

# scohpica

Swiss COhort of Healthcare Professionals and Informal CAregivers

Schweizer Kohorte der Gesundheitsfachkräfte und pflegenden Angehörigen  
Cohorte Suisse des professionnel·le·s de santé et des proches aidant·e·s  
Coorte svizzera di professionisti della salute e familiari curanti

## Factors associated with the intent to stay of Swiss healthcare professionals: results from SCOHPICA

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# Plan



- Introduction
  - Aims of SCOHPICA
  - 2022 Health Professionals data collection
  - First Results
- In-Depth Analyses
  - Factors associated with Intent to stay in the profession
  - Clusters of participants
- Discussion
- Next Steps

# Introduction



# Aims

## of SCOHPICA

To describe and understand, over time, how specific professional trajectories and experiences facilitate or prevent **health professionals (HP) / informal caregivers (IC)** from embodying their role, and thus from staying in or leaving their job / role

Today: Focus on Health Professionals

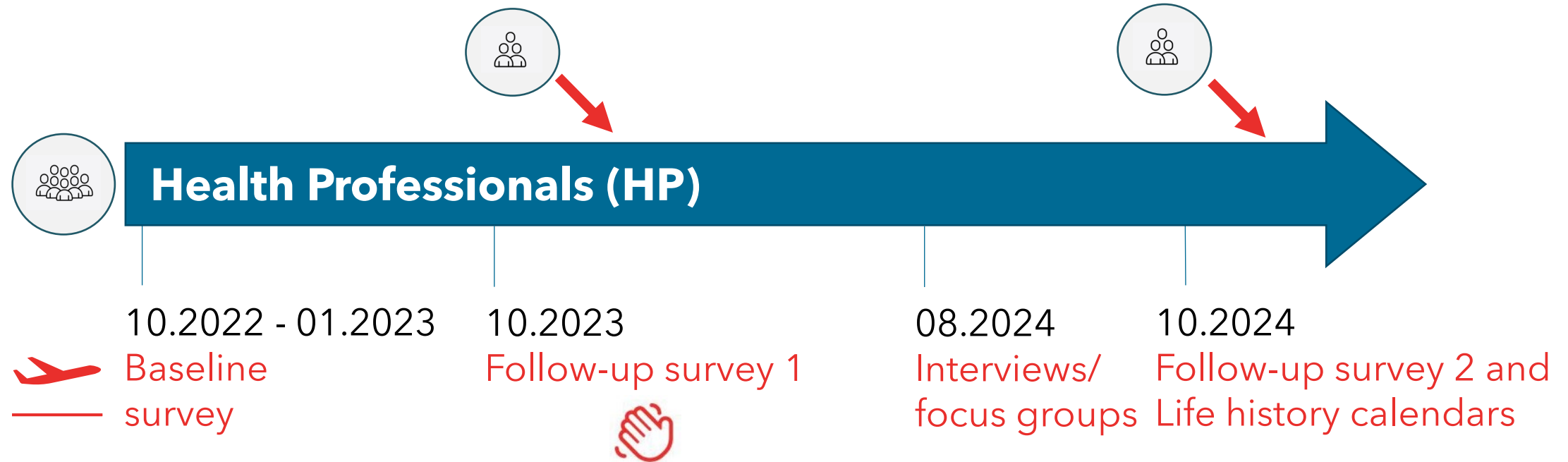
## Problems with the health workforce:

- Current and projected shortage of HP, in Switzerland and European countries
- To address this situation, measures have to be undertaken
- Swiss data is lacking to guide such measures (i.e., HP's trajectories, well-being, quality of life, work conditions, etc.)

A red arrow pointing to the right, highlighting the following text.

Longitudinal data on health professionals is essential for **public policy planning and management** of the health workforce in Switzerland, and for **ensuring high-quality healthcare**

# Prospective open cohort



# 2022 Questionnaire

## Baseline web questionnaire:

- 120 questions, ~30 minutes

### Outcomes

- **Intention to leave the position / profession / health sector, within next 5 years**
- **Intention to stay in the position / profession / health sector, within the next few months**
- **Well-being**

### Professional situation

- Profession and work context
- Current situation (type of activity and rate, employment status, etc.)
- Specialization and training
- Changes of employers/sectors, interruptions due to illness/occupational injury

### Socio-demographic characteristics

- Gender
- Age
- Nationality
- Marital/partnership status
- Income
- ...

### Determinants (dimensions)

... next slides ...

# 2022 Questionnaire



## Determinants (dimensions)

<b>Workload</b>	Perceived amount of work in terms of pace and volume
<b>Staffing &amp; resources</b>	Staffing and resource adequacy to work
<b>Opportunities for development</b>	Possibility to learn new things at work, to use skills/expertise, to develop competences
<b>Work-life balance</b>	Interference of work demands with private life, work drains energy and has negative effects on private life
<b>Work readiness</b>	Feeling prepared for professional activity by previous training
<b>Recognition at work</b>	Recognition by the company, colleagues and leaders
<b>Meaning of work</b>	Feeling that the work done is meaningful and important
<b>Leadership</b>	Leader's behaviors: providing a vision and an appropriate model, fostering the acceptance of group goals, performance expectations, providing individualized support to staff and intellectual stimulation
<b>Control over working time</b>	Ability to decide when to take holiday; control over work overtime
<b>Influence at work</b>	Degree of influence on the decisions at work
<b>Sense of community at work</b>	Atmosphere and co-operation with colleagues
<b>Interprofessional collaboration</b>	Collaboration between interprofessional team members
<b>Moral resilience</b>	The capacity to sustain/restore integrity in response to moral adversity
<b>Intolerance to uncertainty</b>	The tendency to consider a negative event occurring unacceptable, irrespective of the probability of occurrence

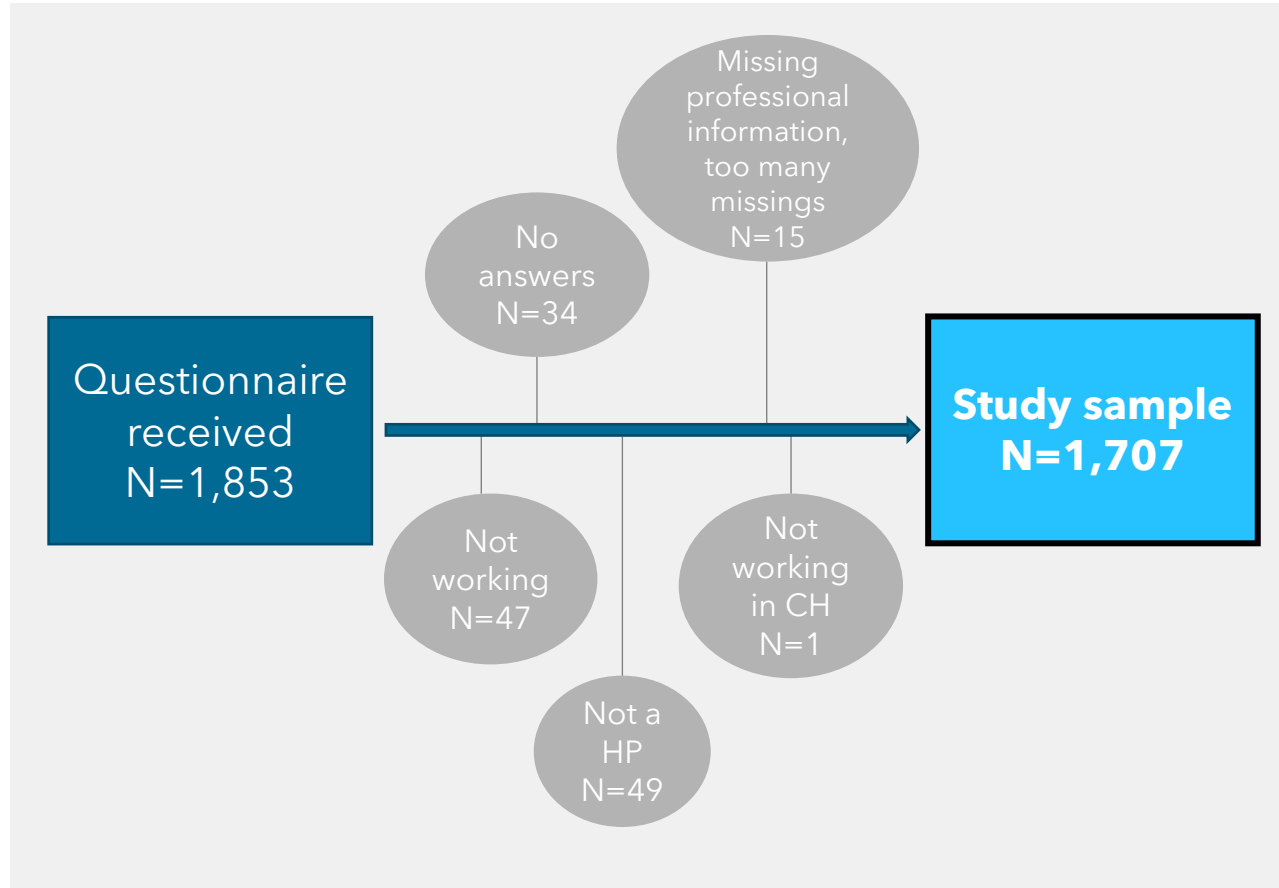
+ Burnout + Self-rated health + Job satisfaction



