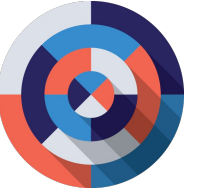


**VSAE**



# **Covid impact on disability insurance**

Date: March 4, 2025

By: Thomas de Boer & Bertus Veurink

# Thomas de Boer

## Background:

- Business Actuary at Movir (part of Nationale Nederlanden). Movir offers disability insurance for self-employed.
- Specialization: AOV, Pricing, Financial Risk Management, Solvency II
- University of Amsterdam: Teacher for Actuarial Practice Cycle. Module Product development (Disability Insurance).

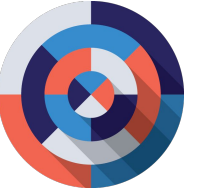
## Academic background:

- MSc Econometrics (University of Groningen, 2011)
- Actuarial Practice Cycle (UvA, 2015/2016)

## Contact:

thomas.de.boer@movir.nl





# Bertus Veurink

## **Background:**

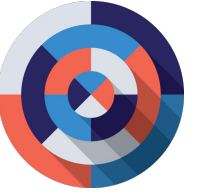
- Risk manager AFH team NN Schade (2019-now)
- Focus: income products (pricing and reserving), P&LA, Inflation modelling
- Expert Supervisor DNB (2016-2019)
- Income actuary a.s.r. (2011-2016)

## **Academic background:**

- Bsc Physics and Mathematics (2008)
- MSc Meteorology, Physical Oceanography and Climate (Utrecht, 2010)
- MSc Actuarial sciences (University of Groningen, 2015)
- Actuarial Practice Cycle (UvA, 2016)

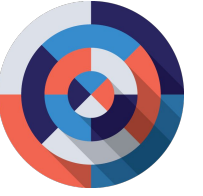
## **Contact:**

Bertus.Veurink@nn.nl



# Agenda

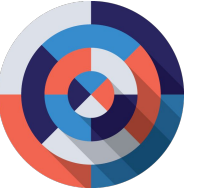
1. Wooclap on COVID19 and work
2. Brief explanation of disability coverage for self-employed and employees
3. General impact of COVID related to disability risk
4. Employees: Collective income products
  - Countrywide impact of Covid-19 on sickness leave
  - Countrywide impact of Covid-19 on WIA claims
5. Self employed: Individual income product
  - Short introduction on modeling disability insurance
  - What happened at Movir?
  - Effects of COVID-19 on the Model Parameters
6. Conclusion, Wooclap and Questions



# COVID19 and work

## WordCloud WOOCCLAP

*What words come to mind first when considering the changes in work after the COVID-19 pandemic?*

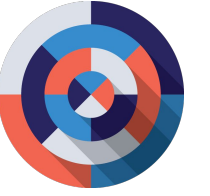


# COVID19 and work

## Multiple choice WOOCCLAP

*How do you feel the risk of disability has changed for you after the pandemic?*

- Severely lower risk
- A slightly lower risk
- No change in disability risk
- A slightly higher risk
- Severely higher risk
- Ough, I don't have a clou!



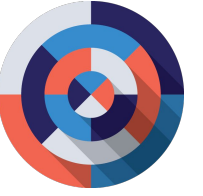
# COVID19 and work

## Multiple choice WOOCCLAP

*How do you think the risk of disability has changed in general after the pandemic?*

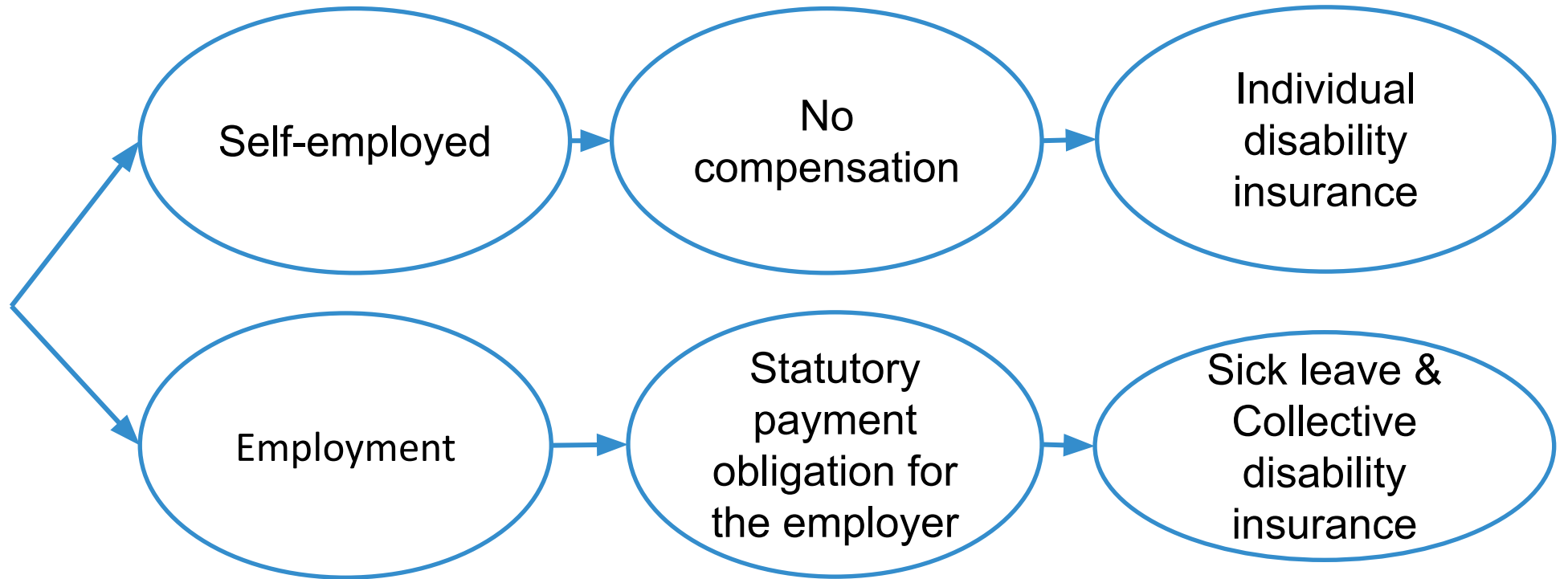
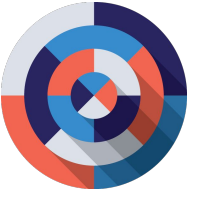
- Severely lower risk
- A slightly lower risk
- No change in disability risk
- A slightly higher risk
- Severely higher risk
- Ough, I don't have a clou!



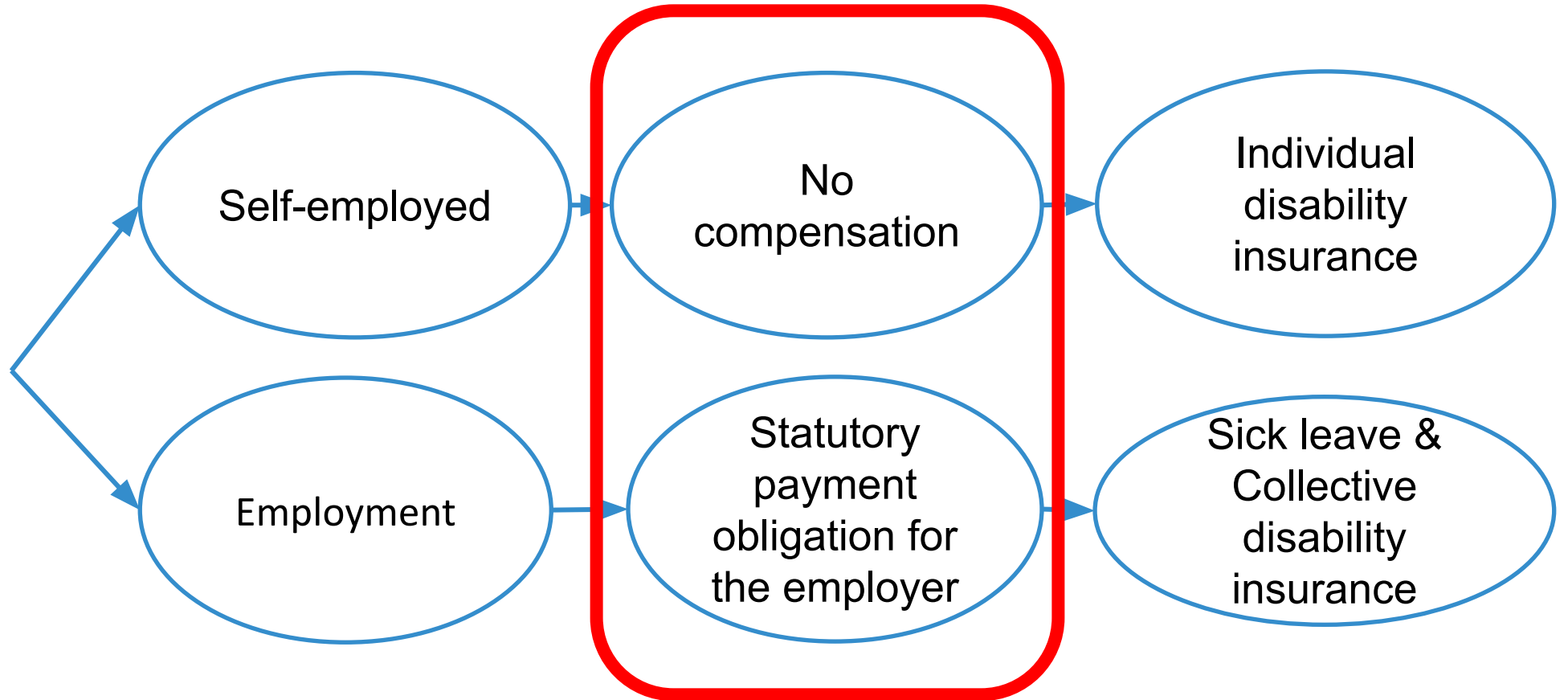
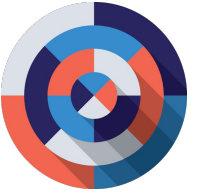


