



*PHAR-QA: Quality Assurance in  
European Pharmacy Education and Training*

## **PHAR-QA: Quality Assurance in European Pharmacy Education and Training**

### **The PHAR-QA Project (Preliminary) Results.**

### **The PHAR-QA consortium**

J. Atkinson. PCN. Villers. France – P2

*[jeffrey.atkinson@univ-lorraine.fr](mailto:jeffrey.atkinson@univ-lorraine.fr)*

*<http://pcn-consultants.com/>*



## *PHAR-QA: Quality Assurance in European Pharmacy Education and Training*

# 1. The project: consortium, aims, methodology.





### *PHAR-QA: Quality Assurance in European Pharmacy Education and Training*

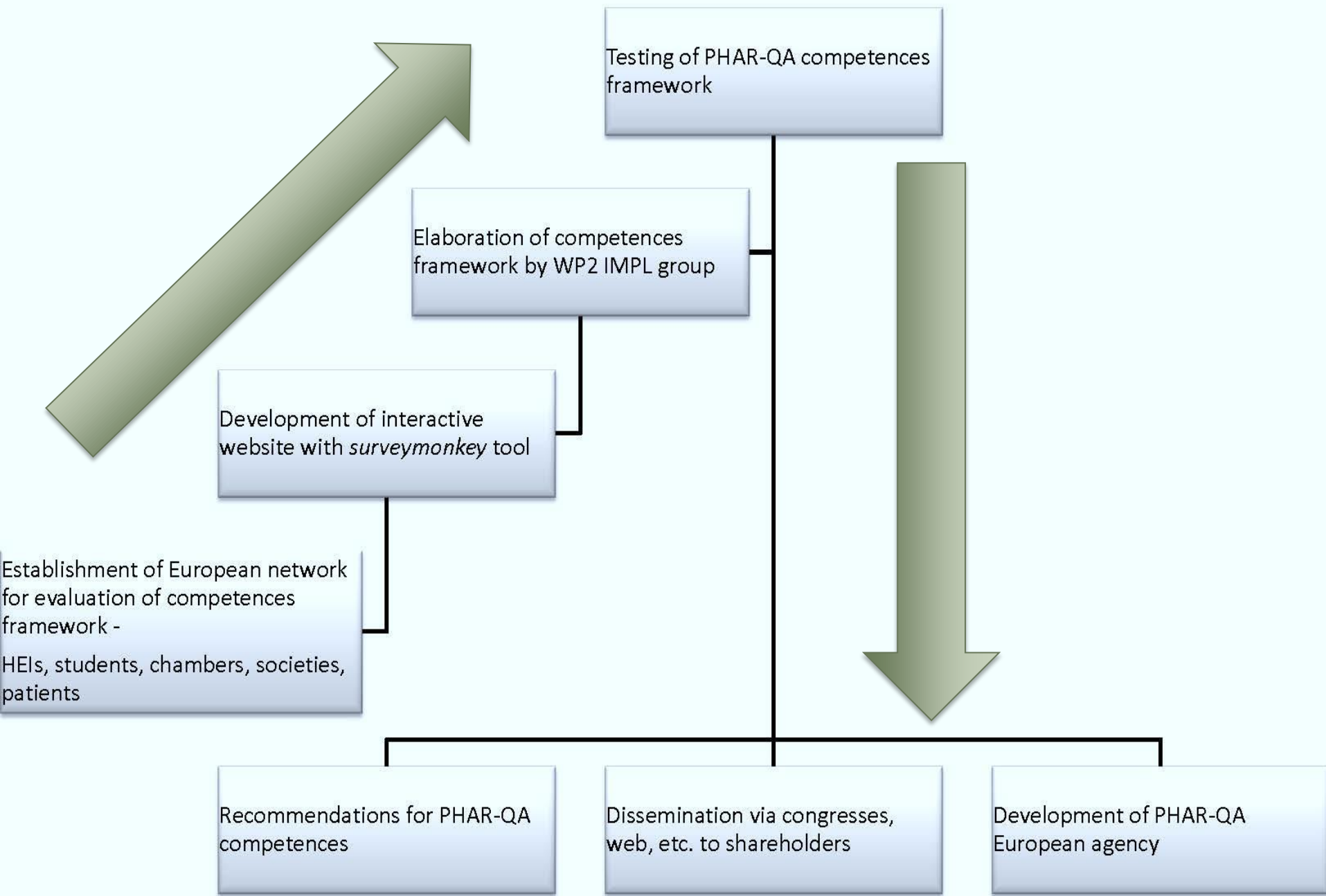
## The PHAR-QA consortium

### Partners

1. **KRISTIEN DE PAEPE**, Vrije Universiteit Brussel, Brussels, Belgium. 
2. **JEFFREY ATKINSON**, Pharmacolor Consultants Nancy, Villers, France. 
3. **ANTONIO SÁNCHEZ POZO**, University of Granada, Granada, Spain. 
4. **DIMITRIOS REKKAS**, National and Kapodistrian University Athens, Athens, Greece. 
5. **DAISY VOLLMER**, University of Tartu, Tartu, Estonia. 
6. **JOUNI HIRVONEN**, University of Helsinki (UH), Helsinki, Finland. 
7. **BORUT BOZIC**, University of Ljubljana, Ljubljana, Slovenia. 
8. **AGNIESKA SKOWRON**, Jagiellonian University, Krakow, Poland. 
9. **CONSTANTIN MIRCIOIU**, University of Medicine and Pharmacy "Carol Davila" Bucharest, Romania. 
10. **ANNIE MARCINCAL**, EAFF, Université de Lille 2, Lille France  & **ANDRIES KOSTER**, EAFF, Universiteit Utrecht, Utrecht, The Netherlands. 

### Advisory board

1. **KEITH WILSON**, Aston University, Birmingham, UK. 
2. **CHRIS VON SCHRAVENDIJK**, MEDINE2, Vrije Universiteit Brussel, Brussels, Belgium. 



# THE DELPHI METHOD.

1. INITIAL QUESTIONNAIRE - starting point questionnaire: small expert panel (A. Sanchez-Pozo, D. Rekkas plus consortium)
2. EVALUATION BY SMALL EXPERT PANEL – questionnaire modified in 3 Delphi rounds; panel provide (1) rankings, (2) comments (what is unclear, missing, in duplicate, *etc.*)
3. 4<sup>th</sup> VERSION OF QUESTIONNAIRE - 68 propositions in 13 groups submitted to large expert panel (academics, students pharmacists from all areas of the profession (n=1,245)
4. ANALYSIS OF DATA AND COMMENTS 4<sup>th</sup> VERSION - production of 5<sup>th</sup> version
5. EVALUATION LARGE EXPERT PANEL- production of final QA framework

## The European network evaluation of the PHAR-QA framework of

### The European network evaluation of the PHAR-QA framework of competences for...

The PHAR-QA ("Quality assurance in European pharmacy education and training") funded by the European Commission, will produce a framework of competences for pharmacy practice and a quality assurance system to back this up.

The PHAR-QA competence framework is primarily in line with the EU directive on the sectoral profession of pharmacy but also takes into account the diversity of the pharmacy profession and the on-going changes in European healthcare systems (with an increasingly important role for pharmacists), and in the pharmaceutical/biotechnological industry. Changes in the European Higher Education Area, especially those involving the bachelor and master degree organisation are also considered.

You are asked to rank the importance of the competences bearing in mind that fact that this survey applies to the wide range of domains of pharmaceutical activity. Responders should concentrate on competences needed for all pharmacists - not only on those for their speciality. It also applies to Europe - minor differences in different countries should not be stressed.