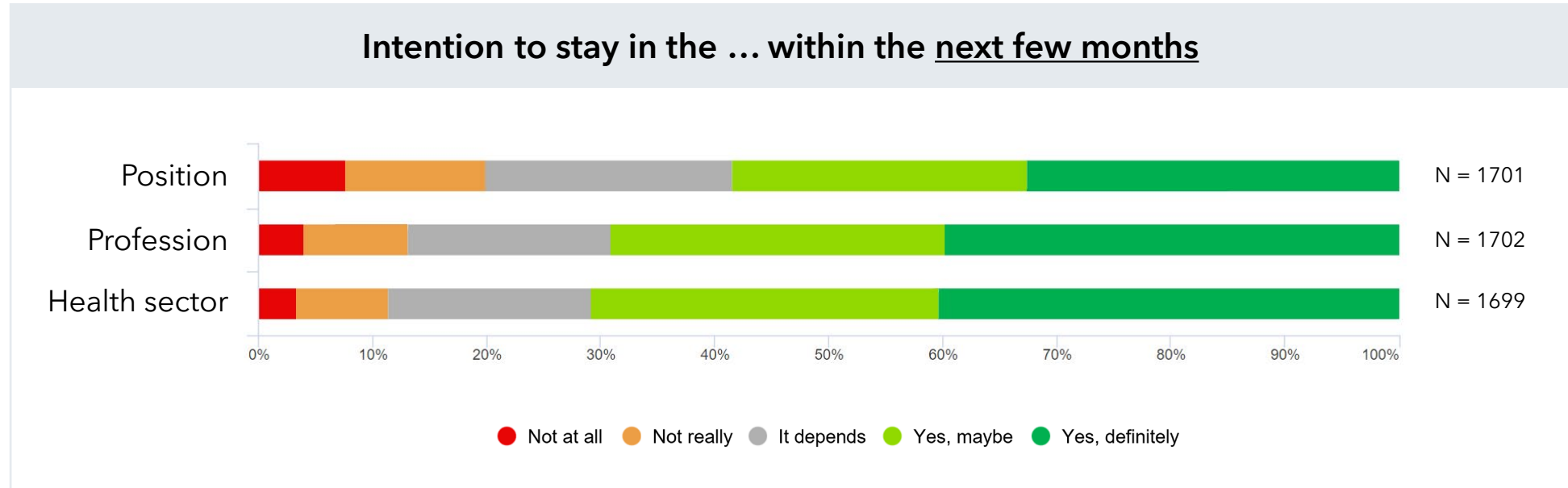
# First Results Reminder



# First results – the sample



# First results – study outcomes



Full presentation  
of the first results available  
on our website!

# First results – study outcomes

n > 50



\* (DE) Fachfrau/-mann Gesundheit, Pflegefachfrau/-mann DN1, Krankenpfleger/-in FA SRK  
(FR) Assistant-e en soins et santé communautaire (ASSC) ; Infirmier-ière niveau I (NI) ; Infirmier-ière assistant-e (CC-CRS)

# In-depths results



# Aims

- To derive a core set of factors associated with the intent to stay in the profession suitable for diverse healthcare professionals and care settings in Switzerland.
- To identify clusters of participants with different profiles of core work characteristics, and to relate them with the main professions represented in the baseline SCOHPICA survey.

# Univariate associations



# Analysis strategy



## To derive a core set of factors



Introduce the different type of information collected in the SCOHPICA survey.



For each sub-models and the main model, add all relevant covariates in a linear regression framework.



Operate necessary statistical checks.



Select the variables based on likelihood ratio tests and the Akaike Information Criterion.



This establishes a core set of factors that will explain much of the variation present in the outcome.

## To identify clusters of participants



Run a k-means clustering algorithm on the selected factors (other options such as PAM or hierarchical clustering algorithms also considered).



Select the optimal number of clusters based on the strength of association (i.e. proportion of variance explained) with the intent to stay.



This enables to reduce the dimensionality of the problem and summarize as much of the information as possible in a single cluster membership variable.



Describe the clusters thus obtained through their centres and the proportion of healthcare professionals from different preminent professions they entail.



# Example

Bivariate model		Intent to stay in the profession (1: lowest, 5: highest)	
		Beta	P-value
Managerial responsibility	No (n=1180)	(reference)	
	Yes (n=502)	<b>0.13</b>	0.03

Multivariate model		Intent to stay in the profession (1: lowest, 5: highest)	
		Beta	P-value
Managerial responsibility	No (n=1180)	(reference)	
	Yes (n=502)	<b>0.008</b>	0.9
Salary	1: lowest class, 6: highest class	0.13	<0.001

N = 1682

# Example

Bivariate model		Intent to stay in the profession (1: lowest, 5: highest)	
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Managerial responsibility	No (n=1180)	(reference)	
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Salary	1: lowest class, 6: highest class	0.13	<0.001

N = 1682

Focus on this!

# Socio-professional information

## ❖ Night shift:

❖ yes vs no ↓ -0.24 [-0.36, -0.12]

Working night shifts compared to not working night shifts is associated with a 0.24 (out of 5) lower intent to stay in the profession (95% CI 0.12 to 0.36) after adjustment for the other socio-professional variables.

## ❖ Hours worked per week:




❖ 1 to 29 ➤ 30 to 39 ➤ 40 to 49 ➤ 50 or more  
↓ -0.14 [-0.21, -0.08]

Each increase in the categories of hours worked per week is associated with a 0.14 lower intent to stay in the profession (95% CI 0.08 to 0.21) after adjustment for the other socio-professional variables.

## ❖ Monthly income (CHF):



❖ 2'000 or less ➤ 2'001 to 4'000 ➤ 4'001 to 6'000 ➤  
6'001 to 8'000 ➤ 8'001 to 10'000 ➤ more than 10'000  
↑ 0.2 [0.15 to 0.25]

N = 1680

- ❖ Further education / training:
  - ❖ yes vs no  0.19 [0.08, 0.3]
- ❖ Work-related accident / sick leave in the past five years:
  - ❖ yes vs no  -0.44 [-0.56, -0.32]
- ❖ Reduction of employment rate in the past 12 months:
  - ❖ yes vs no  -0.23 [0.1 to 0.37]

# Socio-demographics


## ❖ Marital / partnership status:

- ❖ live-in partner vs single  0.17 [0.04, 0.3]
- ❖ separated vs single  -0.27 [-0.47, -0.06]

## ❖ Informal caregiving:

- ❖ yes vs no  -0.23 [-0.34, -0.11]

## ❖ Age (years):

- ❖ less than 25 ➤ 25 to 34 ➤ 35 to 44 ➤  
45 to 54 ➤ 55 to 64 ➤ 65 or more  
 0.1 [0.05 to 0.15]

N = 1640

# Determinants (dimensions of work experiences)



Outcome: intent to stay	Coef. [95% CI]
Work-life balance	0.2 [0.15, 0.25]
Opportunities for development	0.19 [0.14, 0.25]
Meaning of work	0.18 [0.13, 0.23]
Influence at work	0.15 [0.1, 0.21]
Recognition	0.14 [0.09, 0.2]
Workload	0.14 [0.09, 0.2]
1 Work preparedness	0.05 [0.01, 0.1]

Outcome: intent to stay	Coef. [95% CI]
Work-life balance	0.2 [0.14, 0.27]
Opportunities for development	0.2 [0.14, 0.27]
Meaning of work	0.2 [0.14, 0.25]
Recognition	0.14 [0.07, 0.21]
Staffing and resources	0.11 [0.04, 0.18]
Control over working time	0.1 [0.04, 0.16]
2 Workload	0.09 [0.03, 0.16]