# Brief explanation of disability coverage for self-employed and employees

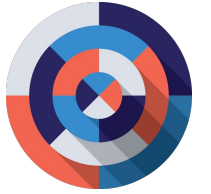
# Social Security in the Netherlands in a nutshell



# Social Security in the Netherlands in a nutshell



# Employment – Statutory payment obligation for the employer



Inspection by UWV

0 - 2 years sick

2 years sick – AOW age



Continued payment of wages during illness:

- At least 70% of gross salary
- Often 100% / 70%
- Collective bargaining agreements

WIA:

- WGA: Werkhervatting Gedeeltelijke Arbeidsgeschikten (Work resumption of Partially Disabled Persons)
  - Partial: 35-80% disability
  - Full: 80-100% disability
- IVA: Income provision for the fully (and durable) disabled

Continued payment of wages  
Reintegration obligation

Own risk bearer (ERD)

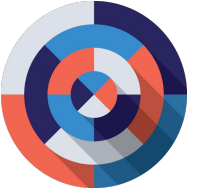
- WGA benefit payment
- Reintegration obligation for 10 years

Not own risk bearer

- Runs through UWV



# Self-employed - No compensation



## What if you are disabled as a self employed?

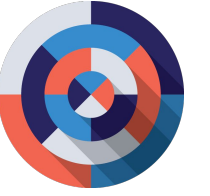
- Nothing is arranged for you!
- Social welfare (“bijstand”) if you are disabled and unable to support yourself.
- You can buy an individual insurance for this risk.

## Development: Mandatory AOV for self-employed persons without employees

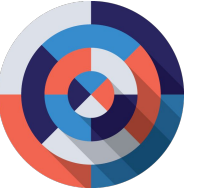
### Proposal for mandatory insurance:

- UWV implements mandatory regulation.
- Covers long-term disability; 52-week waiting period.
- Final age linked to AOW age.
- Income-related payment, max 70% of last income, capped at 143% of minimum wage.
- Tax authorities levy premium; standard insurance premium is 6.5% of income, max €195/month (subject to change).
- Degree of incapacity follows WIA system.
- Private insurance allowed if coverage meets criteria.
- UWV handles reintegration from day one of illness.

Possible implementation of the amended law in 2030



# General impact of COVID related to disability risk



# General overview on COVID19 & Work

## *High level time line of COVID19 in the Netherlands*

**February 2020:** First COVID-19 case reported on February 27.

**March 2020:** Implementation of the intelligent lockdown, closing schools, hospitality, and non-essential shops.

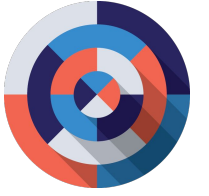
**April 2020:** Extension of measures and expansion of testing policy.

**May 2020:** Initial easing of measures and introduction of financial support packages

**June 2020:** Further easing of measures and introduction of testing for everyone with symptoms.

**2021:** Start of the vaccination campaign and introduction of the curfew.

**2022:** Lifting of most COVID-19 measures and introduction of the long-term strategy



# General overview on COVID19 & Work

*Main impacts following from RIVM*



**Physical Health**



**Mental Health**



**Educational performance deteriorated**



**Vulnerable/low income groups**

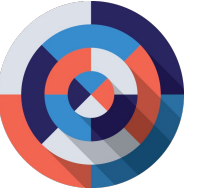


**Less healthy lifestyle**



**Healthcare workers overburdened**



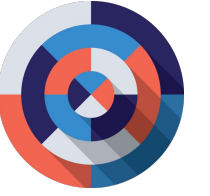


# General overview on COVID19 & Work

## *Main impacts following from RIVM*

The impact of COVID-19 on society is enormous and multifaceted. Here are some of the main consequences:

- 1. Health:** The pandemic has led to a significant increase in health problems, both physical and mental. Many people experience long-term symptoms after infection, such as fatigue. Delayed care and late diagnoses, especially for diseases like cancer, have also resulted in lost healthy life years.
- 2. Mental Health:** Young people and young adults have more often experienced depressive feelings and anxiety. Loneliness has increased, especially among young adults and the elderly.
- 3. Education:** The academic performance of students in secondary and higher education has deteriorated due to the pandemic.
- 4. Vulnerable Groups:** People with low incomes and other vulnerable groups have been hit harder by the pandemic. They have struggled more with the consequences of the crisis.
- 5. Lifestyle:** Many people have adopted less healthy lifestyles, with less exercise and unhealthier eating habits.
- 6. Healthcare Workers:** People working in healthcare have become both physically and mentally overburdened.

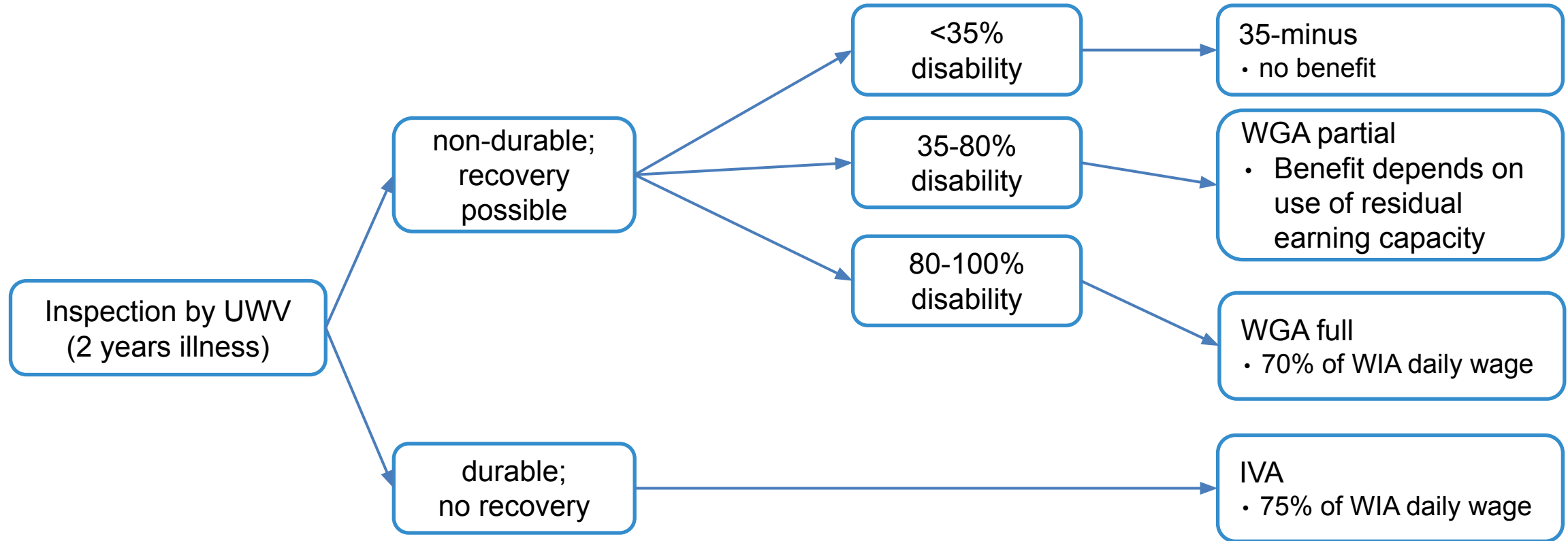


# Employment

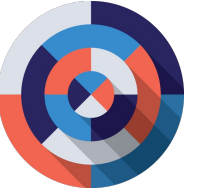
(Collective income products)