The ranking scale is as follows:

1. Not important = Can be ignored.
2. Quite important = Valuable but not obligatory.
3. Very important = Obligatory with exceptions depending upon field of pharmacy practice.
4. Essential = Obligatory.
5. I cannot rank this competence.

In the "Any comments" box you can:

- explain your ranking,
- explain why you were unable to rank a competence,
- suggest competence(s) that should be added.

If you wish to change your ranking for one or several competences click on the "Previous" button to reach the relevant page(s) before the final validation of your replies.

Following analysis of your replies, a second version will be produced for your evaluation. Following refinement of the framework via this repetitive Delphi process, a final version will be produced. This will form the basis of the PHAR-QA quality assurance system.

Further information can be obtained from Jeffrey ATKINSON, executive director of PHAR-QA.  
Jeffrey.atkinson@univ-lorraine.fr  
<http://pcn-consultants.com>

Thank you for participating in this survey.

### A final check before distribution to European network.

The survey should work on all browsers.  
Your comments on format are most welcome.

### Your details.

#### 1. What is your age?

# PHAR-QA framework:

- Based on competences
- Short
- Concise
- Consensual
- Harmonized

## Survey:

- +/-random recruitment
- Balance throughout EHEA



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### **13 questions on groups of competences**

#### **Personal competences**

7. learning and knowledge.
8. values.
9. communication and organizational skills.
10. knowledge of different areas of the science of medicines.
11. understanding of industrial pharmacy.

#### **Patient care competences**

12. patient consultation and assessment.
13. need for drug treatment.
14. drug interactions.
15. provision of drug product.
16. patient education.
17. provision of information and service.
18. monitoring of drug therapy.
19. evaluation of outcomes.



## *PHAR-QA: Quality Assurance in European Pharmacy Education and Training*

### **Ranking of competences proposed was as follows:**

1. *Not important = Can be ignored.*
2. *Quite important = Valuable but not obligatory.*
3. **Very important = Obligatory with exceptions depending upon field of pharmacy practice.**
4. **Essential = Obligatory.**

Plus: “I cannot rank” and/or blank

Plus possibility to add comments.





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## Distribution of *surveymonkey* to potential respondents

**Thanks to the regional directors:**

**Northern: J. Hirvonen P6**

**Eastern: B. Bozic P7**

**Western: D. Rekkas P4**

**Southern: A. Sanchez-Pozo P3**

**And to stakeholders: EPSA, PGEU, EAHP, EIPG & EUFEPS  
(contacted by J. Atkinson P2)**



## *PHAR-QA: Quality Assurance in European Pharmacy Education and Training*

# 2. Data analysis

## - General considerations



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## Replies by current occupation, and sampling rates.

Minimal sample size is calculated for 95% confidence interval and 10% margin of error.

Professional groups	Number of respondents	%	Estimated European population (x 1,000)	Calculated minimal sample size
Community pharmacists	258	20.7	400 (PGEU)	97
Hospital pharmacists	152	12.2	12 (EAHP)	96
Industrial pharmacists	135	10.8	10 (EIPG)	96
Others	77	6.2	?	?
Students	382	30.7	200 (PHARMINE)	96
Academics	241	19.4	10 (PHARMINE)	96
<b>Total</b>	<b>1,245</b>	<b>100</b>	<b>400+12+10+200+10 = 632</b>	<b>97</b>



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## Global ranking for n = 1,245.

Rank	Number	%
4	29,194	34.1
3	30,132	35.6
2	14,933	17.6
1	2,470	2.9
Cannot rank	1,764	2.1
Blank	6,167	7.3
<b><i>Theoretical total</i></b>	<b><i>= 68 x 1,245 = 84,660</i></b>	<b><i>100%</i></b>



## *PHAR-QA: Quality Assurance in European Pharmacy Education and Training*

## **2. Data analysis**

- Ranking of proposed competences
  - Possibilities
    - Medians
    - Means
    - Scores



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**Score =**  
**(frequency rank 3 + frequency rank 4) as % total**

Based on MEDINE2:

Richard Marz, Friedo W. Dekker, Chris Van Schravendijk, Siun O'Flynn and Michael T. Ross. Tuning research competences for Bologna three cycles in medicine: report of a MEDINE2 European consensus survey.. *Perp. Med. Educ.* 2013, 2.

Rank	Frequency
1	3
2	121
3	480
4	622

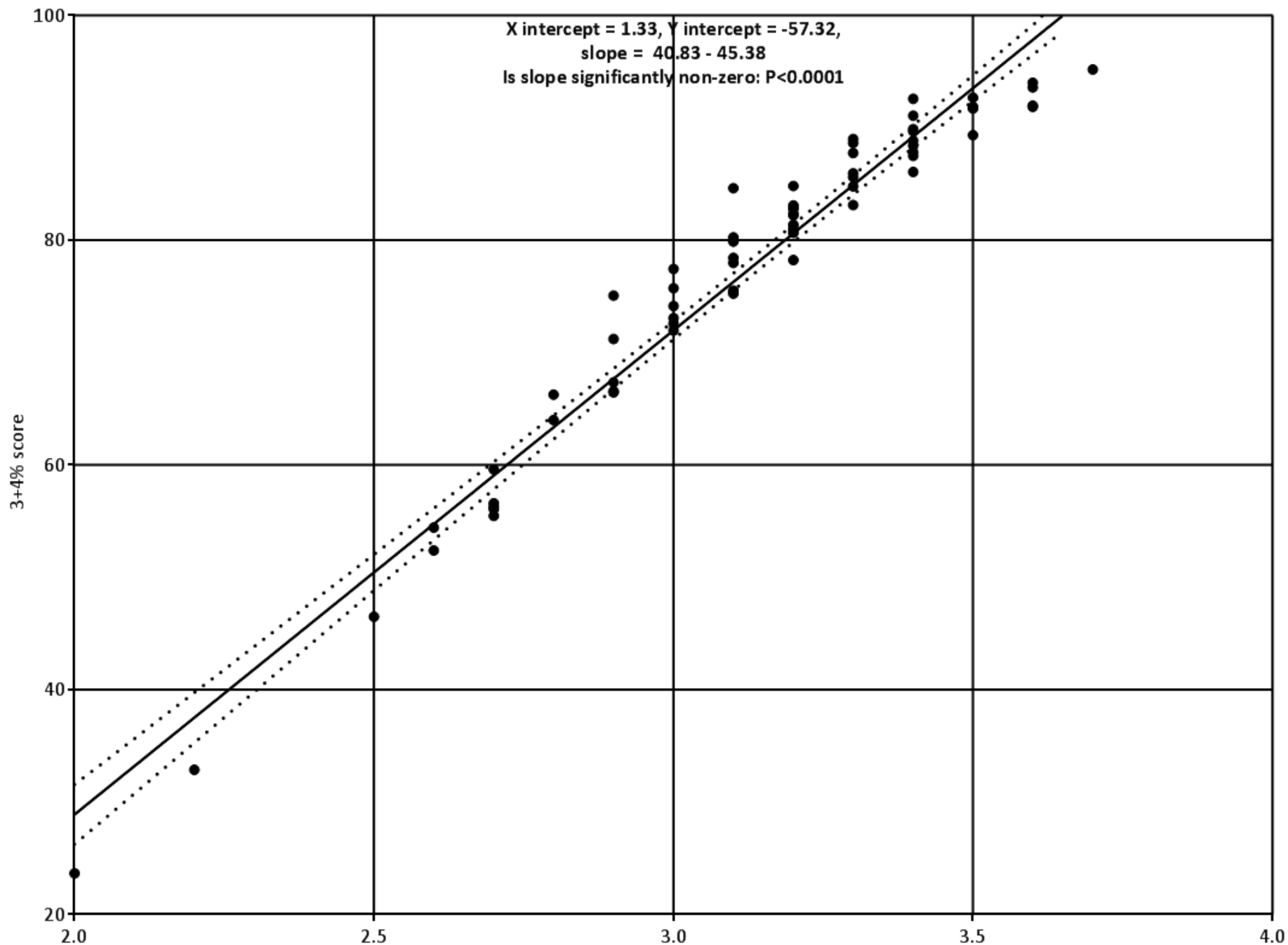
**Example: community pharmacists ranking competence number 1 (data left)**