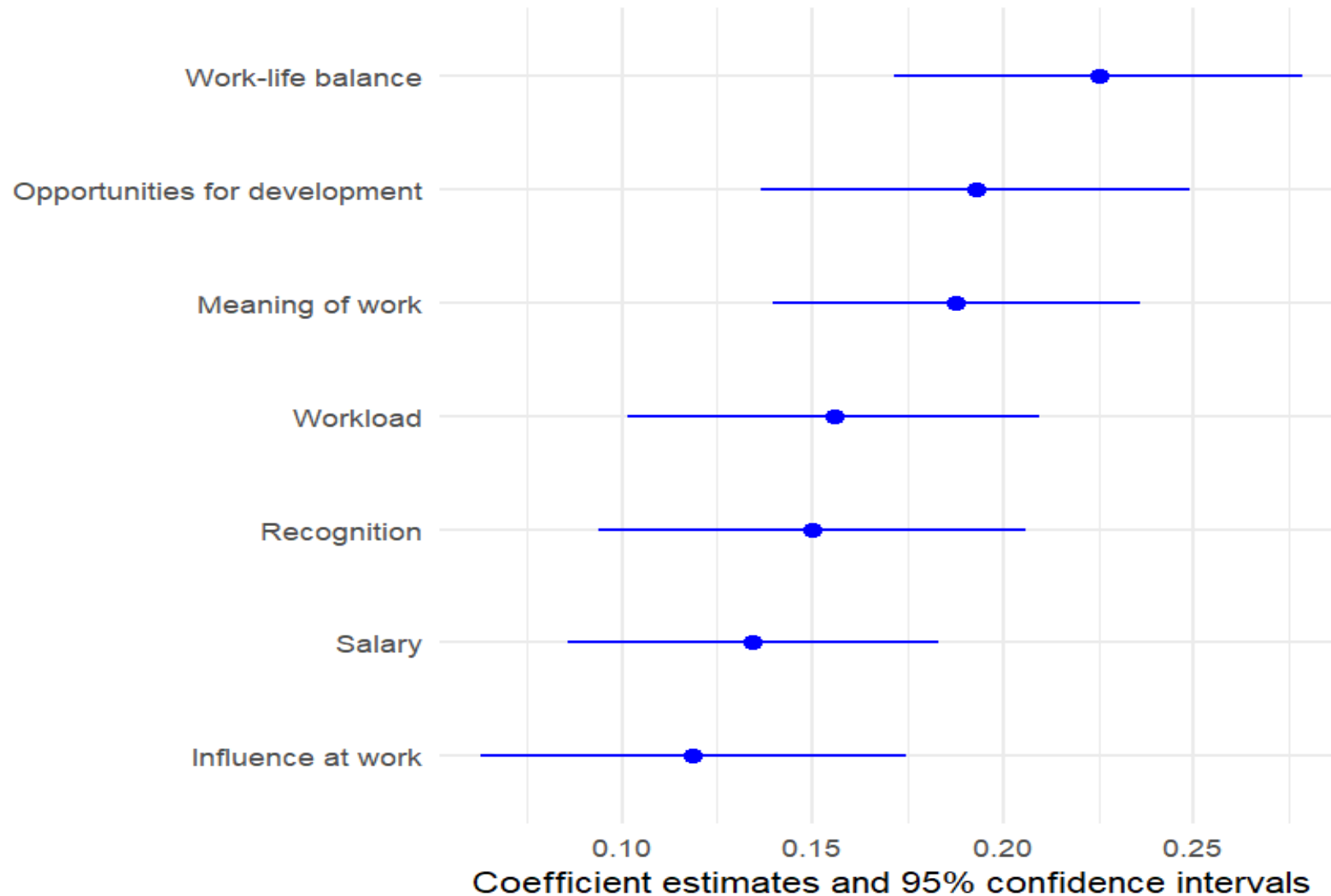
Focus  
on this  
model

1. All participants, without intermediate variables (i.e. without job satisfaction, burnout, and self-rated health) (N = 1670)
2. Employee subsample, without intermediate variables (N = 1324)
3. All participants, with intermediate variables (N = 1645)

Outcome: intent to stay	Coef. [95% CI]
Job satisfaction	0.37 [0.32, 0.42]
Burnout	0.26 [0.21, 0.31]
Opportunities for development	0.15 [0.1, 0.2]
Meaning of work	0.12 [0.07, 0.16]
Influence at work	0.09 [0.04, 0.14]
3 Workload	0.08 [0.03, 0.13]

In purple : variables that differ depending on the model

# Core factors associated with the intent to stay



- Multivariate linear regression model
- N = 1673
- All covariates are standardized
- Higher scores indicate better working conditions
- Proportion of the variance in the independent variable explained = 0.33
- All associations have p-values < 0.001
- Robust / logistic regression results very similar

# Analysis strategy



## To derive a core set of factors



Introduce the different type of information collected in the SCOHPICA survey.



For each sub-models and the main model, add all relevant covariates in a linear regression framework.



Operate necessary statistical checks.



Select the variables based on likelihood ratio tests and the Akaike Information Criterion.



This establishes a core set of factors that will explain much of the variation present in the outcome.

## To identify clusters of participants



Run a k-means clustering algorithm on the selected factors.



Select the optimal number of clusters based on the strength of association (i.e. proportion of variance explained) with the intent to stay.



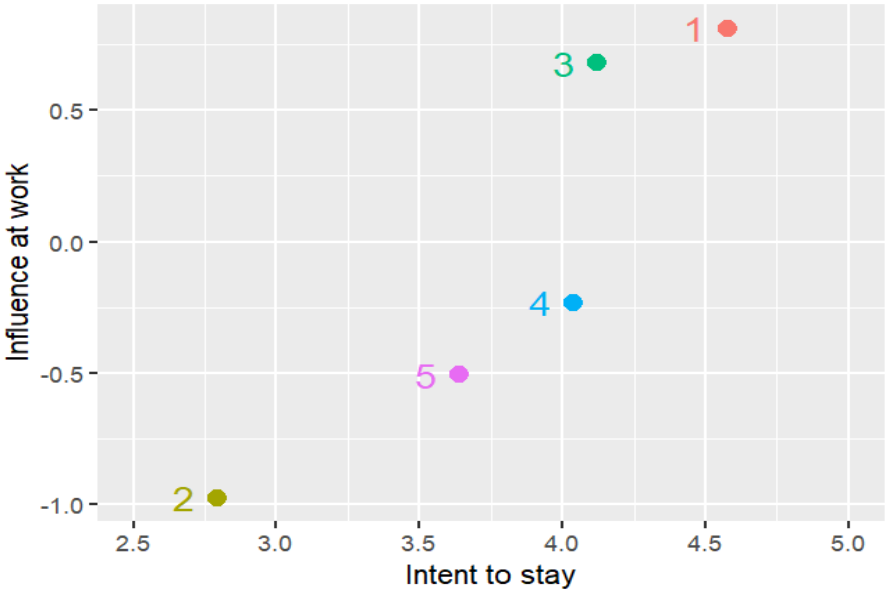
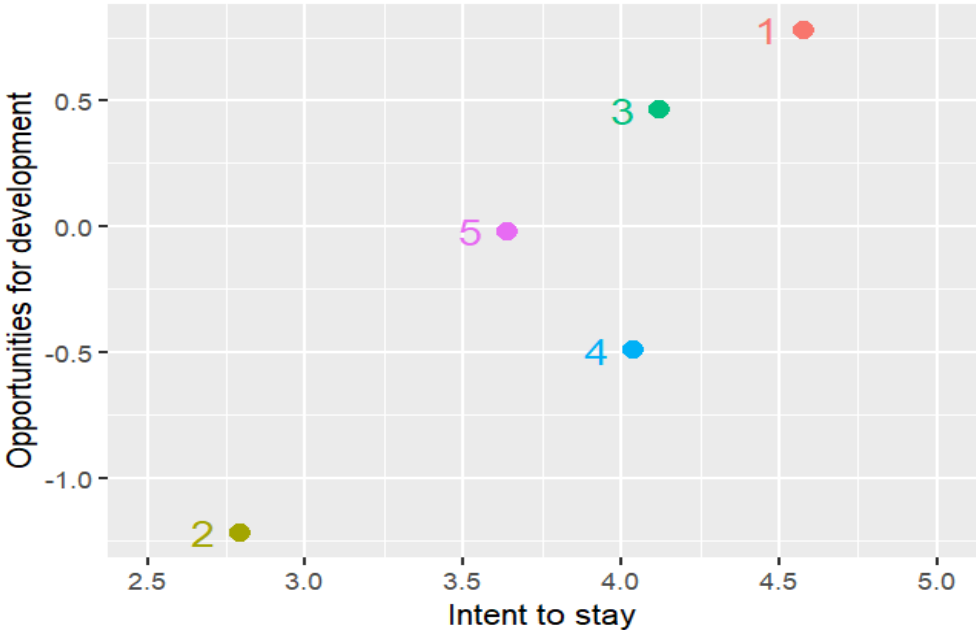
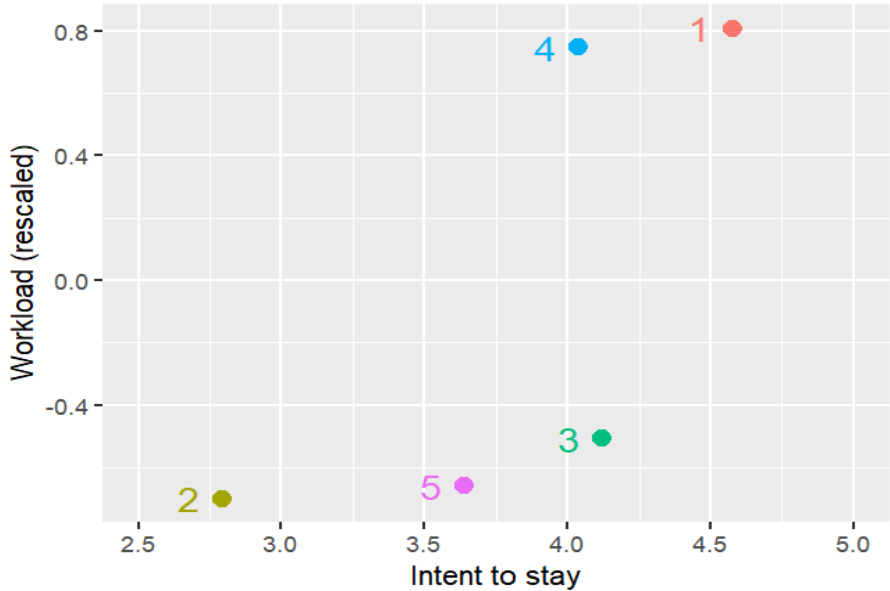
This enables to reduce the dimensionality of the problem and summarize as much of the information as possible in a single cluster membership variable.



