



## **42nd AAE Annual Meeting**

Vienna 9-11 OCTOBER 2019

**INAIL**  
ISTITUTO NAZIONALE PER L'ASSICURAZIONE  
CONTRO GLI INFORTUNI SUL LAVORO

## **Measuring Adequacy In Social Security**

Raffaello Marcelloni

# AGENDA

- ❑ WHAT IS ADEQUACY?
- ❑ HOW TO MEASURE ADEQUACY?
- ❑ VULNERABLE GROUPS AND DISABLED WORKERS
- ❑ PENSION WEALTH: A CASE STUDY

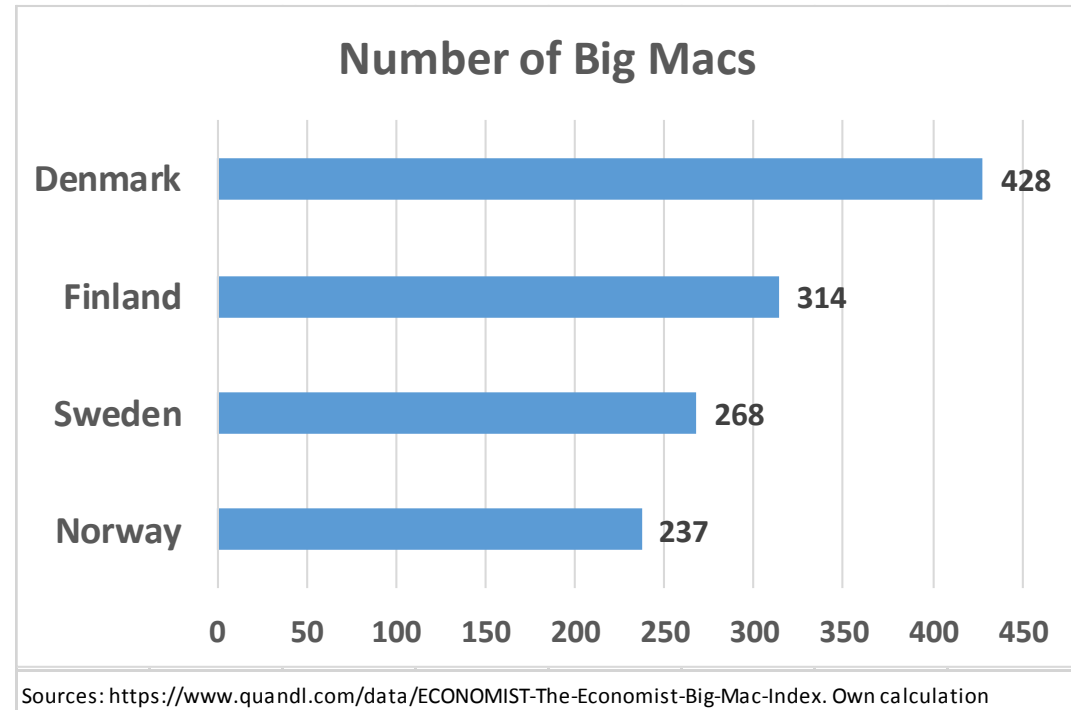
# WHAT IS ADEQUACY?

*“The adequacy of pensions is measured by their ability to prevent poverty and by the degree to which they match the level of pre-retirement income”*

Briefing of European Parliament, November 2015

# HOW TO MEASURE ADEQUACY?

## Big Mac Index



**How many Big Macs can you purchase with your monthly pension?**

# HOW TO MEASURE ADEQUACY?

## Theoretical Replacement Rate

$$\text{TRR} = \frac{\text{Annual pension amount (1st year of retirement)}}{\text{Annual amount of final salary}}$$

**How many SALARIES can you purchase with your annual pension?**

# HOW TO MEASURE ADEQUACY?

## Pension Wealth

$$PW = \frac{\sum_{k=1}^{\omega} v^k p_k(r) B_k}{S}$$

GROSS PW

Net PW

PW=PENSION WEALTH;