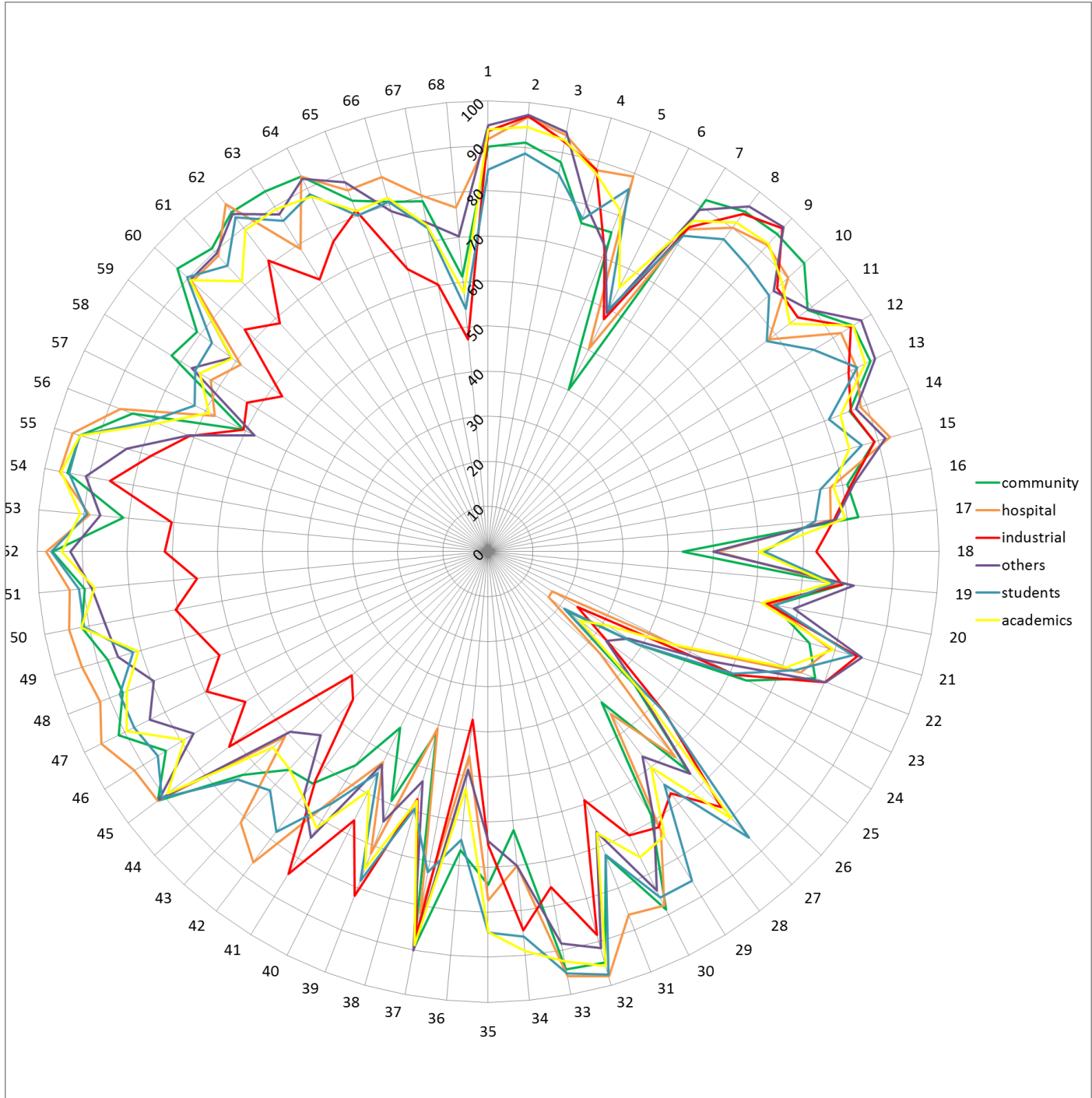
**Total = 1,226**

**$f_3 + f_4 = 1,102$**

**Score =  $(1,102/1,226) \times 100 = 90\%$**

**Liner regression of score (3+4%) versus mean**









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# 2. Data analysis:

- Comparisons of groups

# Pharmine



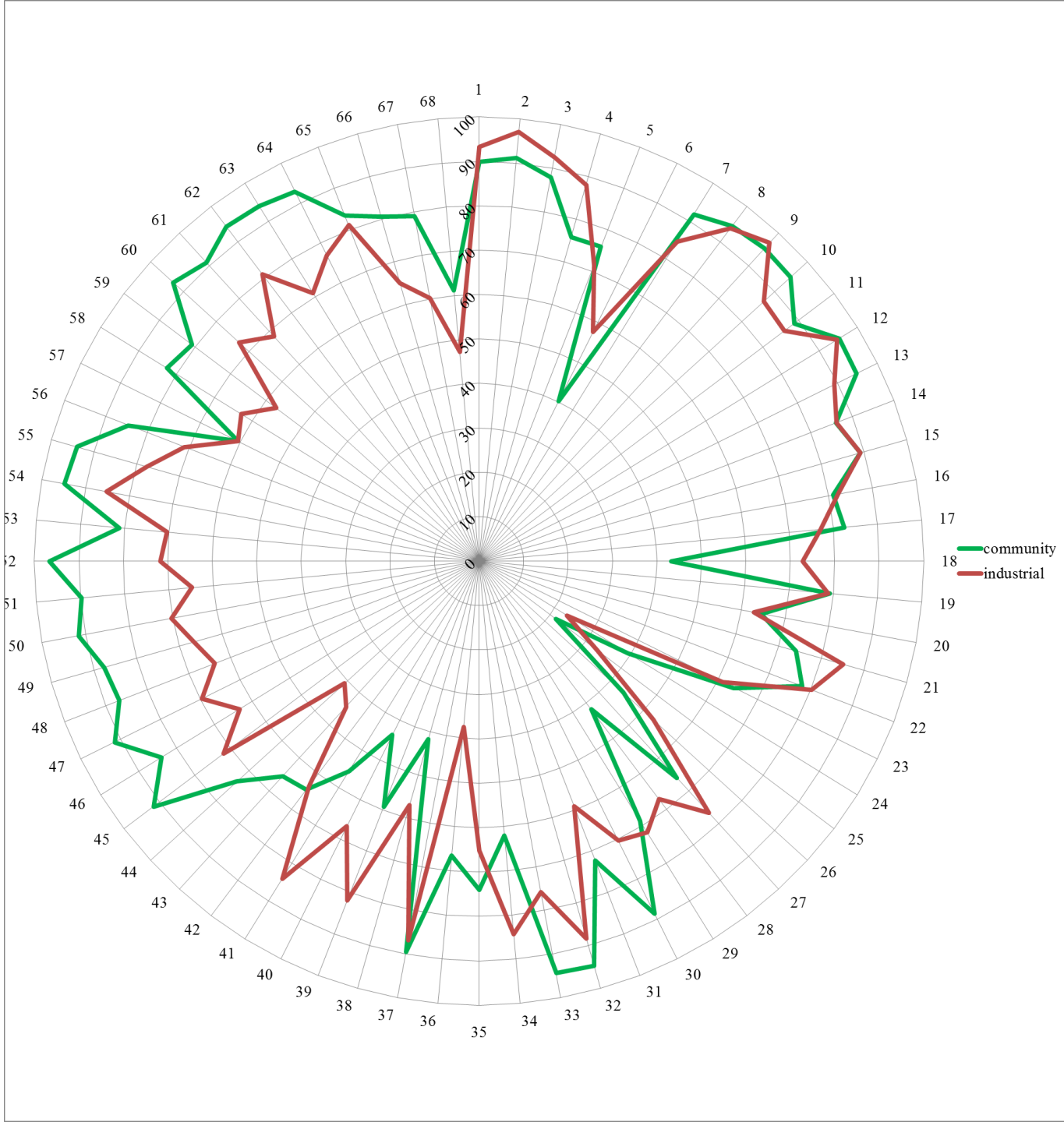
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## **Community pharmacists vs. Industrial pharmacists**