Describe the clusters thus obtained through their centres and the proportion of healthcare professions from different professions they entail.

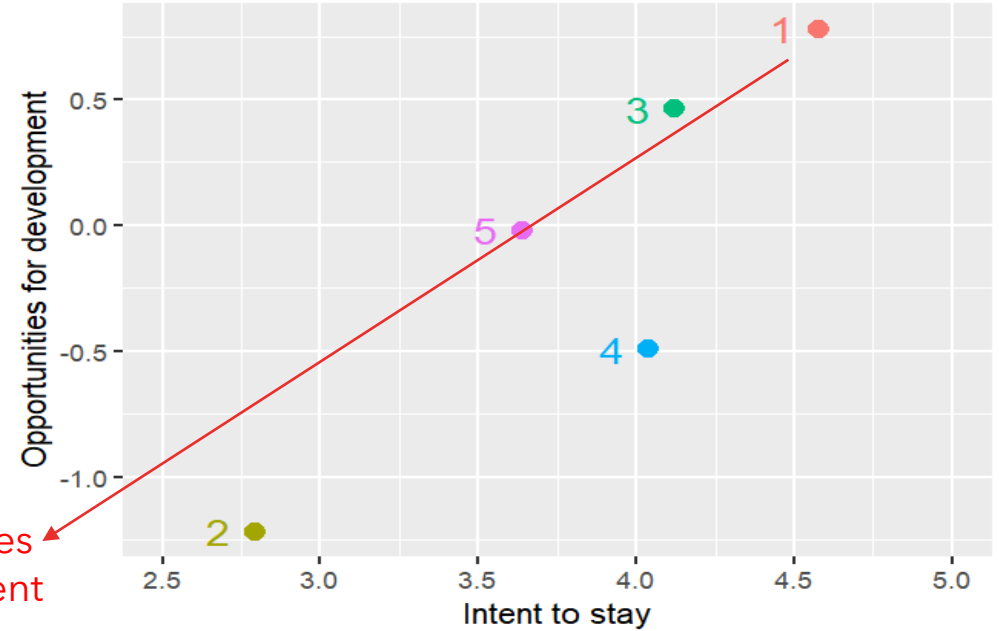
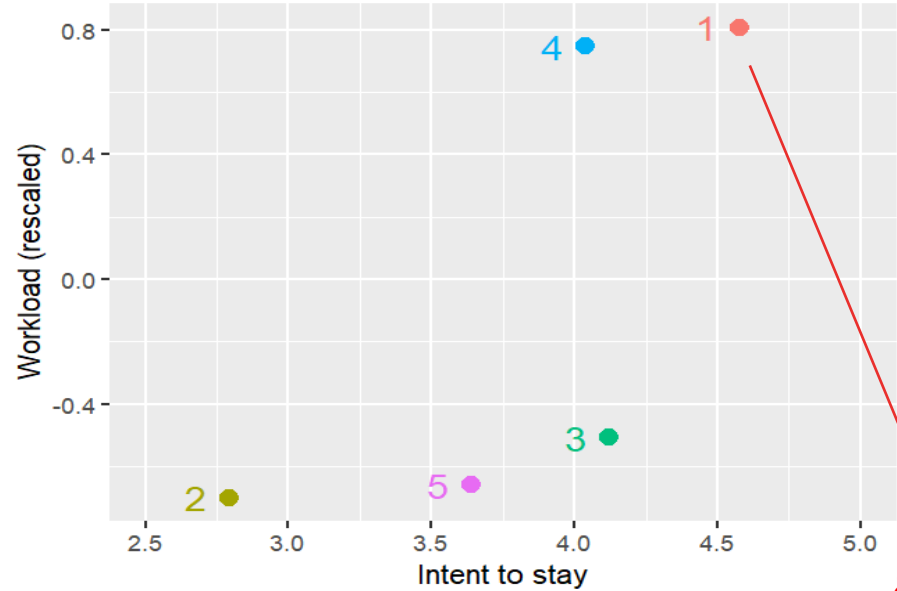


# First cluster (n = 413)

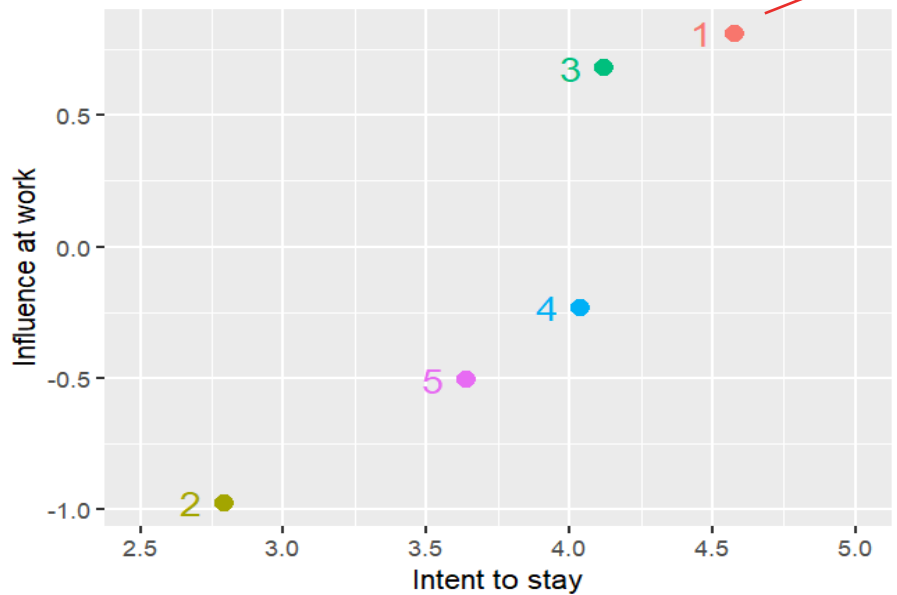


Intent to stay	1	2	3	4	5
Cluster 1	0%	1%	6%	25%	67%
Cluster 2	18%	21%	33%	21%	7%
Cluster 3	3%	8%	12%	29%	48%
Cluster 4	2%	7%	17%	34%	40%
Cluster 5	3%	13%	25%	34%	25%