$v$  = DISCOUNT FACTOR;

$p_k(r)$  = PROBABILITY THAT INDIVIDUAL WHO RETIRED AT AGE R WILL SURVIVE K YEARS;

$B_k$  = ANNUAL PENSION AT TIME K

# HOW TO MEASURE ADEQUACY?



# VULNERABLE GROUPS AND DISABLED WORKERS

**JOB**

**ON**

**CALL**



Intermittent jobs



Maternity leaves



Widowers



Disabled



Injured workers



# VULNERABLE GROUPS AND DISABLED WORKERS

Promotes prevention



Post-accident assistance



# INAIL

Workers Protection

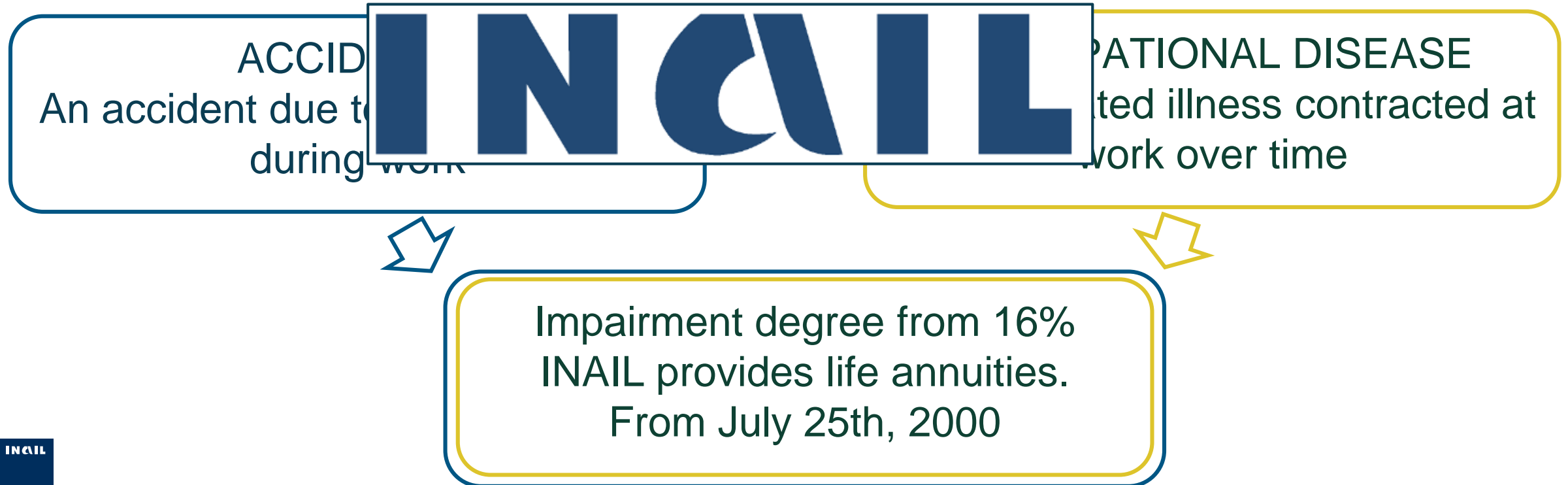


Pension benefits





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# VULNERABLE GROUPS AND DISABLED WORKERS