- Countrywide impact of Covid-19 on sickness leave
- Countrywide impact of Covid-19 on WIA claims

# WIA (Work and Income by capacity Act)

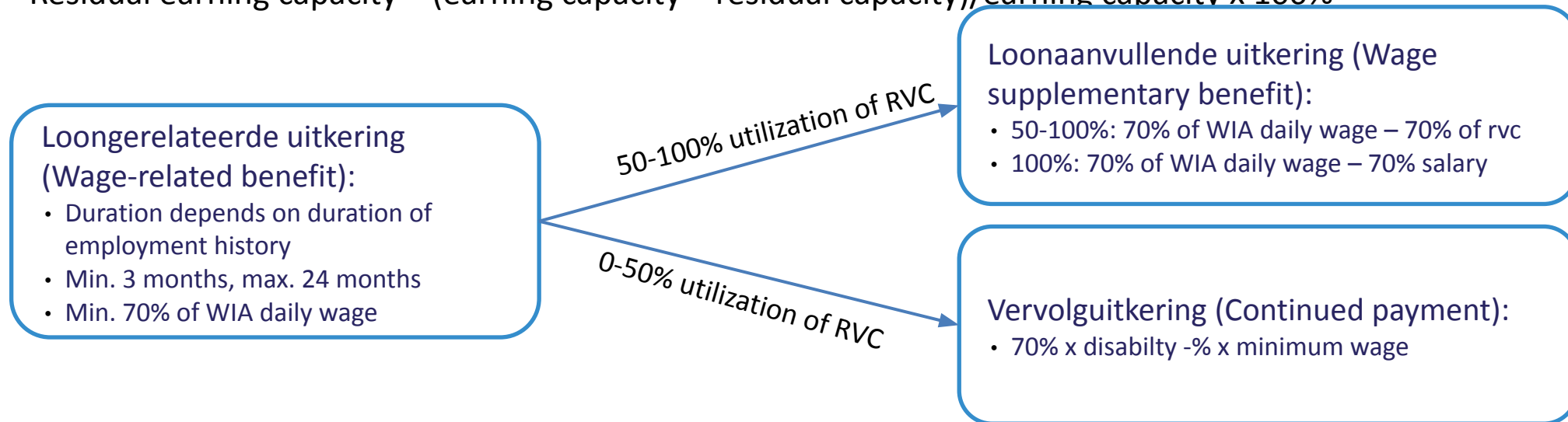


- WIA daily wage =  $\min(\text{max. insured wage}, \text{salary in year before start of illness})$
- max. insured wage January 2025: € 75.864

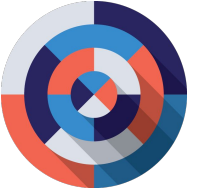


# WIA benefit: WGA partial

- The main point of the WGA is that work is rewarded
- Payment will be higher with (partial) utilization of the residual earning capacity  
(In Dutch restverdiencapaciteit = RVC)
- Residual earning capacity =  $(\text{earning capacity} - \text{residual capacity}) / \text{earning capacity} \times 100\%$

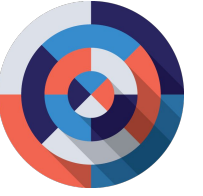


- WIA daily wage =  $\min(\text{max. daily wage}, \text{salary in year before start of illness})$
- Min. yearly wage January 2025: € 29.222 (40-hour workweek)



# COVID-19 and Employees

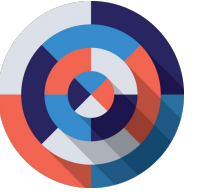
- No cause of illness available for insurers
- Countrywide data scattered, but some information available
- Lookthrough NN based on total WIA information



# Employment

(Collective income products)

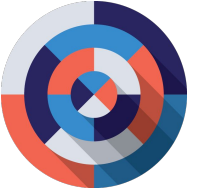
- Countrywide impact of Covid-19 on sickness leave
- Countrywide impact of Covid-19 on WIA claims



# Employment

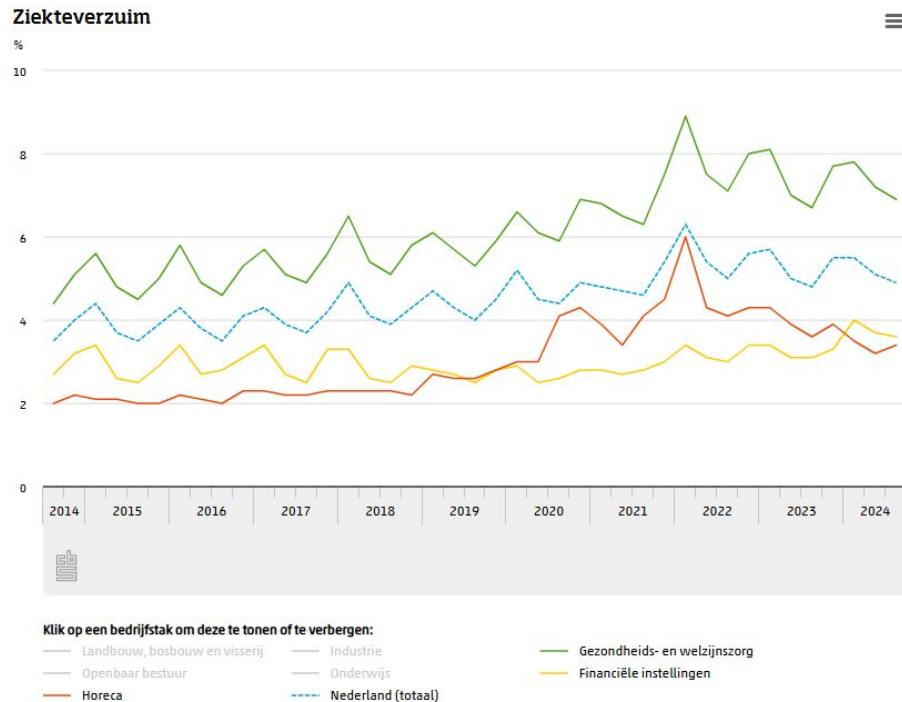
(Collective income products)

- **Countrywide impact of Covid-19 on sickness leave**
- Countrywide impact of Covid-19 on WIA claims

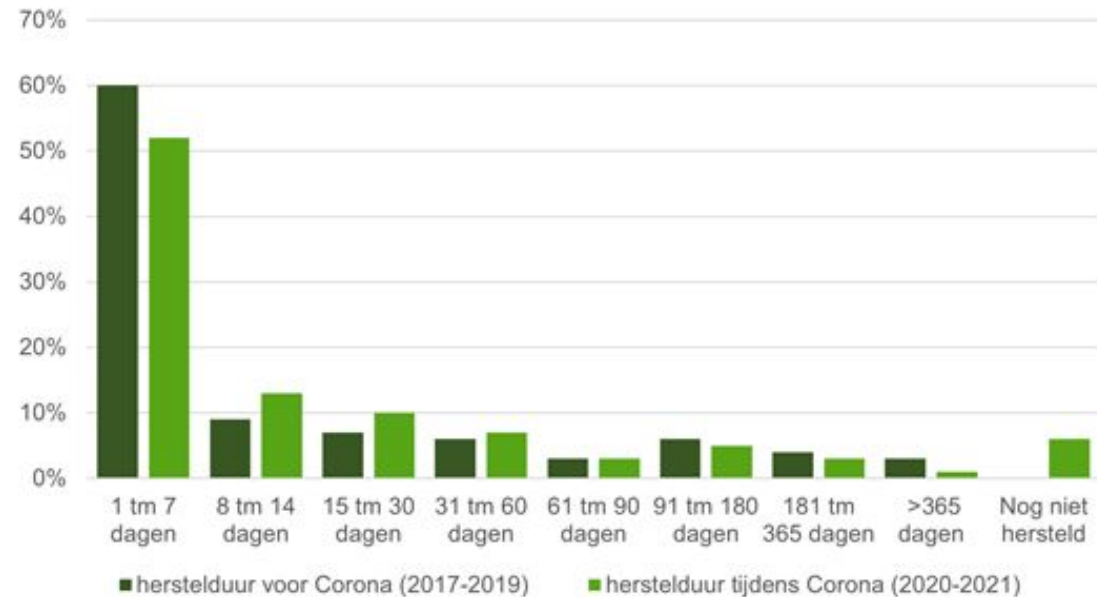


# Sickness leave before, during and after COVID-19

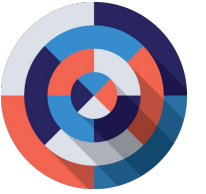
- Why does it peak in 2022 and not in 2020?
- Two factors: #claims and duration
- Return to normal?
- How to model?