# First cluster (n = 413)



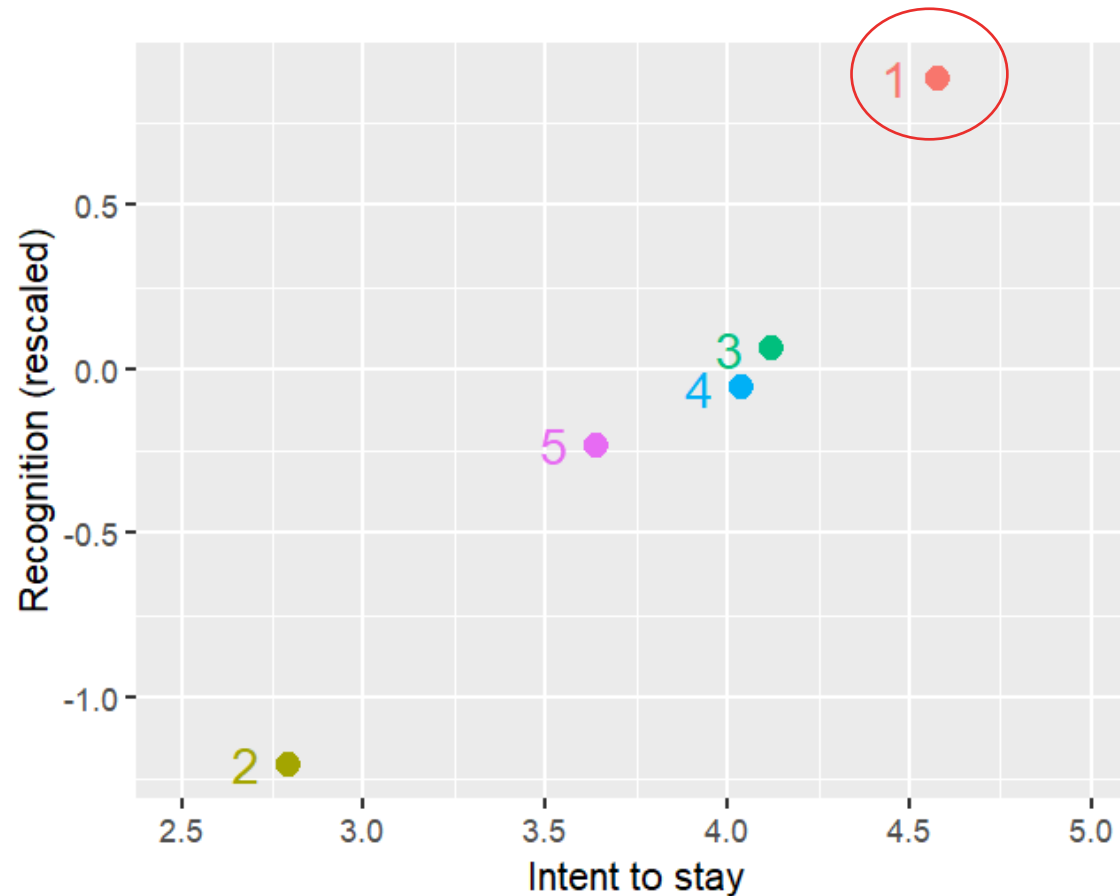
Highest scores  
& highest intent



24% of the  
variance  
explained!

Intent to stay	1	2	3	4	5
Cluster 1	0%	1%	6%	25%	67%
Cluster 2	18%	21%	33%	21%	7%
Cluster 3	3%	8%	12%	29%	48%
Cluster 4	2%	7%	17%	34%	40%
Cluster 5	3%	13%	25%	34%	25%

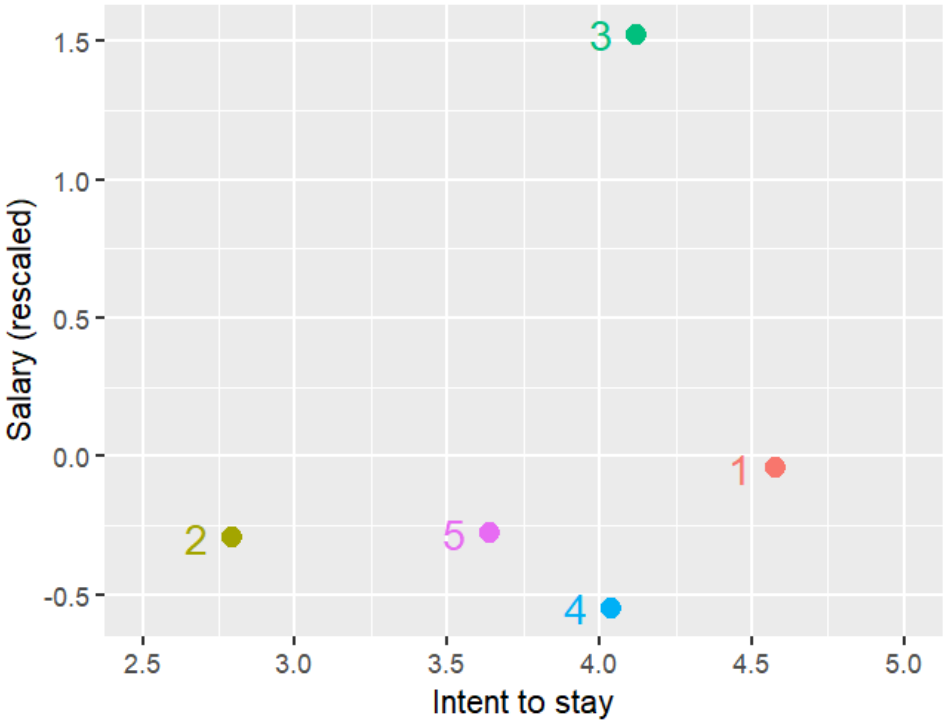
# First cluster (cont.)



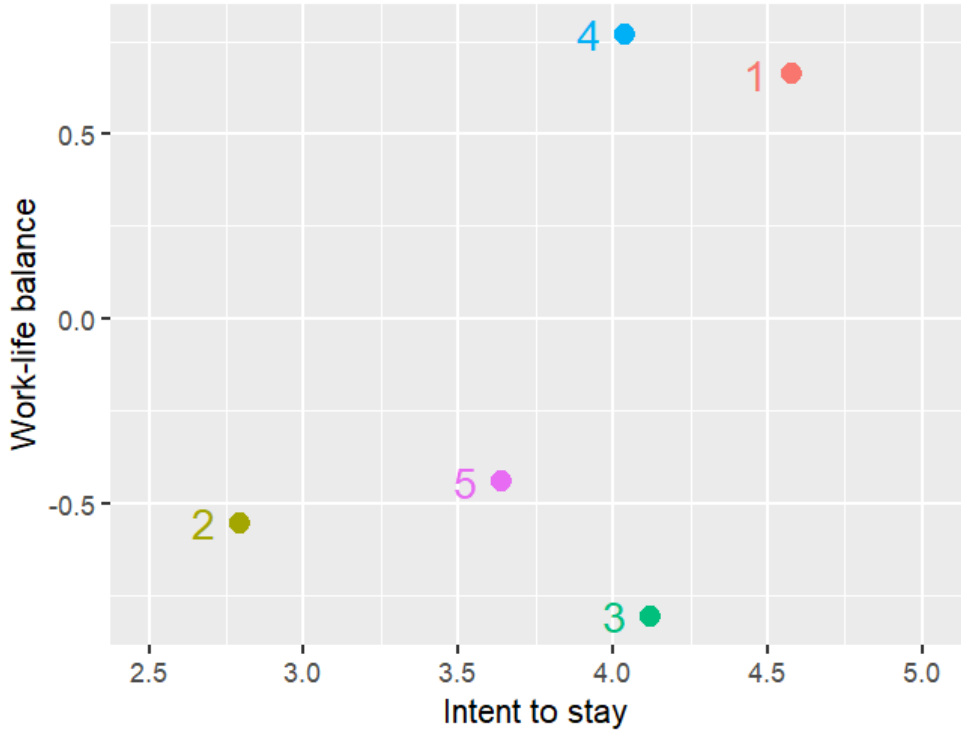
More than 40% of the occupational therapist and paramedic participants in SCOHPICA are part of this cluster

Profession	n	%
Occupational therapist	40	<b>44.9</b>
Paramedic	26	<b>43.4</b>
Physiotherapist	54	<b>35.3</b>
Medical assistant	26	<b>34.7</b>
Dietitian	14	<b>25</b>
Advanced practice nurse	13	<b>21</b>
Registered nurse	100	<b>18.4</b>
Pharmacist	12	<b>17.1</b>
Physician	31	<b>14.8</b>
Intermediate care personnel	8	<b>14.5</b>