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# Pharmine



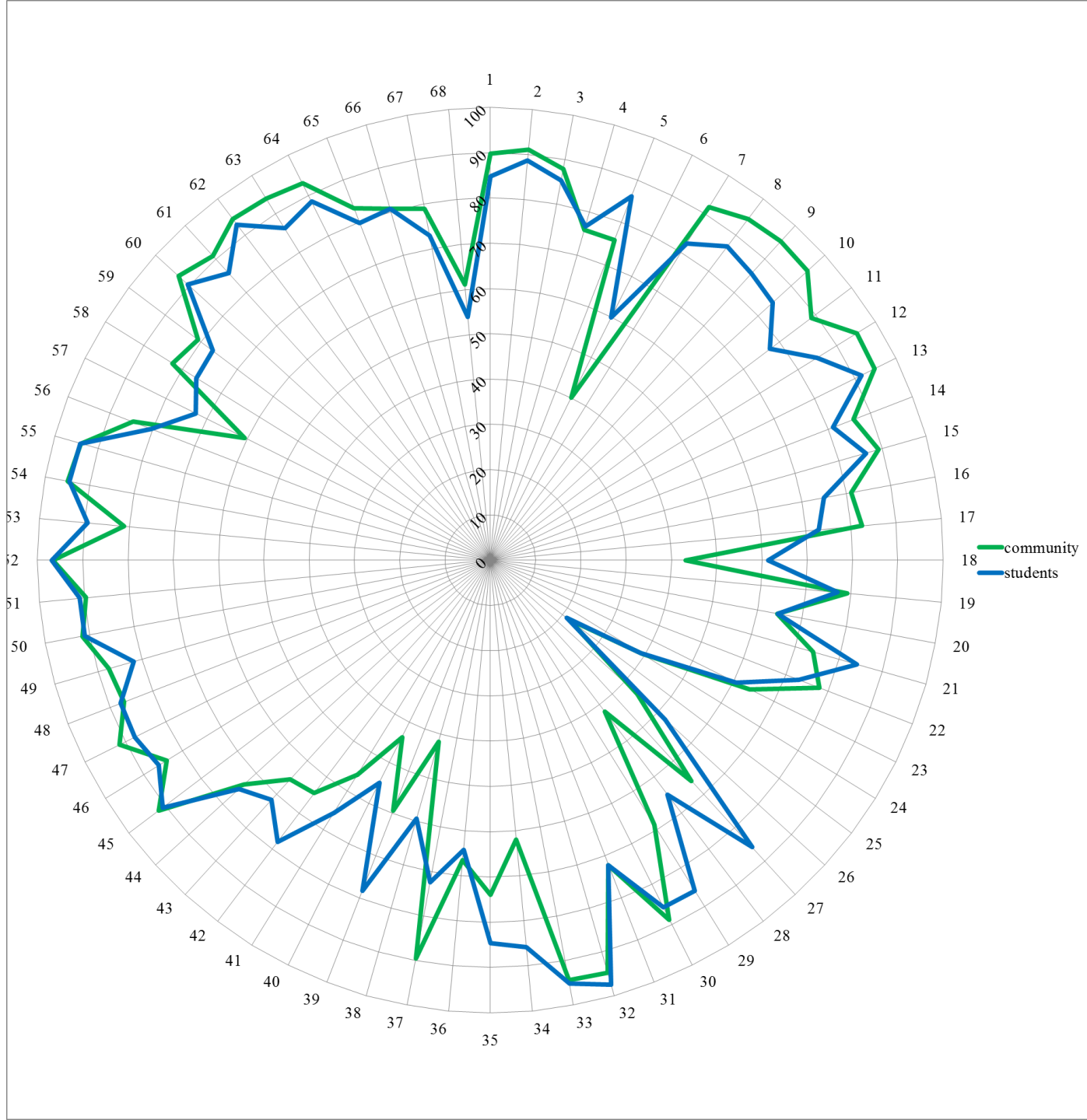
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## Community pharmacists vs. Students

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# Pharmine



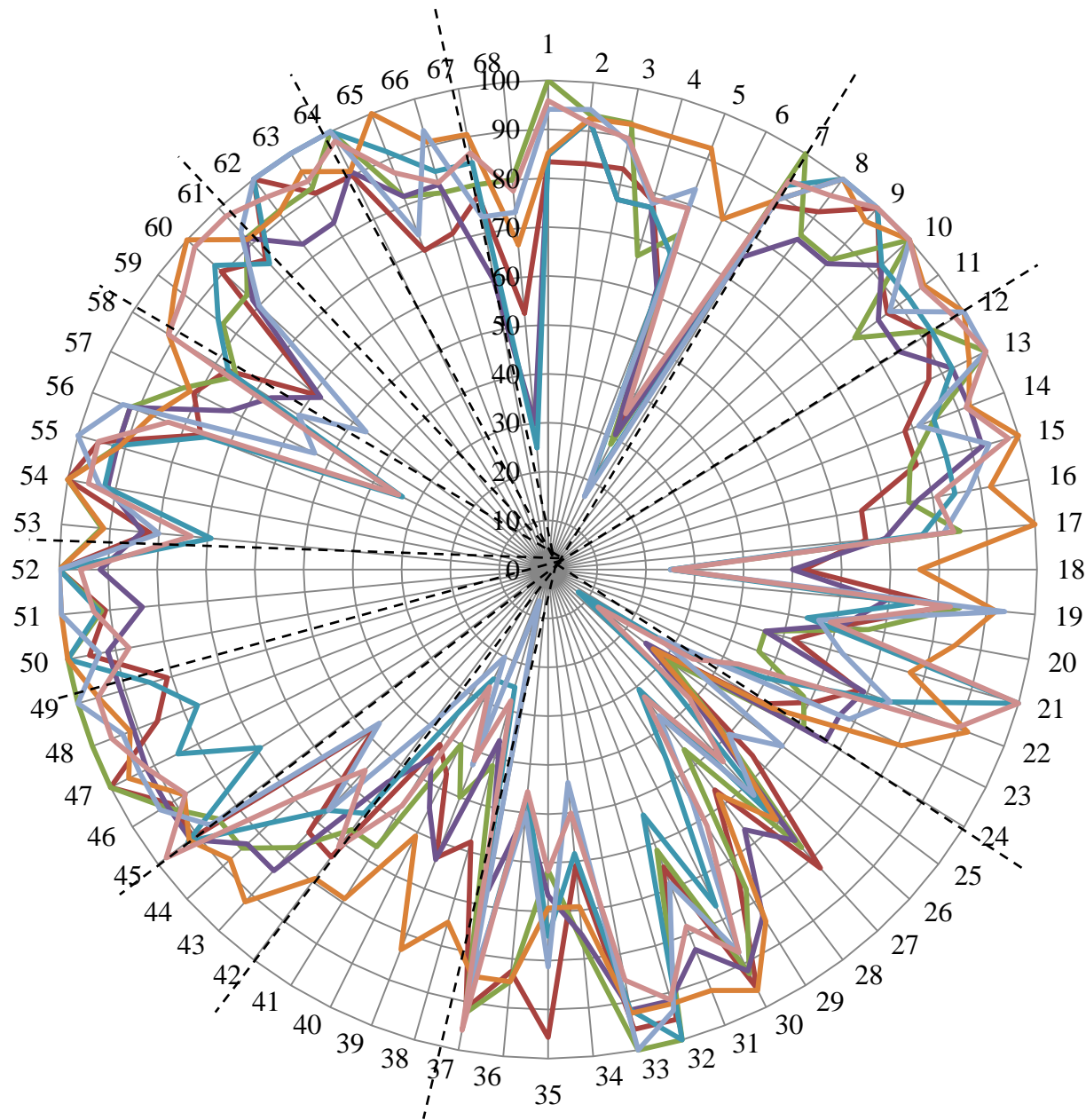
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## Community pharmacists in different member states