"Werknemers die in 2020 of 2021 ziek zijn geworden, blijven gemiddeld genomen langer ziek"



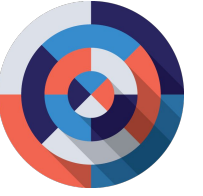




# Sickness leave before, during and after COVID-19

- Predict #extra claims due to COVID-19
- Predict extension of sickness period

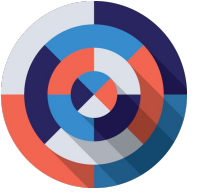
202112		pre jaar	1	2	3	4	5	6	7	8	9	10	11	12	
		maand													
		pre jaar	01	02	03	04	05	06	07	08	09	10	11	12	
		Waargenomen aantal schades per sj per maand													
	2017	# wn	490	490	490	490	490	490	490	490	490	490	490	490	
	2018	# wn	490	490	490	490	490	490	490	490	490	490	490	490	
	2019	# wn	490	490	490	490	490	490	490	490	490	490	490	490	
	2020		500	500	500	500	500	500	500	500	500	500	500	500	
	2021		550	550	550	550	550	550	550	550	550	550	550	550	
	normaal aantal schades		490	490	490	490	490	490	490	490	490	490	490	490	
	extra schades		60	60	60	60	60	60	60	60	60	60	60	60	
	extra schades (%)		12.2%	12.2%	12.2%	12.2%	12.2%	12.2%	12.2%	12.2%	12.2%	12.2%	12.2%	12.2%	
groepen 1) en 2)	plus-duur normale schades		4	4	4	4	4								
3)	extra meldingen	tsunami	tsunami	tsunami	tsunami	beperkt?	beperkt?	beperkt?	beperkt?	beperkt?	beperkt?	beperkt?	beperkt?	beperkt?	
	# dagen extra meldingen		14	14	14	14	14	14	14	14	14	14	14	14	
groep 1) bestaande schades														som	-
groep 2) normale schades			232,848	232,848	232,848	232,848	232,848	-	-	-	-	-	-	-	1,164,240
groep 3) extra schades			28,512	28,512	28,512	28,512	28,512	28,512	28,512	28,512	28,512	28,512	28,512	28,512	342,144
															1,506,384



# Employment

(Collective income products)

- Countrywide impact of Covid-19 on sickness leave
- **Countrywide impact of Covid-19 on WIA claims**



# Covid-19 in WIA claim assessments

- About 1900 Covid-19 WIA judgements in 2022 (mostly AY 2020)
- 1400 converted to WIA claim
- About 2.5% of total WIA inflow
- 60+ measure obscures analysis
- Increase in government pension (AOW) age
- Mental health claims increase simultaneously

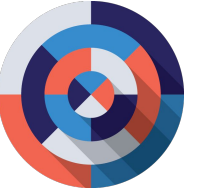
## In 2022 bijna 1900 WIA-beoordelingen vanwege langdurige coronaklachten

1 maart 2023



UWV heeft in 2022 1883 WIA-beoordelingen uitgevoerd bij mensen met als hoofddiagnose langdurige coronaklachten. In het merendeel van de gevallen zijn zij volledig arbeidsongeschikt verklaard. In de zorgsector is het aandeel WIA-beoordelingen vanwege corona groter dan in andere sectoren. Dat blijkt uit een eerste analyse van de cijfers door UWV.

Werknemers die twee jaar ziek zijn en daardoor niet of minder kunnen werken hebben mogelijk recht op een arbeidsongeschiktheidsuitkering, in het kader van de Wet Werk en Inkomen naar Arbeidsvermogen (WIA). UWV bepaalt op basis van een sociaal-medische beoordeling of mensen daarvoor in aanmerking komen.

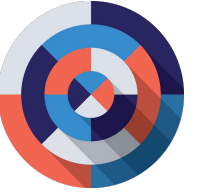


# WIA inflow 2020-2022

Tabel 2 Verklaring mutatie WIA-instroom 2020-2022 vanuit bekende factoren (afgeronde cijfers)<sup>e</sup>

	2020	2021	2022
<b>Instroom</b>	<b>49.920</b>	<b>55.650</b>	<b>54.810</b>
<b>Mutatie (vergeleken met dezelfde periode daarvoor)</b>	<b>3.990</b>	<b>5.700</b>	<b>-840</b>
Bijdrage aan mutatie door structurele factoren	990	1.750	230
Bijdrage aan mutatie door uitvoeringsproblematiek en/of corona, waarvan:	2.030	1.330	2.220
- Stijging door aantal voorschotten	1.550	1.630	920
- Mutatie door de verandering in het toekenningspercentage	460	-400	30
- Corona (directe invloed)	20	100	1.270
<b>Verwachte stijging</b>	<b>3.020</b>	<b>3.080</b>	<b>2.450</b>
<b>Mutatie (vergeleken met dezelfde periode daarvoor)</b>	<b>3.990</b>	<b>5.700</b>	<b>-840</b>
<b>Niet-verklaarde mutatie</b>	<b>970</b>	<b>2.620</b>	<b>-3.290</b>

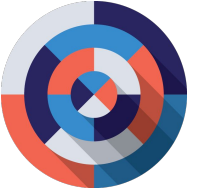
<sup>e</sup> Mutatie in aantal uitkeringen.



# WIA inflow 2023-2024

Tabel 1 (Verwachte) mutatie WIA-instroom 2023-2024 naar oorzaak\*

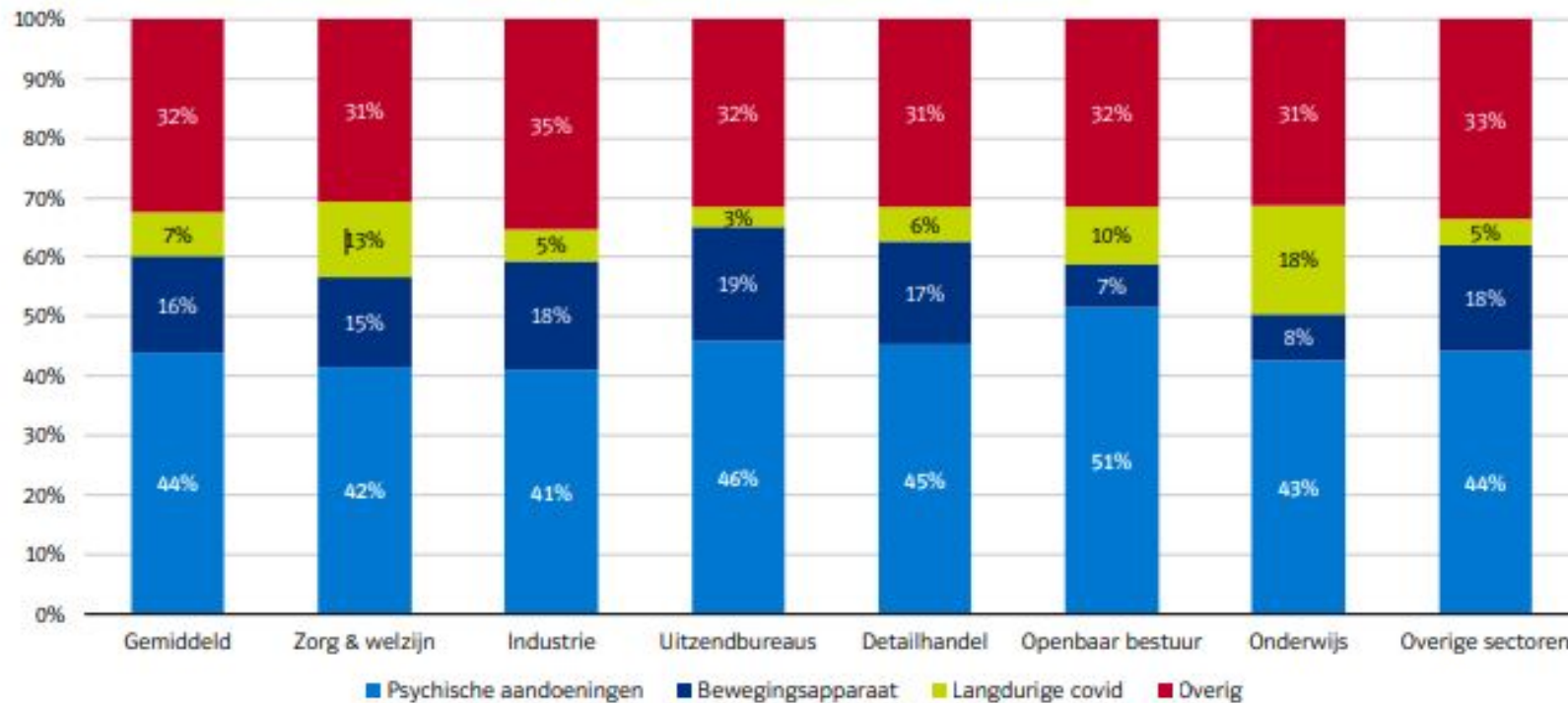
	2023	2024 (raming)
<b>Instroom</b>	<b>59.630</b>	<b>64.600</b>
<b>Mutatie ten opzichte van 1 jaar eerder</b>	<b>4.820</b>	<b>4.970</b>
Bijdrage door verandering in aanvragen, waarvan:	2.870	5.840
- conjunctuur, pensioenleeftijd en heropeningen	1.460	1.870
- langdurige covid, psychische aandoeningen en andere effecten	1.410	3.970
Bijdrage door verandering van het percentage toegekende aanvragen, waarvan:	1.720	-930
- verandering door de 60-plusmaatregel	2.160	0
- verandering door maatregel Praktisch beoordelen	0	240
- verandering in het aantal voorschotten	-440	-1.170
Overige mutatie**	230	60