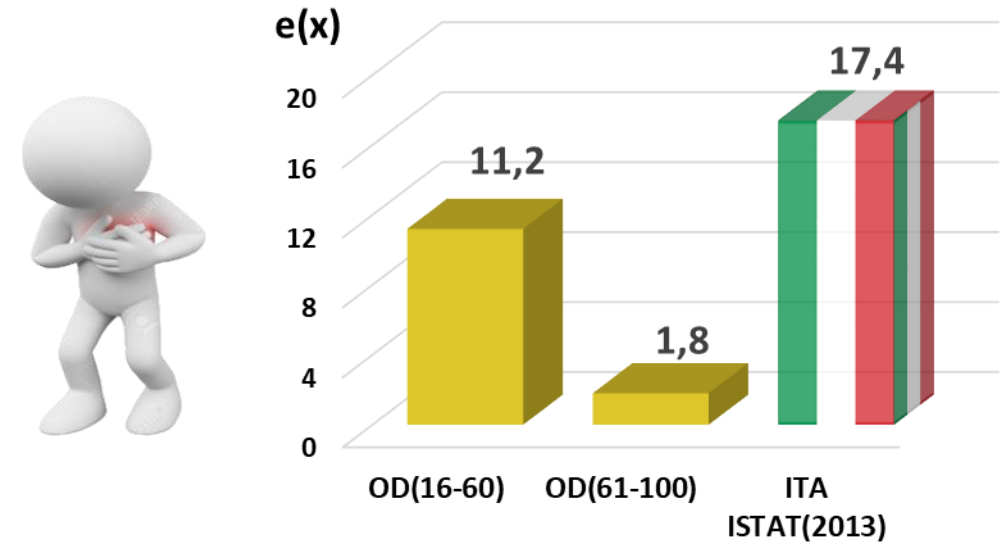
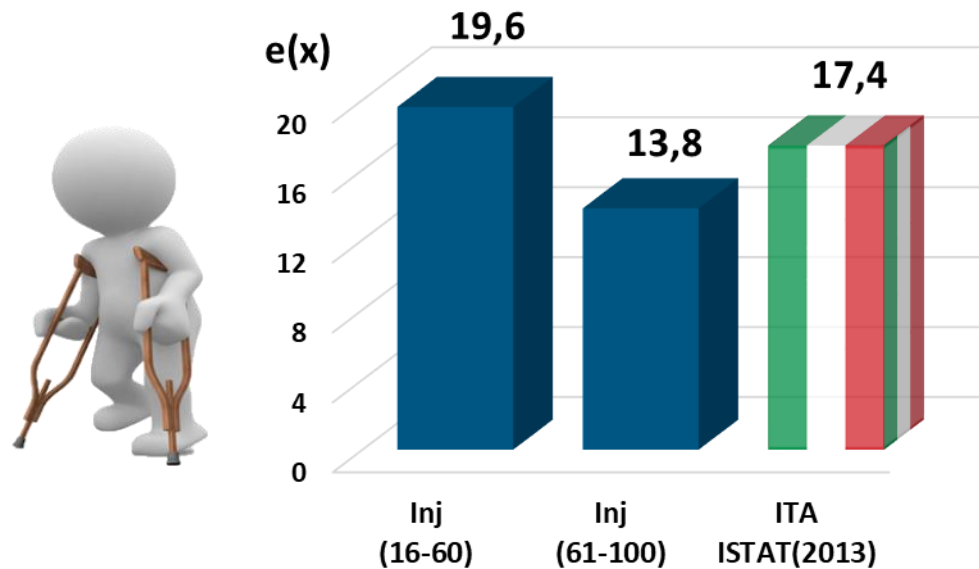
# PENSION WEALTH: A CASE STUDY

$$PW_{\text{Disabled}} = PW_{\text{OldAge}} + PW_{\text{INAIL}}$$

Type of Event		Classes of impairment degree	
		16% - 60%	61% - 100%
Accident		$PW_{\text{inj}(16-60)}$	$PW_{\text{inj}(61-100)}$
Occupational Disease		$PW_{\text{OD}(16-60)}$	$PW_{\text{OD}(16-60)}$