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- Belgium
- Czech Republic
- Germany
- Ireland
- Spain
- The Netherlands
- United Kingdom



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# 2. Data analysis - Comments





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**SM text analysis tool on group question 7  
(Personal competences: learning and knowledge)  
(font size proportional to number of citations).**

Comments (42)

Responses (42)

Text Analysis

My Categories (0)



Search responses



Showing 17 words and phrases

Knowledge<sub>Point</sub> Practice<sub>Role</sub> Questions  
Consider Pharmacy<sub>Scientific Data</sub>  
Pharmacist<sub>Previous Page</sub>  
Research<sub>Ask</sub> Competence<sub>CPD</sub>  
Sources<sub>Order</sub> Public



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### **Final steps.**

- WP IMP: Delphi round 2 to produce definitive PHAR-QA framework
  - analysis of data and comments
  - Athens May 2015: presentation of results of round 1 and call for respondents round 2
  - To be finalized by end of 2015
- DISS: publication of articles
- EXP: testing/use of model (EAFFP)



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Homage to the memory of Peep Veski



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# Pharmine



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PHAR-QA meeting  
16/8/2015  
9h00-12h00

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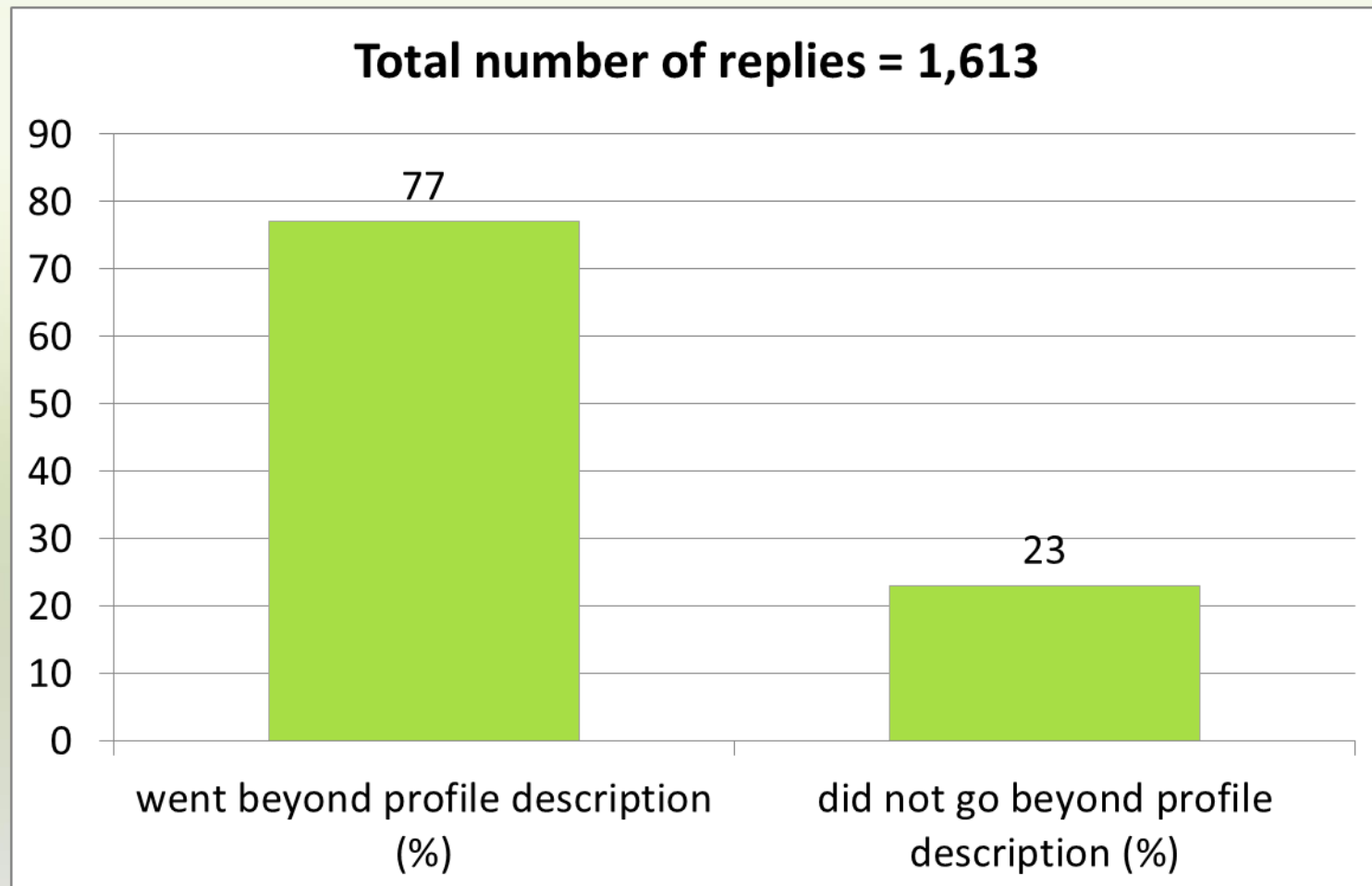


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# “Sparees.”