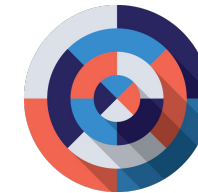


# Long Covid as cause of illness in WIA

- 7% of 2023 claims Covid-19 under 60, but 13% health and 18% education sector
- Total Covid-19 5% (previous slide)
- Question whether without Covid-19 claims would not be here

**Figuur 4** WIA-instroom tot 60 jaar naar aandeel per diagnose<sup>c</sup> en sector (SBI<sup>cc</sup>) in 2023

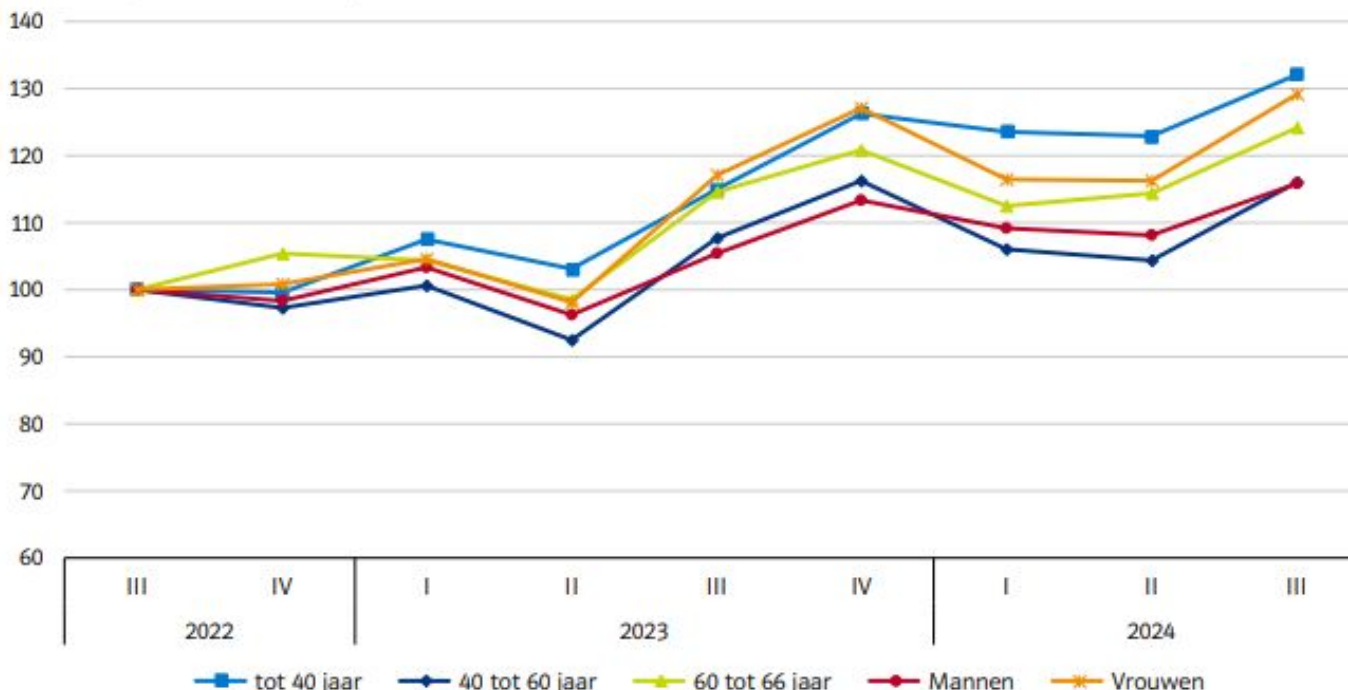




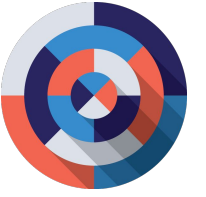
# WIA inflow continues to rise

- 12% increase 2024 compared to 2023
- Increase is stronger with younger employees and women

**Figuur 2 Index ontwikkeling aantal WIA-aanvragen per kwartaal, 2021-derde kwartaal 2024\***  
 (2022 kwartaal III = 100)



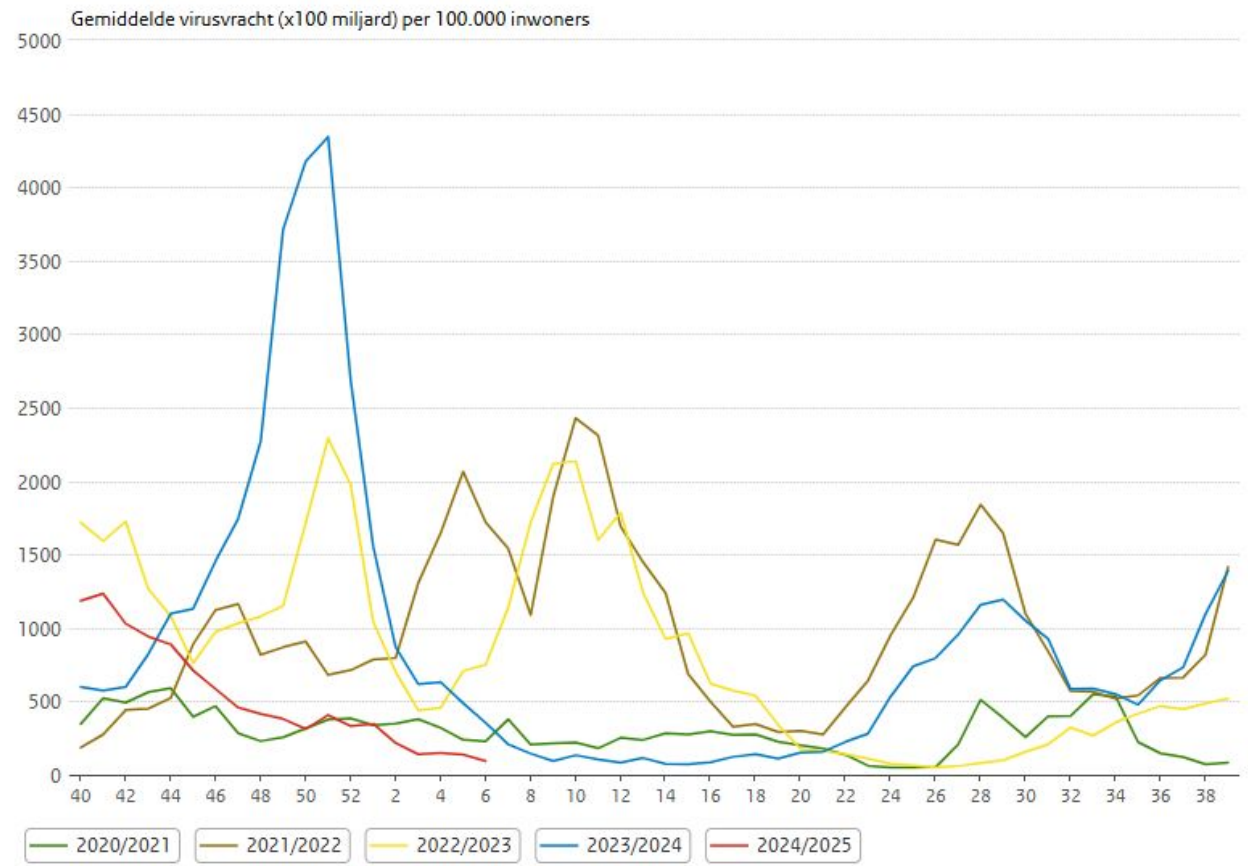
\* WIA-aanvragen van 66-plussers zijn niet opgenomen in de figuur, omdat de groei sterk wordt beïnvloed door de verhoging van de AOW-leeftijd. De ontwikkeling van die oudste leeftijdsgroep is daarom niet vergelijkbaar met de andere leeftijdsgroepen.



