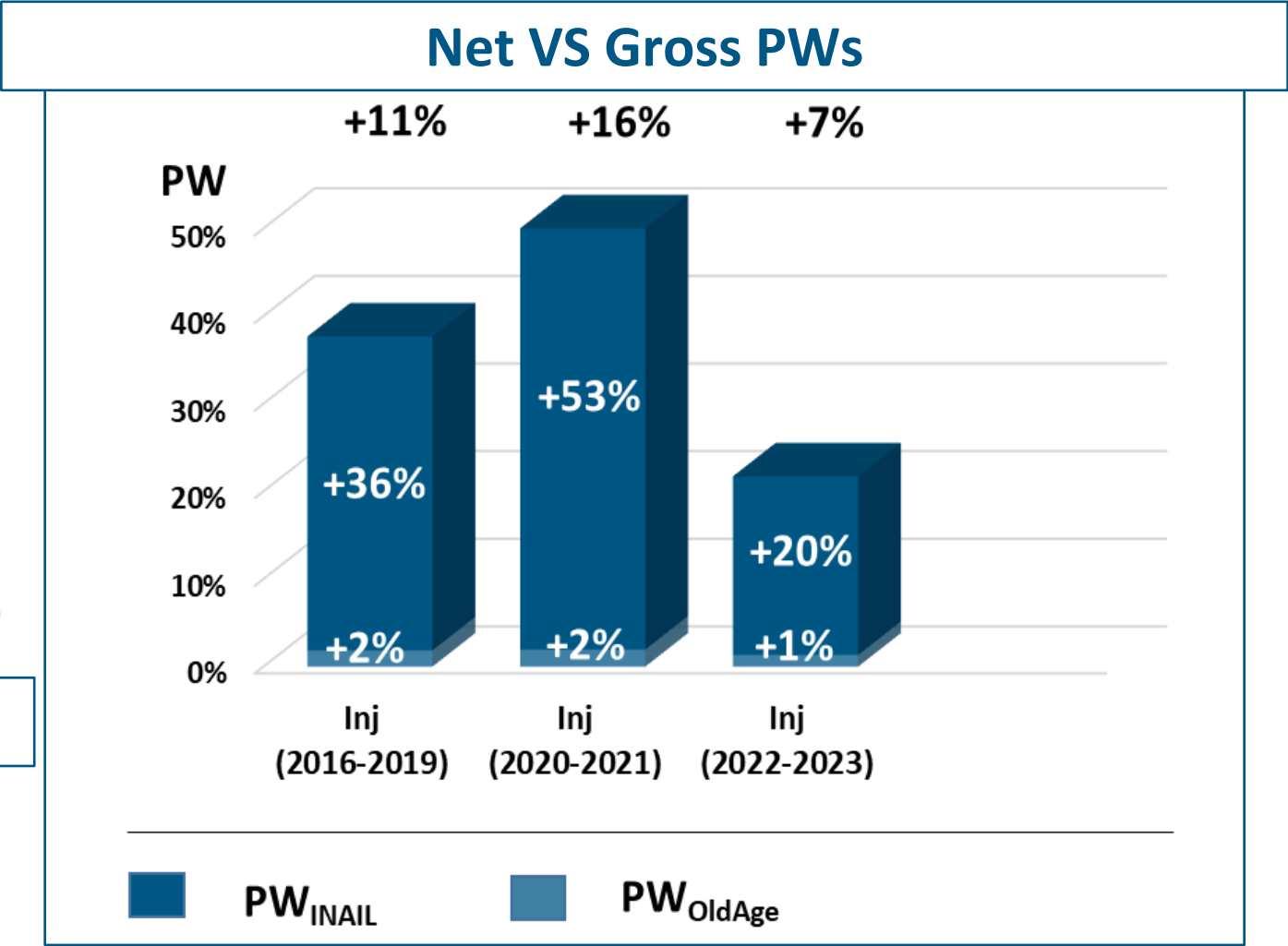# A Case Study on the Adequacy of Italian Disabled's benefits

16%-60%

Net VS Gross PWs

+11%   +16%   +7%

PW

50%

40%

+36%

30%

+53%

20%

+20%

10%

+2%   +2%   +1%

0%

Inj
(2016-2019)

Inj
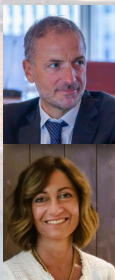(2020-2021)

Inj
(2022-2023)

PW_{INAIL} PW_{OldAge}

Thank you

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