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### **% going beyond profile description.**

Category	%
Professionals	$622/775 = 80\%$
Students	$382/555 = 69\%$
Academics	$241/282 = 85\%$



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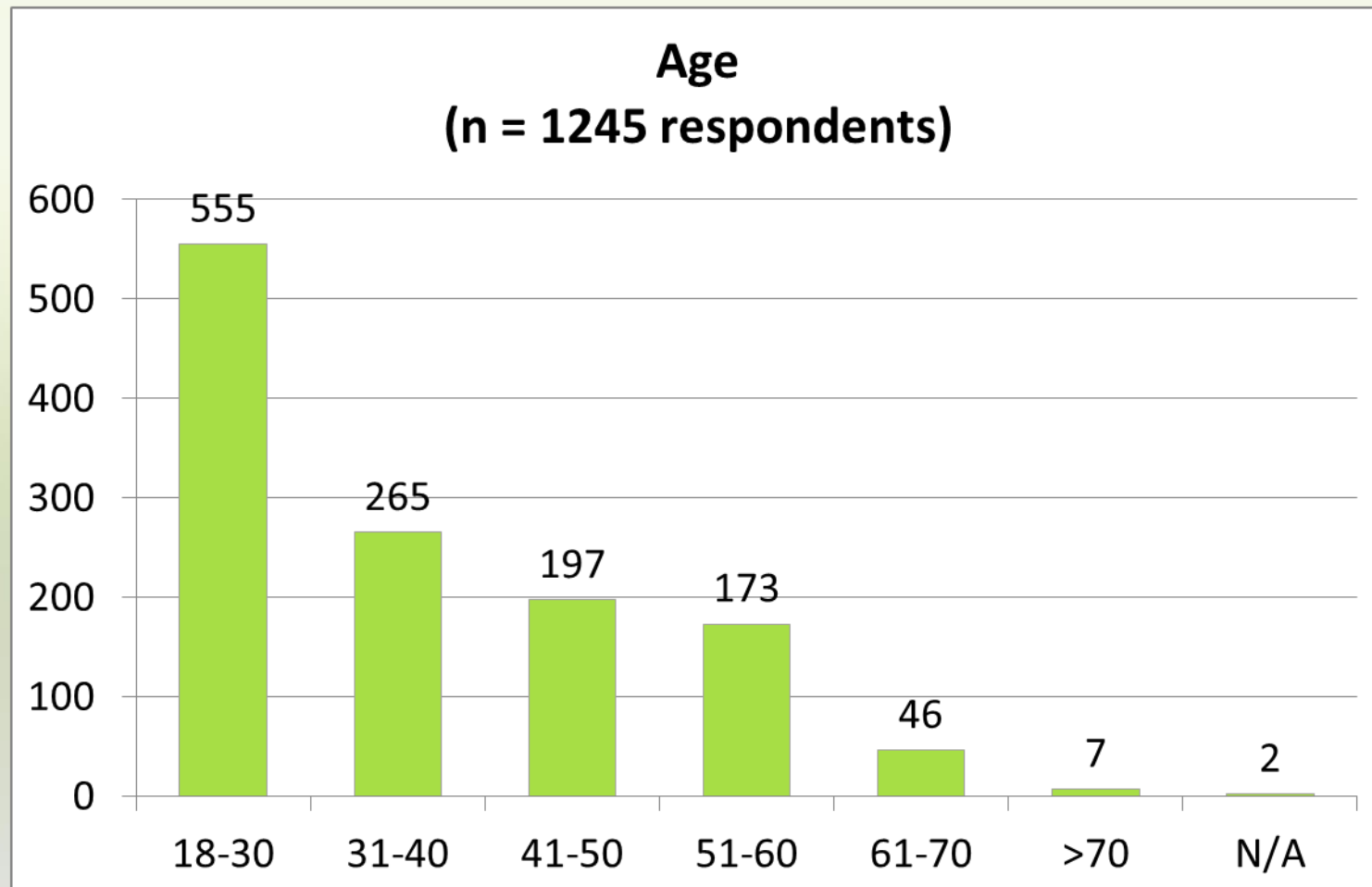
### **Profile description.**

1. What is your age?
2. Country of residence.
3. Current occupation.
4. If you are a student, what is your year of enrolment?
5. If you are a professional (licensed practitioner, academic staff...), how long have you been practicing?
6. Job title.