# Third cluster (n=260) vs. Fourth cluster (n=330)

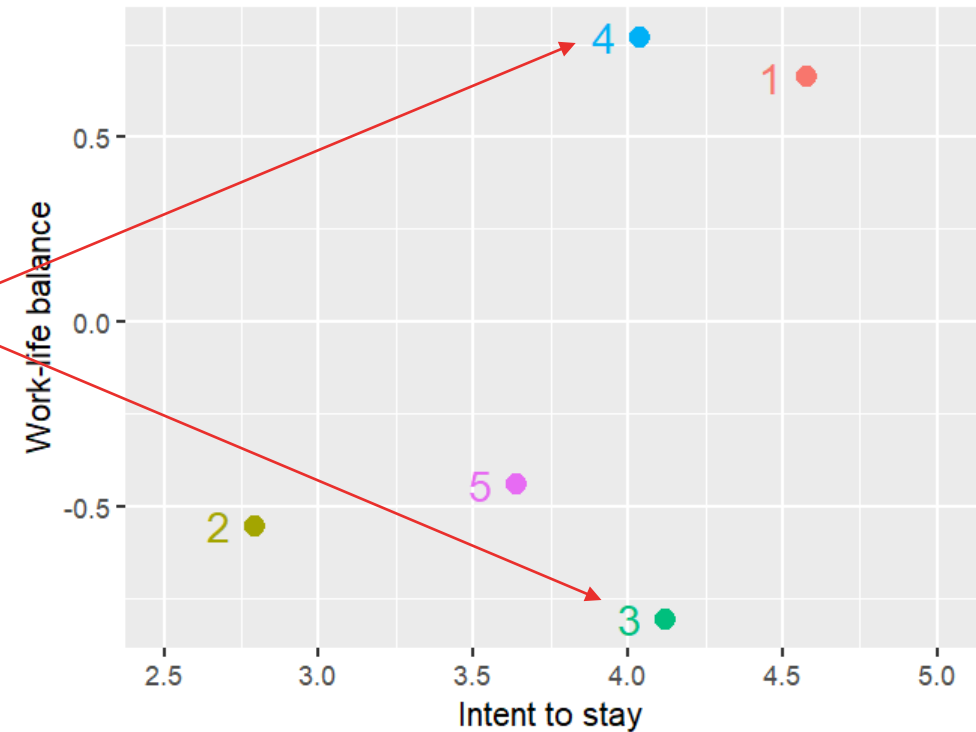
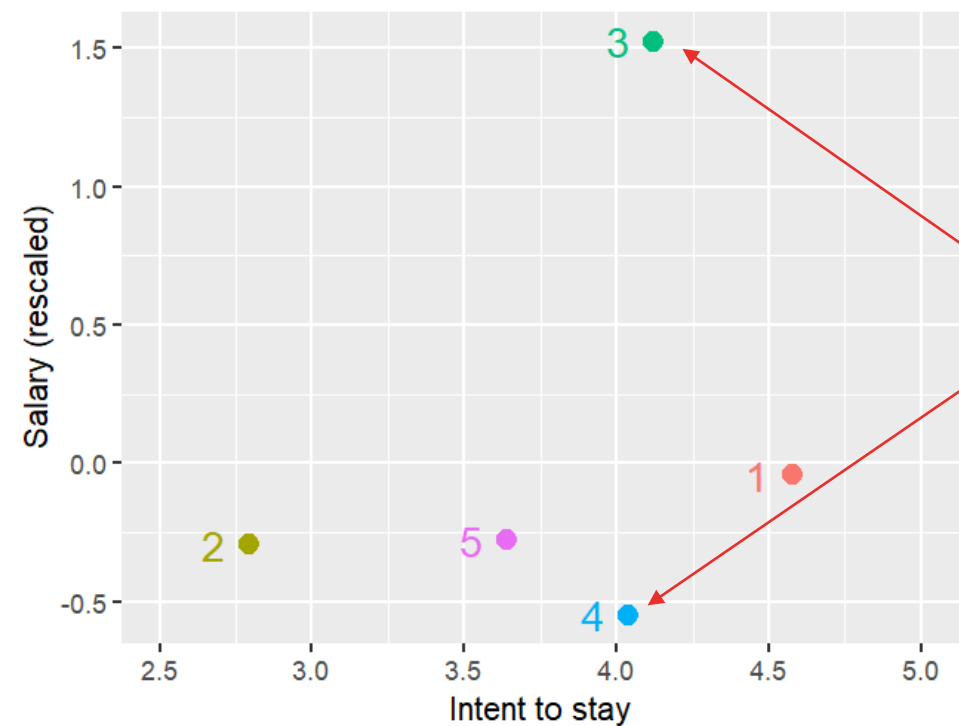


Profession	n	%
Physician	129	61.4
Pharmacist	24	34.3
...		
Intermediate care personnel	1	1.8
Medical assistant	0	0



Profession	n	%
Dietitian	26	46.4
Intermediate care personnel	19	34.5
...		
Pharmacist	8	11.4
Physician	9	4.3

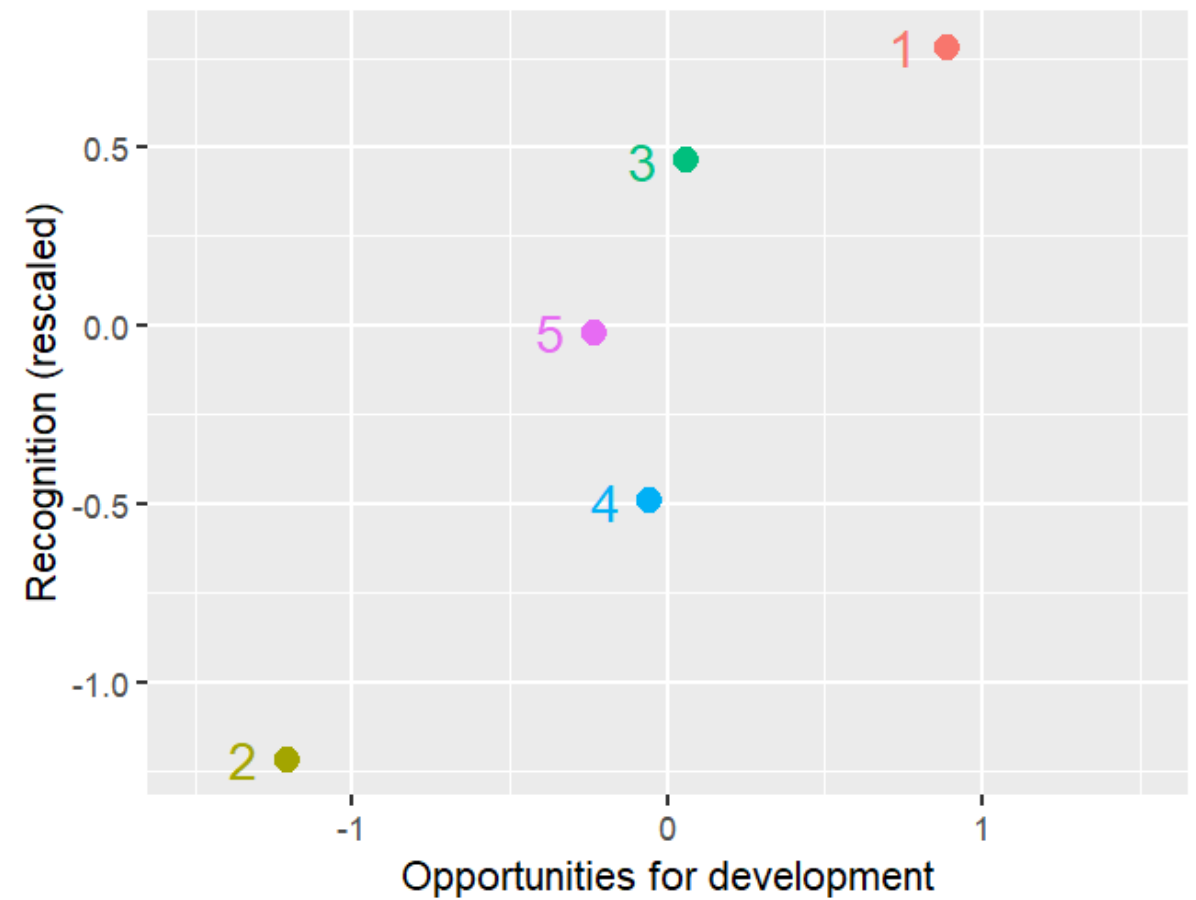
# Third cluster (n=260) vs. Fourth cluster (n=330)