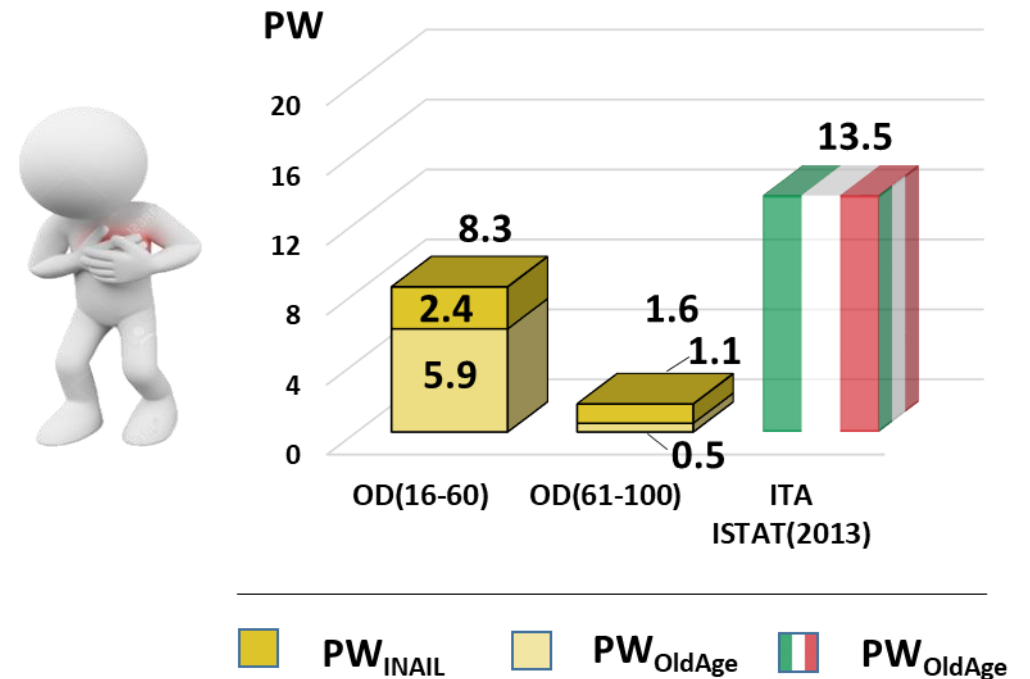
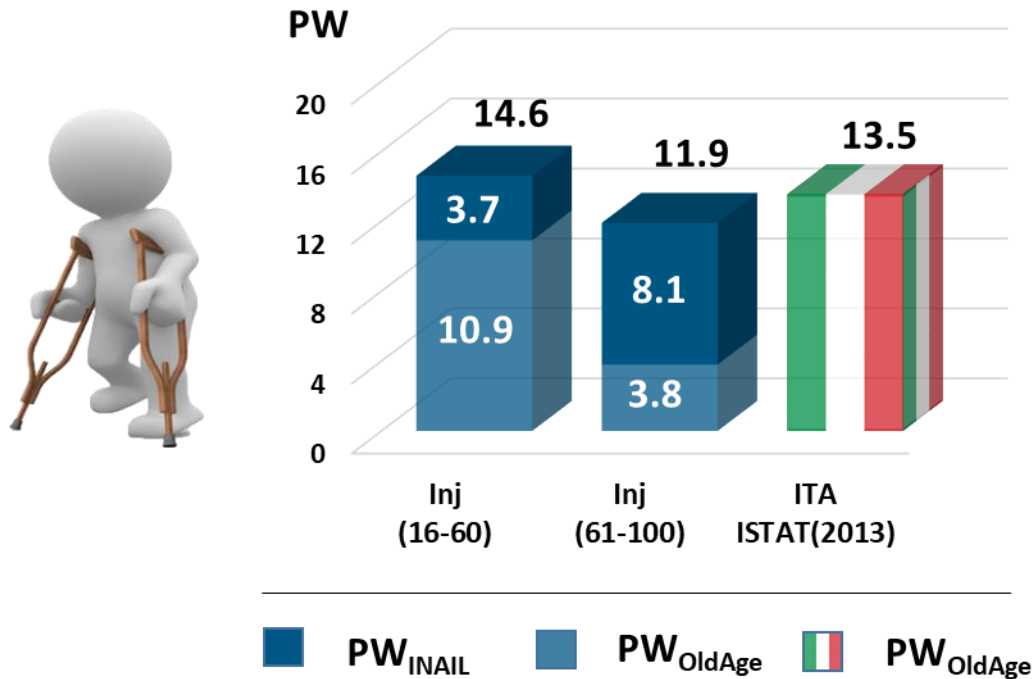
# PENSION WEALTH: A CASE STUDY