# COVID-19 infections proxy

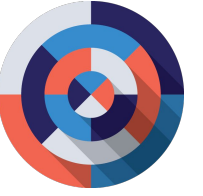
## Rioolwater

### Gemiddelde virusvracht SARS-CoV-2



<https://www.rivm.nl/corona/actueel/weekcijfers>



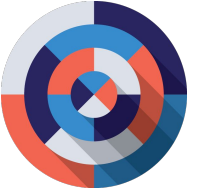


# WIA

## *Recent increase in WIA inflow seems indirectly or unrelated to COVID-19*

Indirect influence on increase in WIA claims:

- Higher approval rate
- Preliminary payments
- No face to face WIA claim assessments
- Healthcare (delays)
- Mental health
- 60+ measure



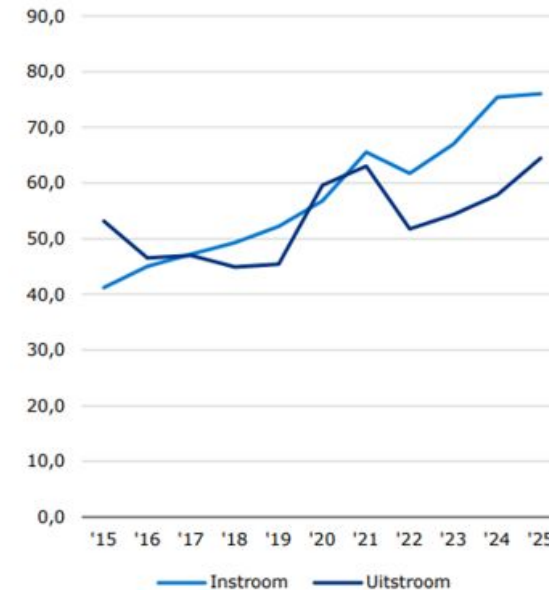
# WIA inflow: latest developments

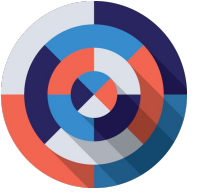
*2025 expectation: increase in #claims 6%, 12% increase in payments*

**Tabel 1.2 Financiële ontwikkelingen uitkeringslasten**  
Bedragen × € 1 miljoen

	2023	2024	Mutatie Juninota	2025	Mutatie Juninota
<b>Arbeidsongeschiktheid*</b>	<b>16.249</b>	<b>17.851</b>	<b>-7</b>	<b>19.286</b>	<b>422</b>
WAO	3.314	3.229	-27	3.119	30
WIA	9.028	10.422	33	11.696	344
WAZ	79	75	-1	68	0
Wajong	3.828	4.124	-14	4.402	48

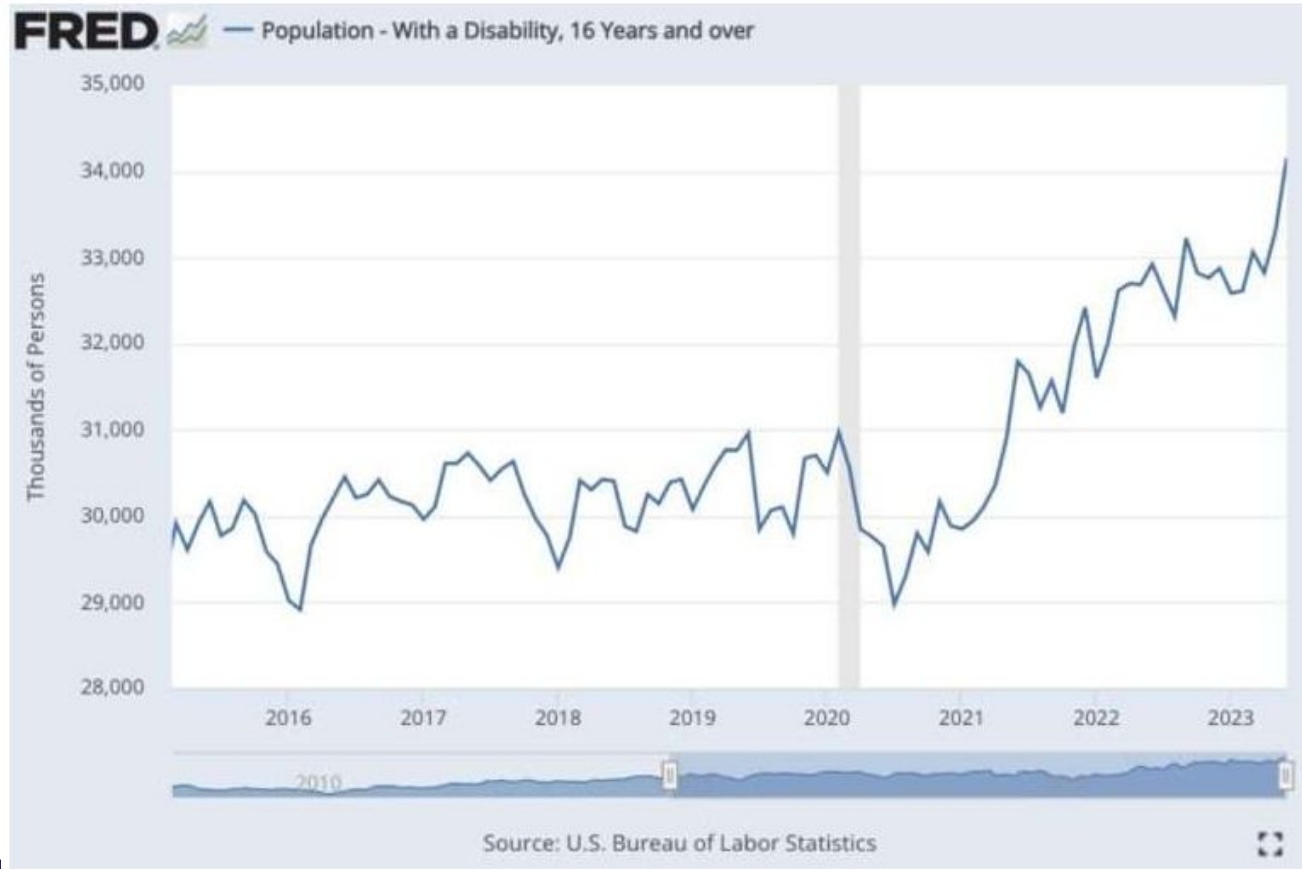
**Figuur 2.1 In- en uitstroom arbeidsongeschiktheid**  
Aantallen × 1.000



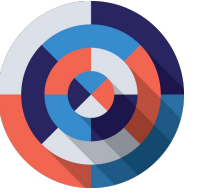


# International trends in disability

## *15% increase in 30 months in USA*



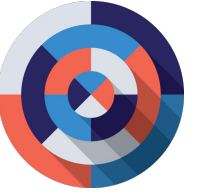
[Disability Claims Are Increasing at a Record Pace Under Biden. Why?](#)



# What about insurers?

- More detailed data available
- WGA most relevant
- 2023 compared to 2022 looks better for own risk carriers
- Countrywide data not necessarily relevant for insurers

<b>Totaal nieuwe WGA-uitkeringen</b>	<b>47.803</b>	<b>44.101</b>	<b>8,4%</b>
Waarvan voorschot	20.635	22.389	-7,8%
Naar risicodrager			
Eigen risicodrager	9.305	9.330	-0,3%
Geen eigen risicodrager	38.498	34.771	10,7%
Nieuwe WGA-uitkeringen per 100 verzekerden <sup>2</sup>	0,62	0,59	5,2%



# Other WIA topics

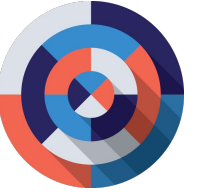
*Errors claim handling UWV up to 25%, reserve impact lower  
OCTAS report*



# Self-Employed

(Individual income product)

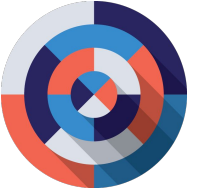
- Short introduction on modeling disability insurance
- What happened at Movir?
- Effects of COVID-19 on the Model Parameters



# Self-Employed

(Individual income product)