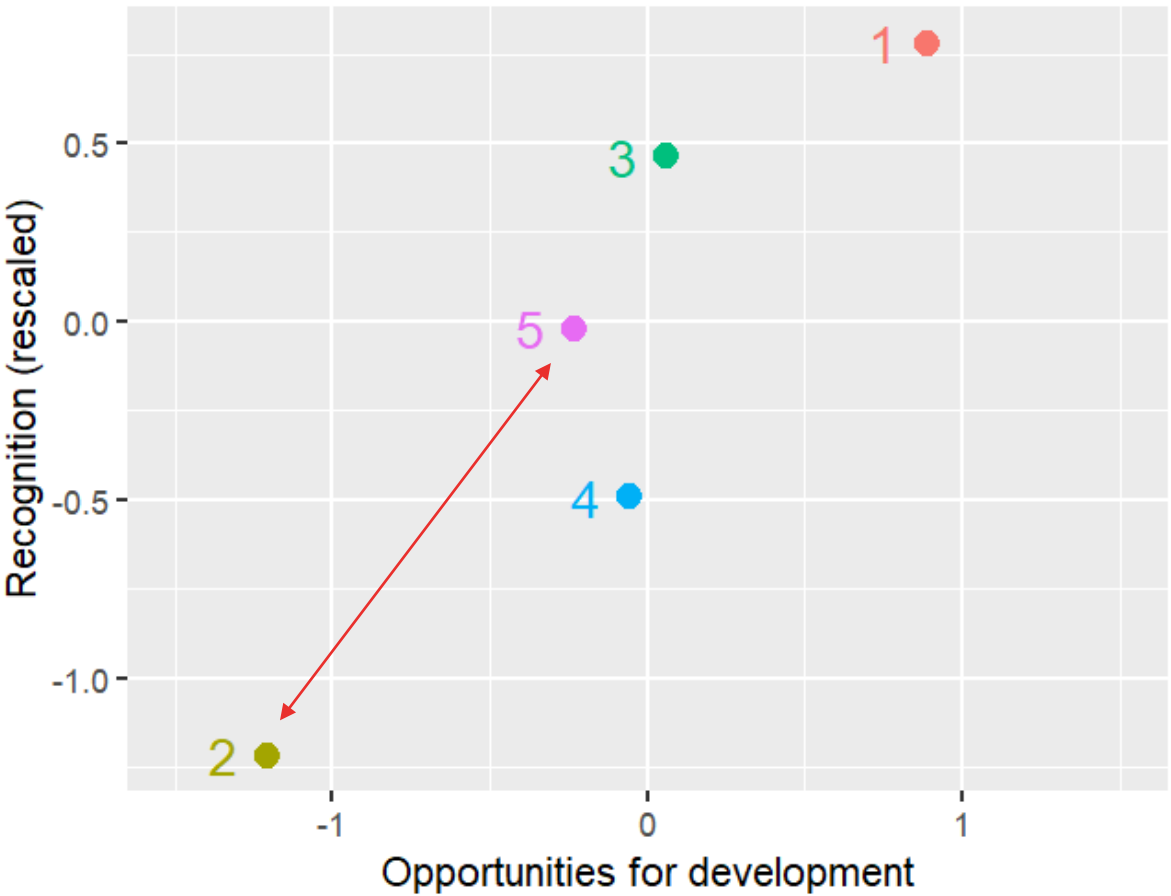
Profession	n	%
Physician	129	61.4
Pharmacist	24	34.3
...		
Intermediate care personnel	1	1.8
Medical assistant	0	0

Profession	n	%
Dietitian	26	46.4
Intermediate care personnel	19	34.5
...		
Pharmacist	8	11.4
Physician	9	4.3

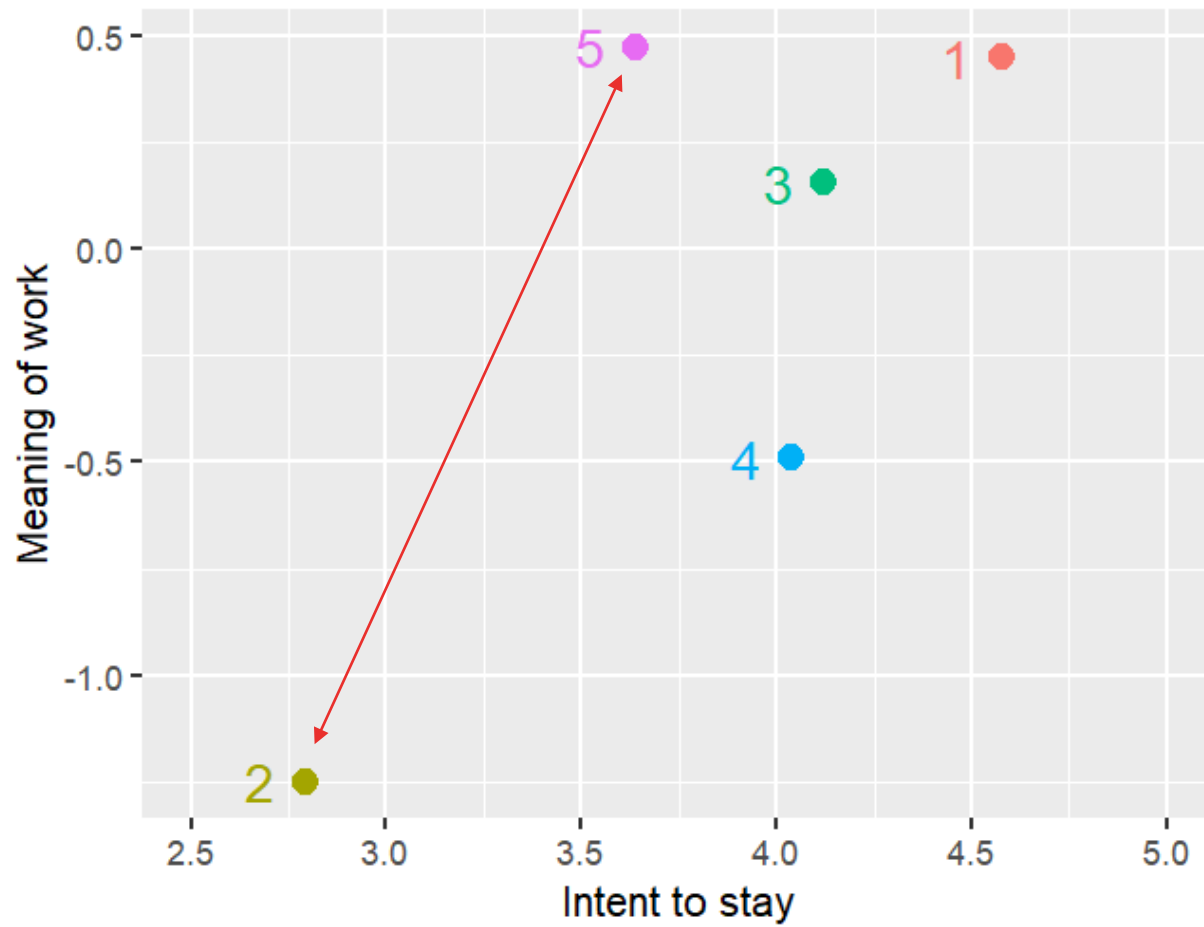
# Fifth cluster (n=450) vs. Second cluster (n=221)



# Fifth cluster (n=450) vs. Second cluster (n=221)



# Fifth cluster vs. Second cluster (cont.)



Profession	n	%
<u>Registered nurse</u>	211	<b>38.9</b>
<u>Intermediate care personnel</u>	20	<b>36.4</b>
Advanced practice nurse	17	<b>27.4</b>
...		
Physician	25	<b>11.9</b>
<u>Paramedic</u>	7	<b>11.7</b>

Profession	n	%
<u>Registered nurse</u>	104	<b>19.2</b>
Medical assistant	13	<b>17.3</b>
<u>Intermediate care personnel</u>	7	<b>12.7</b>
...		
Occupational therapist	4	<b>4.5</b>
<u>Paramedic</u>	2	<b>3.3</b>



# Clustering summary



Cluster	1. (n=413)	2. (n=221)	3. (n=260)	4. (n=330)	5. (n=450)
Top 3 professions	Occup. Therapist Paramedic Physiotherapist	Regist. Nurse Medical Assistant Int. Caregiver	Physician Pharmacist Adv. Practice Nurse	Dietitian Int. Caregiver Paramedic	Regist. Nurse Int. Caregiver Adv. Practice Nurse
Bottom 3 professions	Int. Caregiver Physician Pharmacist	Paramedic Occup. Therapist Physiotherapist	Medical Assistant Int. Caregiver Dietitian	Physician Pharmacist Adv. Practice Nurse	Paramedic Physician Dietitian
Work-life balance	+	-	--	++	-
Development possibilities	++	--	+	-	+-
Meaning of work	++	--	+	-	++
Workload	++	--	-	++	--
Recognition	++	--	+-	+-	-
Salary	+-	-	++	--	-
Influence at work	++	--	+	-	-
<b>Intent to stay</b>	<b>4.6</b>	<b>2.79</b>	<b>4.1</b>	<b>4.06</b>	<b>3.58</b>