## Life expectancy at age 67 (year 2013)



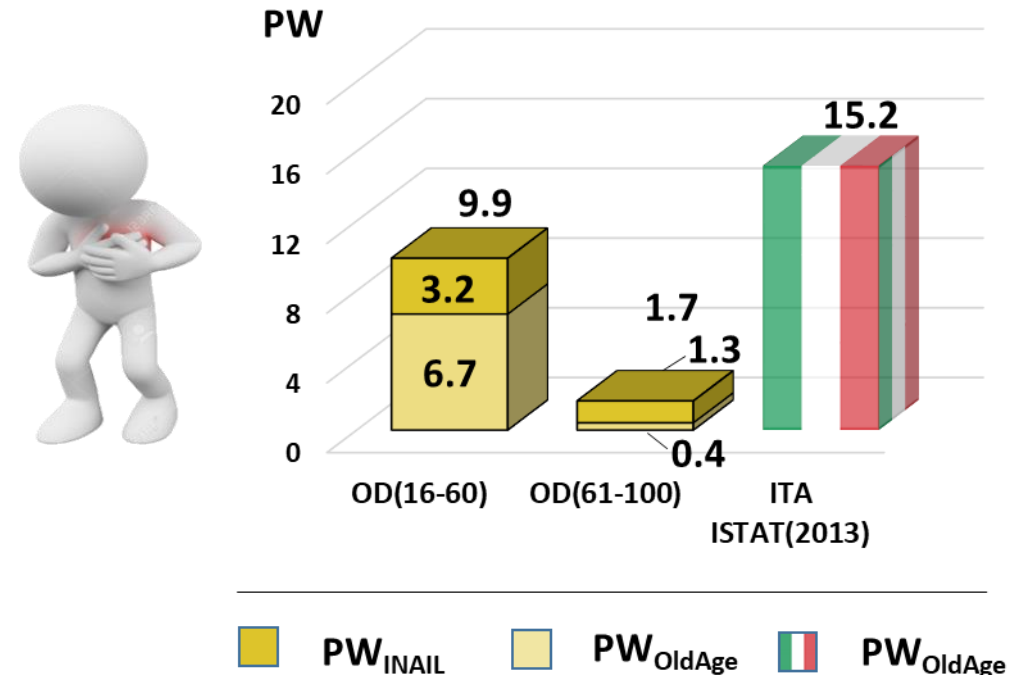
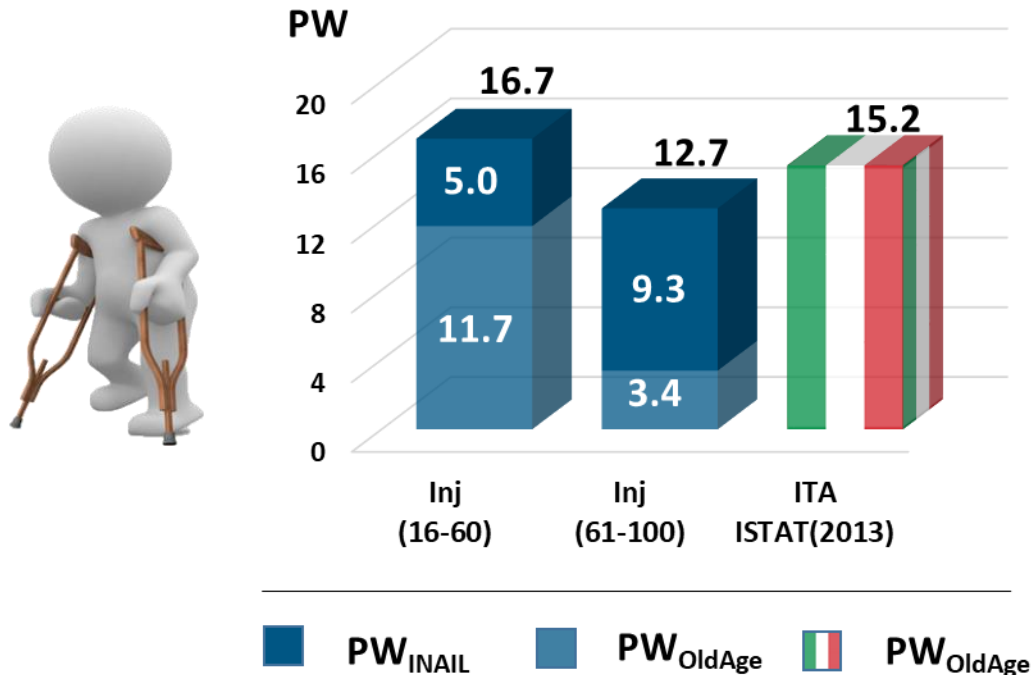
# PENSION WEALTH: A CASE STUDY