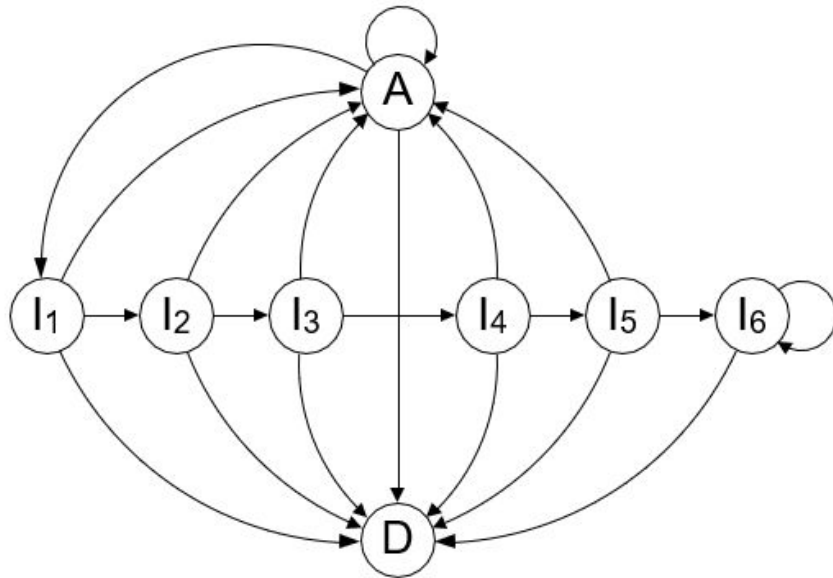
- **Short introduction on modeling disability insurance**
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# Self-employed

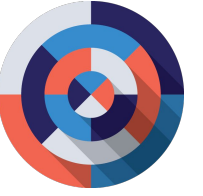
*KAZO introduced the following model in the early 1990s*

Within the KAZO model, there are three different types of one-year age-dependent transition probabilities:



- 1) *Probability of transition from Active to  $I(1)$ :  
**Incidence rate**  $i_x$  insured person with age.*
- 2) *Probability of transition from  $I(d)$  to Active:  
**Recovery rate**  $r(x, I(d))$  of disabled with age  $x$ , in status  $I(d)$ , where  $d = 1, \dots, 6$ .*
- 3) *Probability of transition from Active or  $I(d)$ , where  $d = 1, \dots, 6$ , to Deceased:  
**Mortality rate**  $q_x$  insured with age  $x$ .*





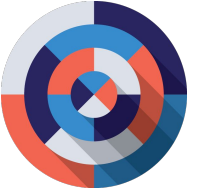
# Self-employed

## *How to construct a disability premium in 6 steps*

With a little bit of actuarial magic, one can calculate actuarial risk premiums using the following steps:

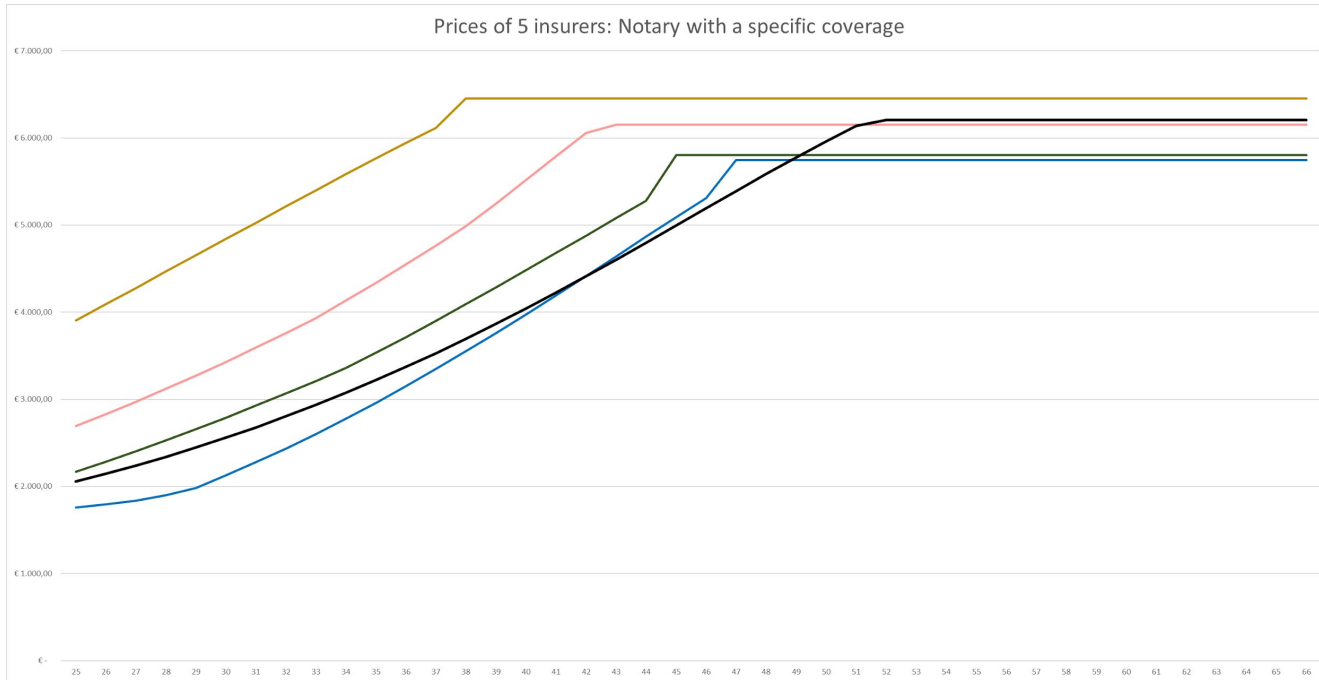
### **How to derive a disability insurance premium:**

1. Derivation of (empiric) rates (**incidence / recovery and mortality**) in the KAZO model.  
The use of **actuarial models** (for example GLM) to estimate these rates in the future;  
With the derived rates, we can model **annuities** and thus determine the disability insurance risk premium.
2. Set macro-economic parameters (interest rate/inflation) as well as other input variables such as (capital) costs.
3. Insert commercial influences into premium such as discount for starters.
4. Profit test these premiums.



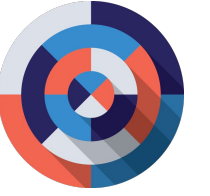
# Self-employed

*This results in commercial premiums*



Prices of the insurance:

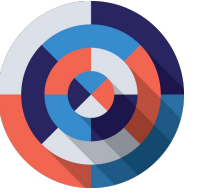
- Are highly dependent on the coverage
- Are highly dependent on the insured risk i.e. the occupation
- Can vary between insurers.



# Self-Employed

(Individual income product)

- Short introduction on modeling disability insurance
- **What happened at Movir?**
- Effects of COVID-19 on the Model Parameters



# Self-employed

*Recap what happened in the operation at Movir*

**At beginning of March, the whole world was in complete shock!**

**Over the course of 2020 / 2021 we observed and did the following:**

**Operations: There was less reinstatement due to three reasons:**

1. More claims due to COVID = more work.
2. Hard to pick up work for recovery employees from Movir. Imagine how to do that!
3. If you were already incapacitated from work, you may not “hurry” to start again

**Actuarial reporting:**

1. Consider COVID apart from others for claim reservation
2. In 2020/2021, we reserved COVID claims for maximum of 1 year(!)
3. After approx. 11 months, we noted that this was not realistic and took the “hit” to reserve until end age.

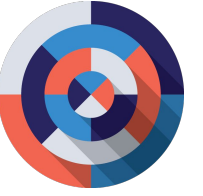
Anno 2025, we can look back and see what we observed in the realizations so far.