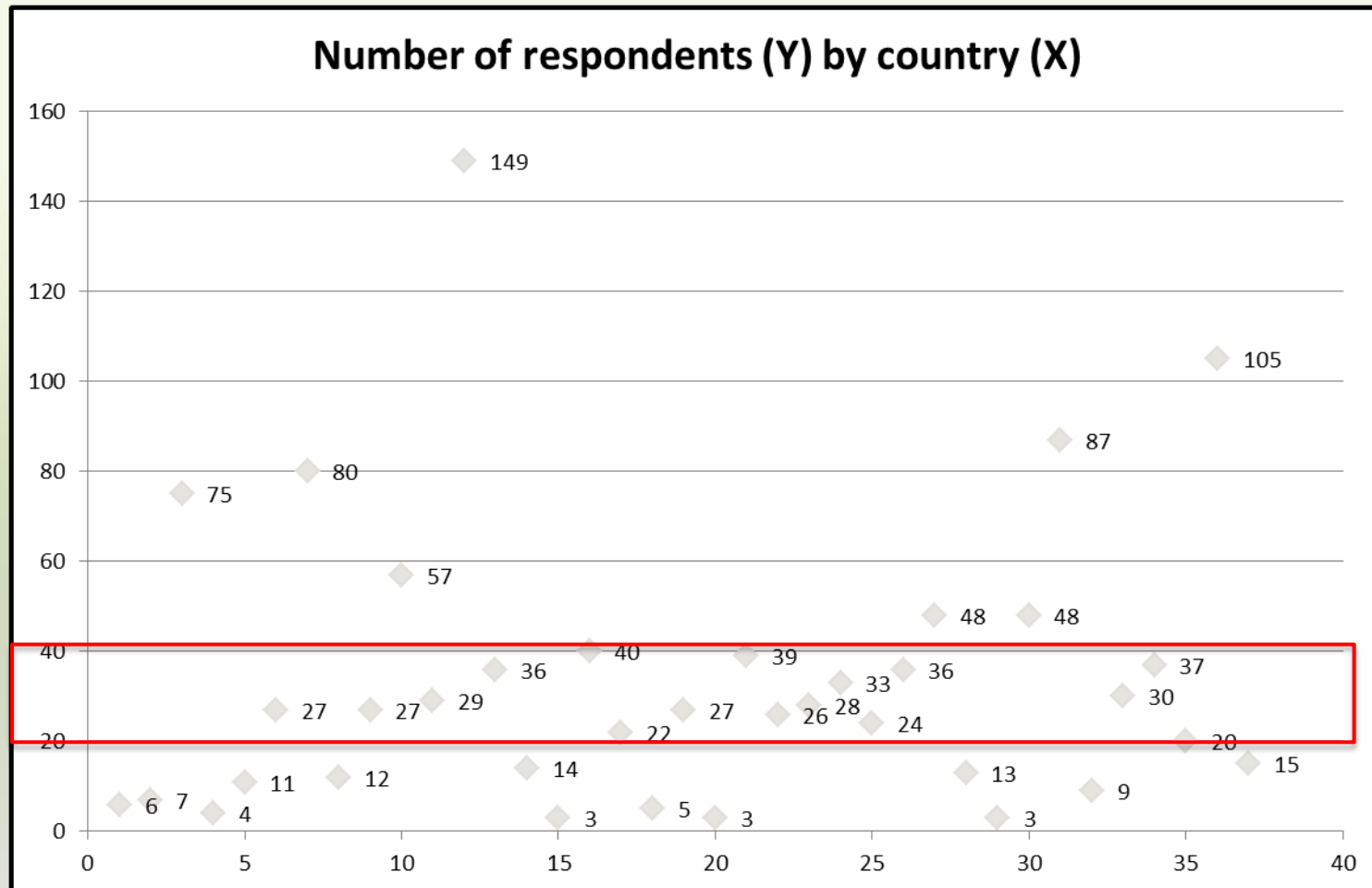


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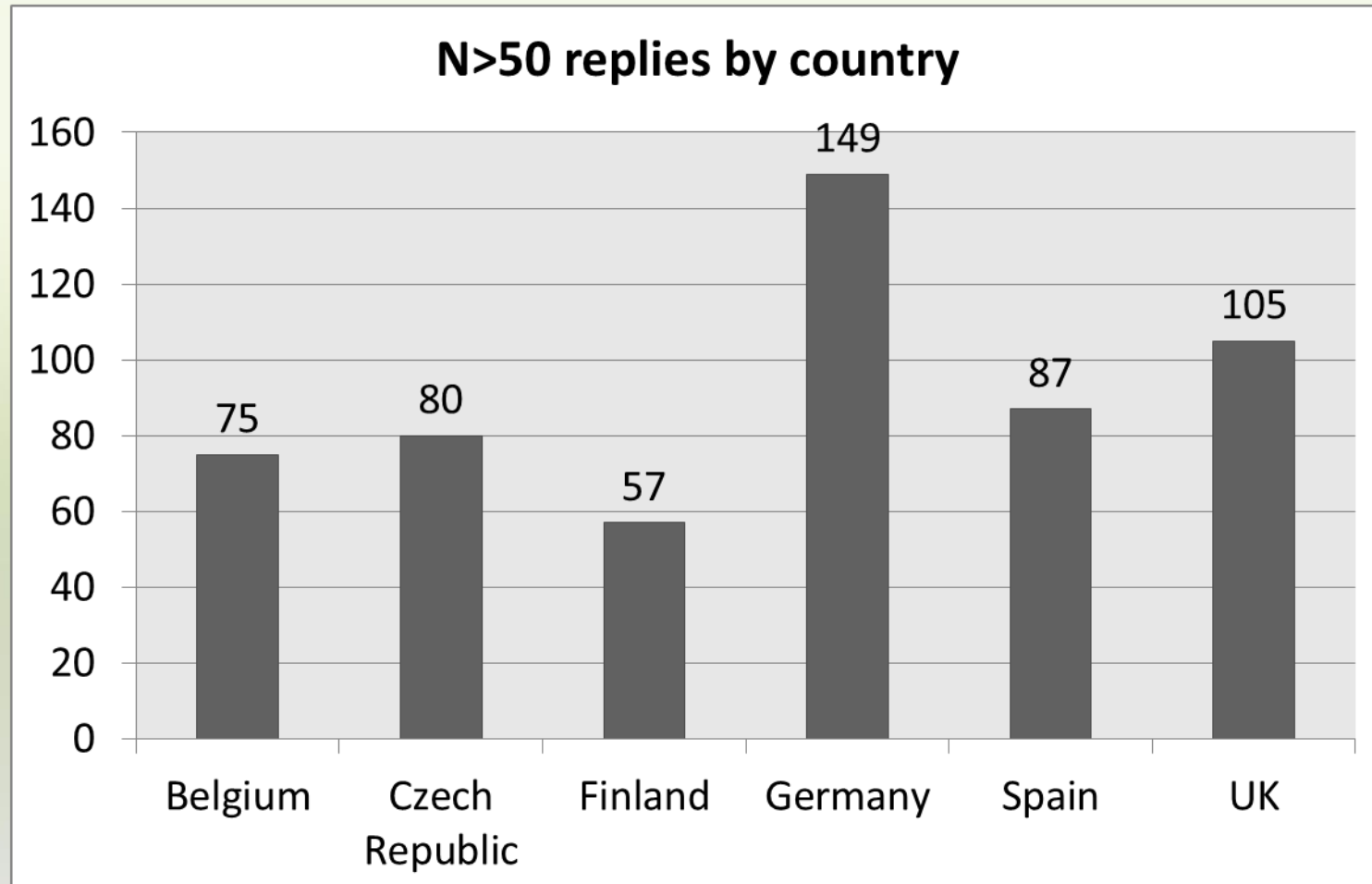
### PHAR-QA: Quality Assurance in European Pharmacy Education and Training



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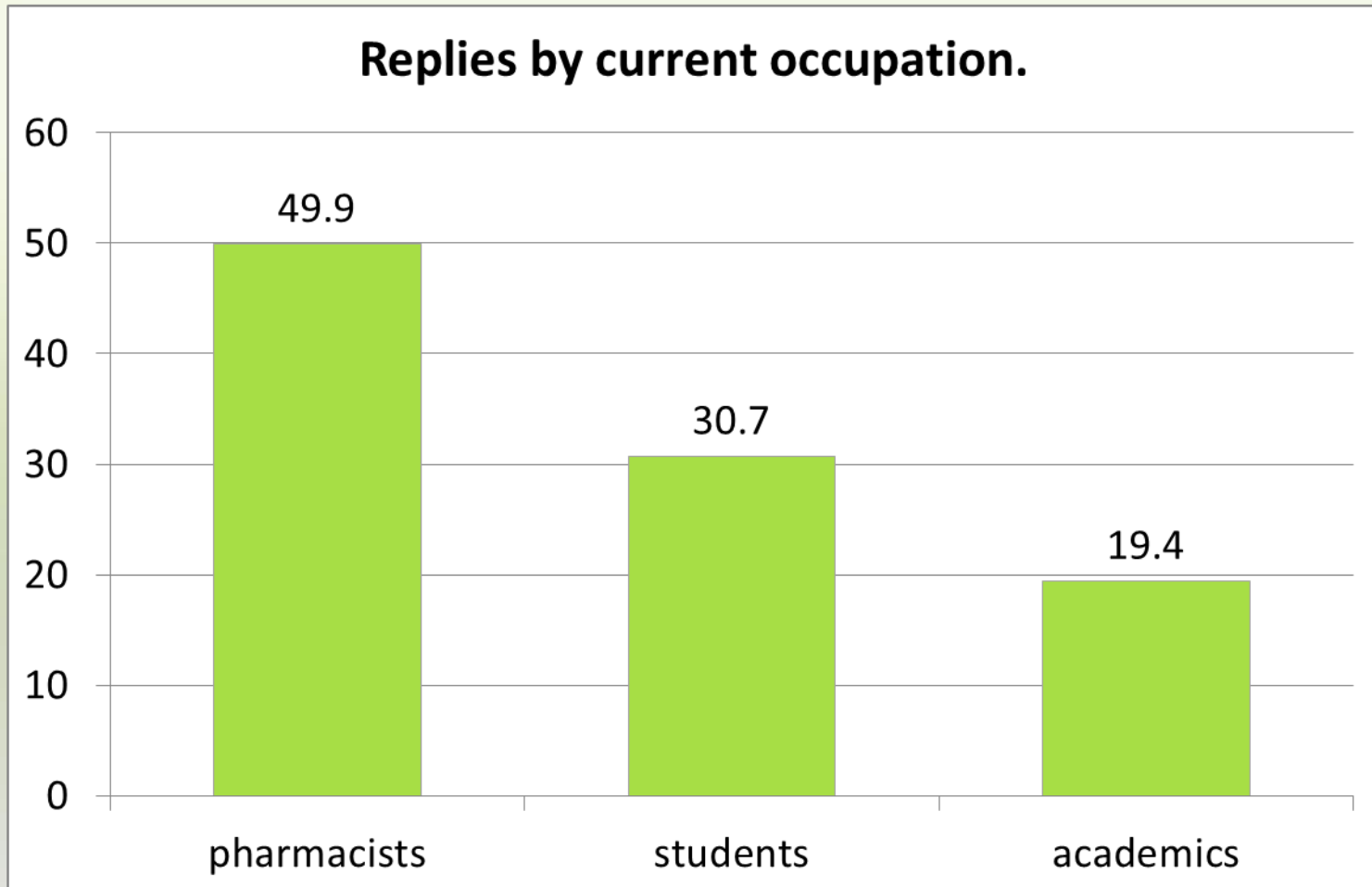


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### Replies by current occupation.