## Gross PWs – year 2013



# PENSION WEALTH: A CASE STUDY

## Net PWs – year 2013 (net of taxation and SS contributions)

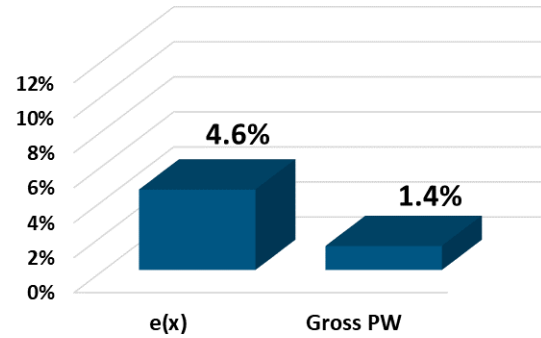


# PENSION WEALTH: A CASE STUDY

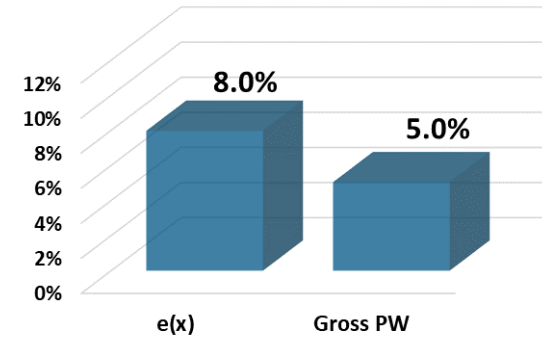
## Variations 2013 - 2018



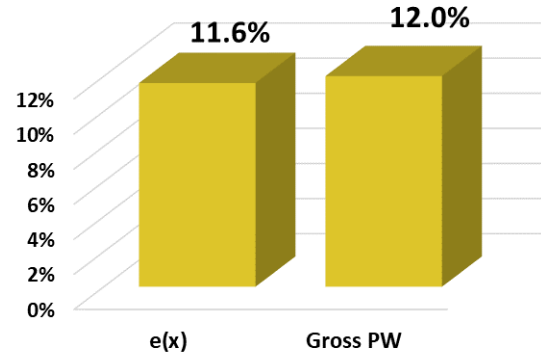
Inj (16-60)



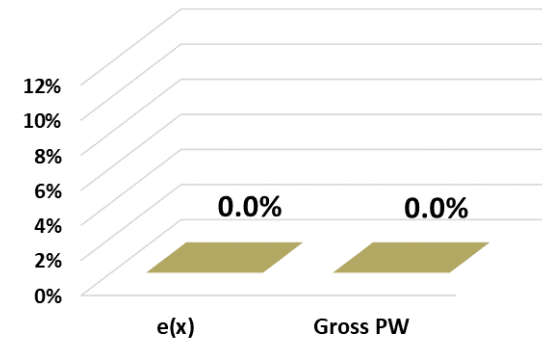
Inj (61-100)



OD (16-60)



OD (61-100)



# PENSION WEALTH: A CASE STUDY



Social Security SubCommittee



Social Security Committee

Working Group Compensation



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## Measuring Adequacy In Social Security

**Thank you very much for your attention!**

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