Beginning of March



End of March



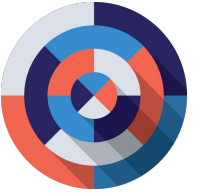
# Self-Employed

(Individual income product)

- Short introduction on modeling disability insurance
- What happened at Movir?
- **Effects of COVID-19 on the Model Parameters** →

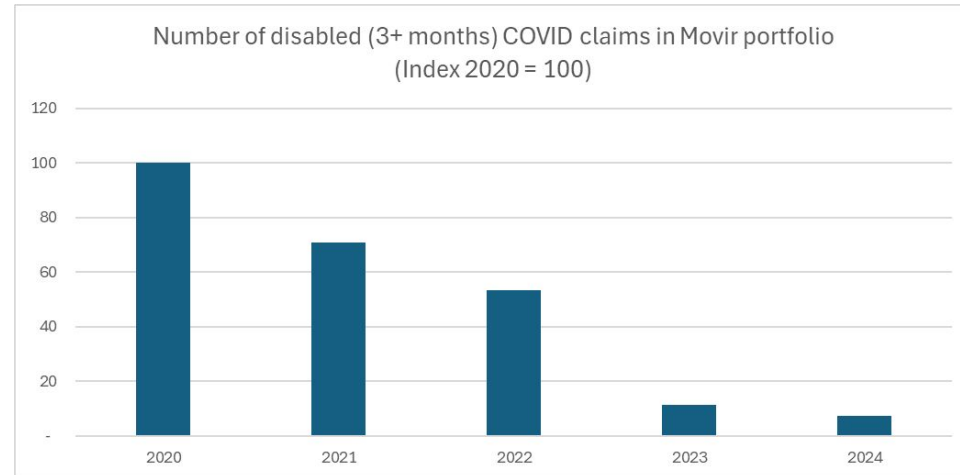
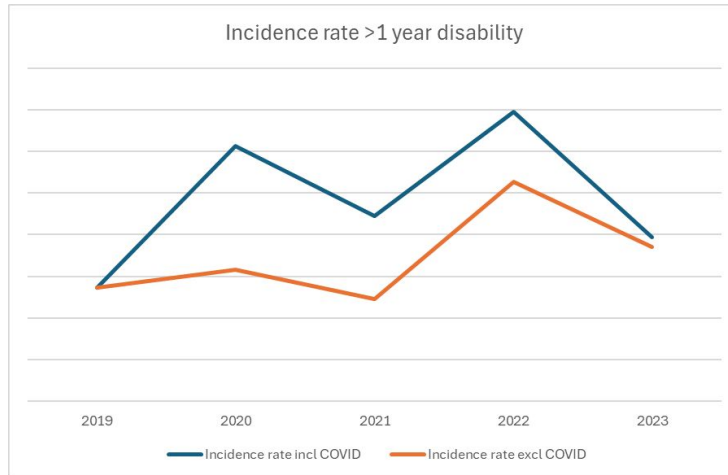
## Cheat sheet

- 1) Incidence rate  $i_x$
- 2) Recovery rate  $r(x, I(d))$
- 3) Mortality rate  $q_x$

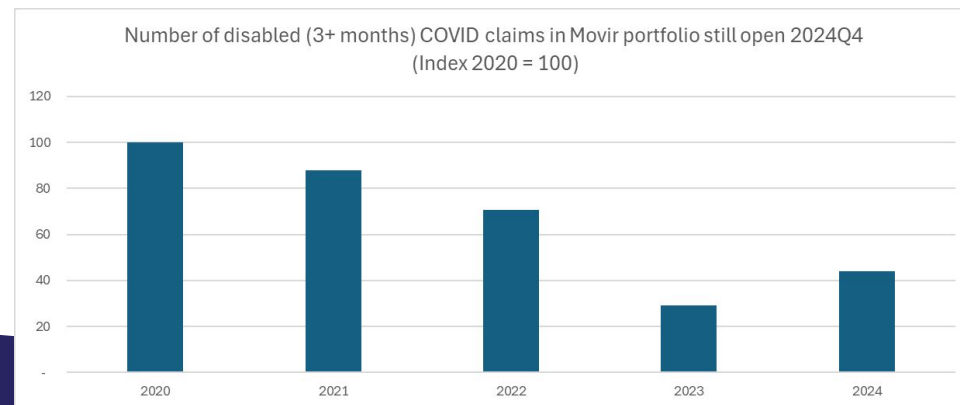


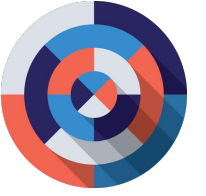
# Model parameters

## *Incidence rates impact in four figures*



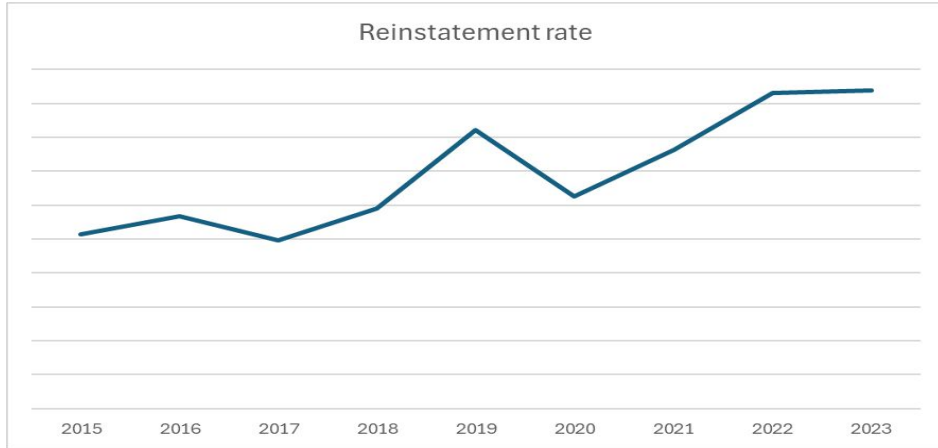
Claim year	Part COVID claims >1 year
2020	13,4%
2021	9,7%
2022	7,3%
2023	1,2%



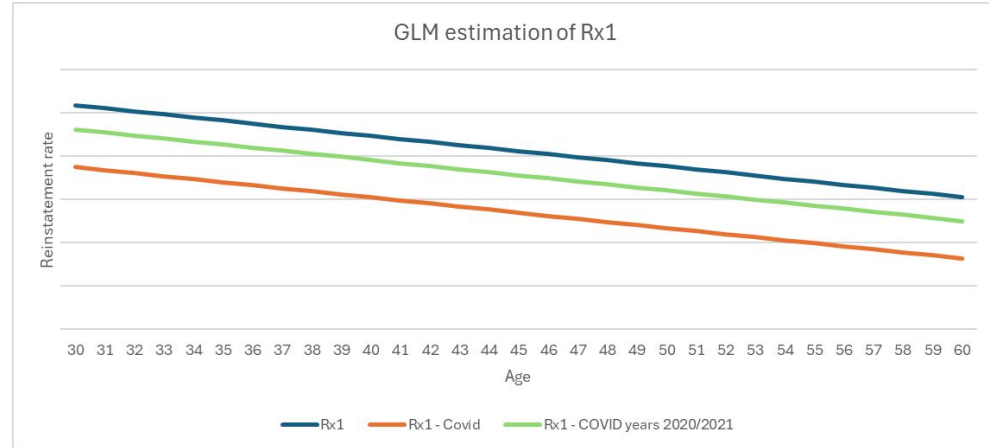


# Model parameters

## *Reinstatement rates two figures*



Weighted reinstatement rate per observation year



GLM on first year reinstatement from 2015-2024

~15% lower reinstatement rate for COVID-19 claims in the first year



# Self-employed

## *Mortality rates*

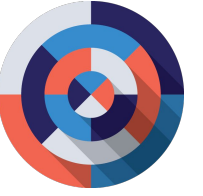
If someone deceases, the technical provision is not needed anymore (similar financial result as full recovery)

- There are usually too few realized deaths among the disabled for reliable derivation of mortality rates.
- In practice, most recent AG mortality tables are chosen.
- For disability insurance, the mortality rate often does not have a major impact on the price/facilities such as incidence rates or recovery rates as product covers until ages around pension age.

### **Experience factor**

- An add-on on the mortality rate for people who are already disabled. That is, use an experience factor for mortality rates in disabled state.
- In practice, we did **not** change this factor following from COVID19.

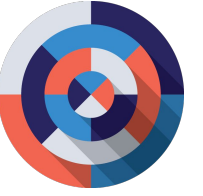




# How we deal with it now?

To summarize in one word: monitor!

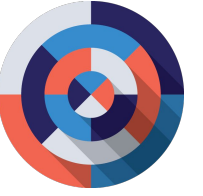
- Monitor monthly the total claim reserve for COVID claims.
- Monitor each quarter whether developments are shown in claims in general.
- Monitor yearly the effect on parameter settings for incidence and reinstatement rates, both for reporting and pricing purposes.
- Adapt your organization on the reinstatement side accordingly.



# Conclusion

## *Both direct and indirect effects should be analyzed*

- While (long) Covid claims contribute to a higher inflow in WIA, the indirect effects seem to be more significant
- Modelling trends in WIA inflow relies on countrywide data
- The inflow in WIA continues to increase
- UWV is in a stress scenario
- Trends for own risk carriers differ from the countrywide trends.
- Monitor developments frequently and adjust company organization and parameter setting accordingly.



# What's your opinion on premiums? WooClap

## *COVID19 on premiums, both collective & individual*

- **Question 1:** Should an insurer rise premiums for a probability of a new pandemic?  
Yes  
No  
I really do not have a clue
- **Question 2:** Should an insurer rise premiums coming from COVID19 claims?  
Yes  
No  
I really do not have a clue
- **Question 3:** Should an insurer rise premiums coming from side effects of COVID 19?  
Yes  
No  
I really do not have a clue

# Questions?