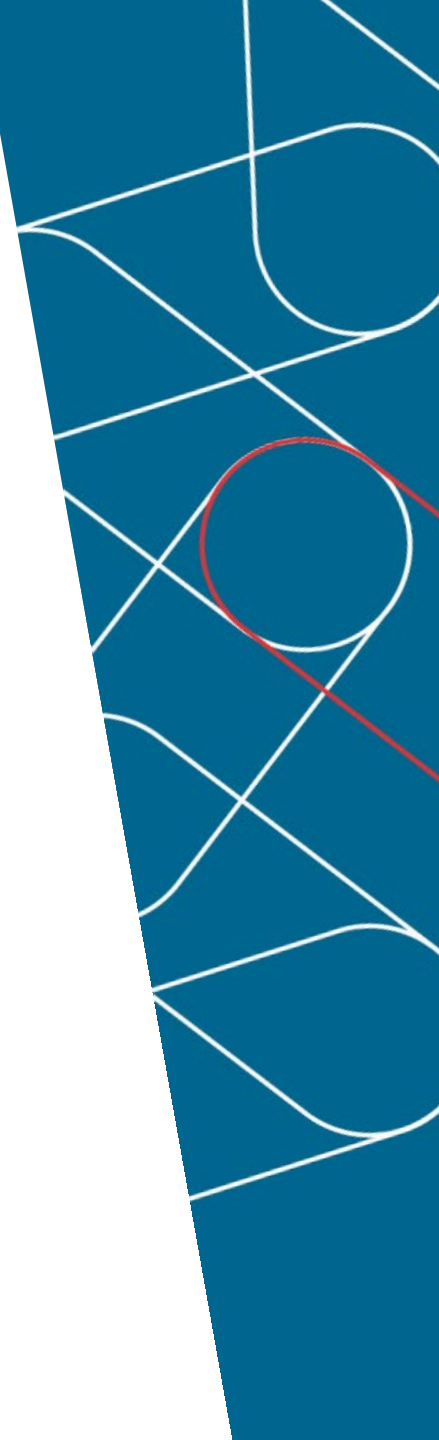
+ and - are based on the average scores for participants in the corresponding cluster (green represents the highest values, red the lowest).

# Clustering main findings



- Cluster = sub-group of participants sharing similar work experiences.
- Five clusters ranging from very willing to stay in their profession to seriously thinking about leaving.
- The highest intent to stay cluster reported in average the lowest workload, the most opportunities for development, the most influence on work decisions and, in particular, the most recognition.
- Two middle clusters were opposite in terms of income and work-life balance but had the same intent to stay.
- The cluster with the worst intent to stay in the profession distinguished itself from the second worst cluster by finding less meaning in work. Both clusters contained high proportions of nurses and intermediate care personnel.

# Discussion






# Discussion (1)

- Seven factors have been identified as critical to keep Swiss healthcare professionals in their profession, regardless of the profession, the care setting or their professional status.
  - Work-life balance
  - Opportunities for development
  - Meaning of work
  - Reasonable workload
  - Recognition
  - Adequate remuneration
  - Influence on work decisions / autonomy

# Discussion (1)

- Seven factors have been identified as critical to keep **Swiss healthcare professionals** in their profession, **regardless of the profession, the care setting or their professional status.**

- Work-life balance  schedule flexibility
- Opportunities for development
- Meaning of work  link with quality of care
- Reasonable workload  in line with working hours
- Recognition
- Adequate remuneration
- Influence on work decisions / autonomy

From  
literature  
reviews

Courvoisier et al., *Déterminants de l'intention de rester dans leur profession ou à leur poste de professionnel·le·s des soins : revue de littérature.*

Roth et al., *Factors associated with intent to leave the profession for the allied health workforce: a rapid review.*

Sikka et al., *The Quadruple Aim: care, health, cost and meaning in work.*

# Discussion (2)

- Cluster analysis is above all an exploratory tool and we will have to see how it evolves when more participants are added.
- However, clusters were well-separated and seem to indicate a real structure in the data.
- An application could be to detect worrying patterns that may lead to healthcare professionals leaving the workforce.
- Similar analyses will be performed on other outcomes and subsets.

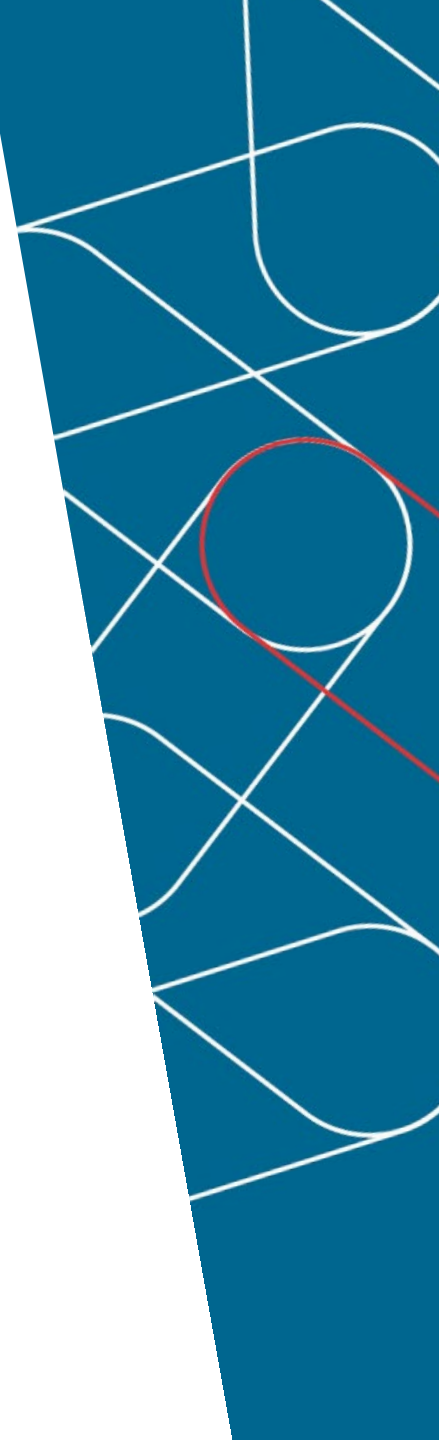
# Limitations (working on it!)

- Non-probability sampling
  - No nationwide data available on the HP population
- Under-represented groups
  - Limited sample size in some professional categories
  - Linguistic regions less represented
- Self-selection bias
  - Risk that people answering the questionnaire differ from those not-answering
- Self-reported data
  - Risk of recall and social desirability bias, which may lead to measurability bias

+ Risk of comparing what is not comparable



# Next steps





# Next steps

## Healthcare professionals cohort

- Extended analyses
  - These results will be used to prepare qualitative interviews and focus groups, as well as stakeholder dialogues
  - Interaction models, structural equation modelling (SEM), longitudinal/trajectory analyses
- Further data collection
  - **First follow-up survey and new recruitment starting in October 2023**
- Data and results dissemination
  - Descriptive results will be available to the public on an interactive dashboard, available soon on [www.scohpica.ch](http://www.scohpica.ch)
  - Access to SCOHPICA data will be provided to researchers and policy makers, by making them available on a **data repository**

# Upcoming conferences



➤ *23 November 2023*

**René Schaffert (BB-Ges, ZHAW)**

➤ *7 December 2023*

**Prof Hans Martin Hasselhorn (lidA-study, Universität Wuppertal)**

*More on [www.scohpica.ch](http://www.scohpica.ch)*

# MANY THANKS TO...

**All participants who responded to the baseline survey**

**Our institutions and their communication services**

- Unisanté
- Institut et Haute Ecole de la Santé La Source, HES-SO
- Centre hospitalier universitaire vaudois (CHUV)

**All entities who supported the recruitment of participants**

**The first funding bodies:** ASSM / SAMW; OFSP / BAG; OBSAN

**All collaborators who have contributed to SCOHPICA**

# Thank you for your attention



To contact us: [scohpica@unisantech.ch](mailto:scohpica@unisantech.ch)



**New recruitment and 1st follow-up  
starting soon!**

**From 1<sup>st</sup> of October 2023,  
participate on:**

**[www.scohpica.ch](http://www.scohpica.ch)**