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### Statistics proposed.

- Same as MEDINE (discussions with M.T. Ross)
- developed by Constantin Mircioiu
- Descriptive:
  - Means  $\pm$  SDs
  - Medians  $\pm$  percentiles
  - Scores: 3+4%
- Analytical:
  - Kruskal-Wallis; Dunn's multiple comparisons
  - Wilcoxon signed rank test
  - Chi-square
  - Leik



## *PHAR-QA: Quality Assurance in European Pharmacy Education and Training*

A proposal to use parametric analysis on the basis that it is robust and gives the same results, rejected by the editor of a manuscript on similar survey data.

Will take up this “academic” point in later statistical papers.

Stick to non-parametric analysis.



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Leik, R.K.

A Measure of Ordinal Consensus.

*Pac. Soc. Rev.*, 1966; **9**: 85-90.



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## Leik (1966): ordinal consensus

D = ordinal dispersion. Ordinal consensus = 1 – D

**Table 2. COMPUTATION OF D FOR HYPOTHETICAL DATA**

	<i>Group A</i>			<i>Group B</i>		
	<i>f<sub>1</sub></i>	<i>F<sub>1</sub></i>	<i>d<sub>1</sub></i>	<i>f<sub>1</sub></i>	<i>F<sub>1</sub></i>	<i>d<sub>1</sub></i>
Strongly agree .....	20	.40	.40	74	.37	.37
Agree.....	14	.68	.32	26	.50	.50
Undecided.....	8	.84	.16	0	.50	.50
Disagree.....	6	.96	.04	6	.53	.47
Strongly disagree .....	2	1.00	0	94	1.00	0
	50		.92	200		1.84

$$D = \frac{2(.92)}{4} = .46 \quad D = \frac{2(1.84)}{4} = .92$$

*Pacific Sociological Review*

Ordinal consensus = 0.54 0.08





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### **Leik (1966): ordinal consensus**

Example, for **total population**, question 7, scores:

Rank	Number
1	3
2	121
3	480
4	622



## *PHAR-QA: Quality Assurance in European Pharmacy Education and Training*

### **Leik ordinal consensus**

Example, for **total population**, question 7,  
**ordinal consensus = 0.59**

MEDINE2 rating scale (2013):

0-0.2	poor
0.21-0.40	fair
0.41-0.60	moderate
0.61-0.80	substantial
>0.80	good



### *PHAR-QA: Quality Assurance in European Pharmacy Education and Training*

Global results (n=1245): competences with mean rank > 3.5

Competence	mean	number
9. Pharmacology including pharmacokinetics.	3.7	32
5. Demonstrate high ethical standards.	3.6	12
10. Pharmacotherapy and pharmaco-epidemiology.	3.6	33
3. Identification, understanding, and prioritisation of drug-disease interactions (e.g. NSAIDs in heart failure).	3.6	52
2. Supply of appropriate medicines taking into account dose, correct formulation, concentration, administration route and timing.	3.6	54
2. Analysis: ability to apply logic to problem solving, evaluating pros and cons and following up on the solution found.	3.5	2
2. Demonstrate the ability to maintain confidentiality.	3.5	9
1. Identification, understanding and prioritisation of drug-drug interactions at a molecular level (e.g. use of codeine with paracetamol).	3.5	50
3. Critical evaluation of the prescription to ensure that it is clinically appropriate and legal.	3.5	55
2. Provision of accurate and appropriate information on prescription medicines.	3.5	62

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Global results (n=1245): competences with mean rank < 2.7

6.	Ability to design and conduct research using appropriate methodology.	2.7	6
6.	Ability to design and manage the development processes in the production of medicines.	2.7	18
11.	Ability to negotiate, understand a business environment and develop entrepreneurship.	2.7	23
5.	Analytical chemistry.	2.7	28
13.	Pharmacognosy.	2.7	36
2.	Evaluation of cost effectiveness of treatment.	2.7	68
1.	Current knowledge of design, synthesis, isolation, characterisation and biological evaluation of active substances.	2.6	38
3.	Current knowledge of European directives on qualified persons (QPs).	2.6	40
3.	General and inorganic chemistry.	2.5	26
1.	Plant and animal biology.	2.2	24
2.	Physics.	2,0	25



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## Data analysis levels/stages/

- Community pharmacists (n = 258)



### *PHAR-QA: Quality Assurance in European Pharmacy Education and Training*

### Community pharmacists (n=258): competences with mean rank > 3.5

Competences.	mean	number
2. Demonstrate the ability to maintain confidentiality.	3.7	9
5. Demonstrate high ethical standards.	3.7	12
9. Pharmacology including pharmacokinetics.	3.7	32
3. Identification, understanding, and prioritisation of drug-disease interactions (e.g. NSAIDs in heart failure).	3.7	52
1. Demonstrate a professional approach to tasks and human relations.	3.6	8
3. Take full personal responsibility for patient care and other aspects of one's practice.	3.6	10
10. Pharmacotherapy and pharmaco-epidemiology.	3.6	33
3. Ability to recognise when referral to another member of the healthcare team is needed because a potential clinical problem is identified (pharmaceutical, medical, psychological or social).	3.6	45
1. Identification, understanding and prioritisation of drug-drug interactions at a molecular level (e.g. use of codeine with paracetamol).	3.6	50
2. Supply of appropriate medicines taking into account dose, correct formulation, concentration, administration route and timing.	3.6	54
3. Critical evaluation of the prescription to ensure that it is clinically appropriate and legal.	3.6	55
2. Provision of accurate and appropriate information on prescription medicines.	3.6	62
3. Provision of informed support for patients in selection and use of non-prescription medicines for minor ailments (e.g. cough remedies...).	3.6	63
1. Ability to identify learning needs and to learn independently (including continuous professional development (CPD)).	3.5	1
2. Analysis: ability to apply logic to problem solving, evaluating pros and cons and following up on the solution found.	3.5	2
7. Ability to maintain current knowledge of relevant legislation and codes of pharmacy practice.	3.5	7
1. Effective communication skills (both orally and written).	3.5	13
14. Legislation and professional ethics.	3.5	37
2. Retrieval and interpretation of an accurate and comprehensive drug history if and when required.	3.5	47
3. Identification of non-adherence and implementation of appropriate patient intervention.	3.5	48

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### *PHAR-QA: Quality Assurance in European Pharmacy Education and Training*

Community pharmacists (n=258): competences with mean rank < 2.7

11.	Ability to negotiate, understand a business environment and develop entrepreneurship.	2,7	23
2.	Current knowledge of good manufacturing practice (GMP) and of good laboratory practice (GLP).	2,7	39
4.	Current knowledge of drug registration, licensing and marketing.	2,6	41
3.	General and inorganic chemistry.	2,5	26
6.	Ability to design and conduct research using appropriate methodology.	2,4	6
6.	Ability to design and manage the development processes in the production of medicines.	2,4	18
5.	Analytical chemistry.	2,4	28
1.	Current knowledge of design, synthesis, isolation, characterisation and biological evaluation of active substances.	2,4	38
3.	Current knowledge of European directives on qualified persons (QPs).	2,4	40
1.	Plant and animal biology.	2,3	24
2.	Physics.	2,0	25

# Ranking of competences by community pharmacists.

