

Brain Flows at Lower Rhine Region

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Graduates' Migration and its Determinants

1. Introduction

2. Graduate Migration Patterns and Determinants

3. Reasons for Migration

4. Discussion and Conclusion

Introduction

Academic literature tells us:

- Human capital is a key indicator of regional economic and innovation performance
 - Patterns of regional “brain flows” are key determinants for the development of the human capital level
- Migration is a well-analyzed research topic on a macro level
 - Additional information can be gained with graduate migration analysis on a small-scale regional level

Introduction

Study Region: Central Lower Rhine Area (CLRA)



Introduction

What are central characteristics of the Central Lower Rhine Area (CLRA)?

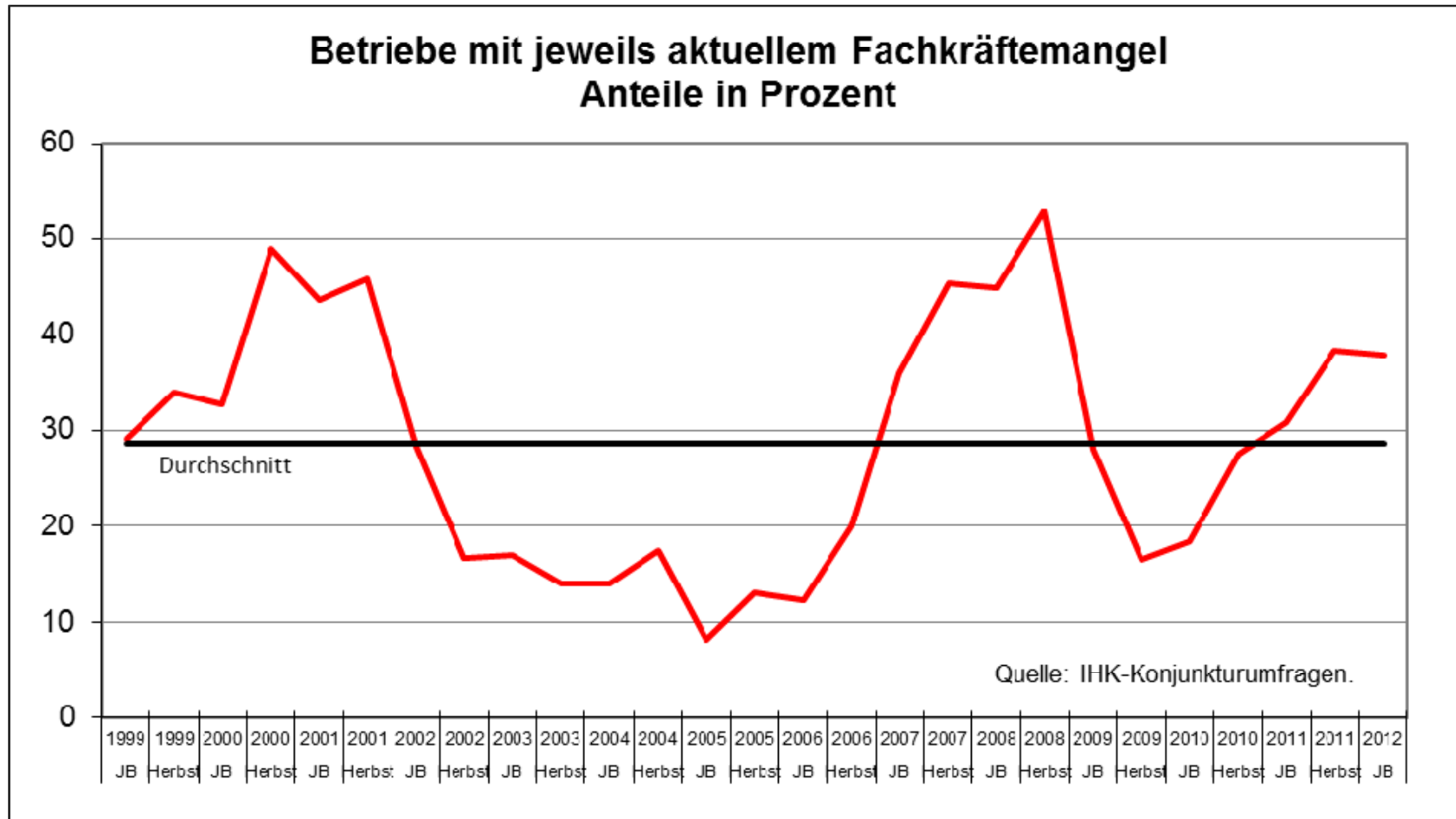
- Old Industrial region, with a focus on textile and engineering (in the past)
- Adjustment problems due to structural changes
- On the rim of a congested urban area with several prospering metropolises → pull factor!

The CLRA faces diverse challenges

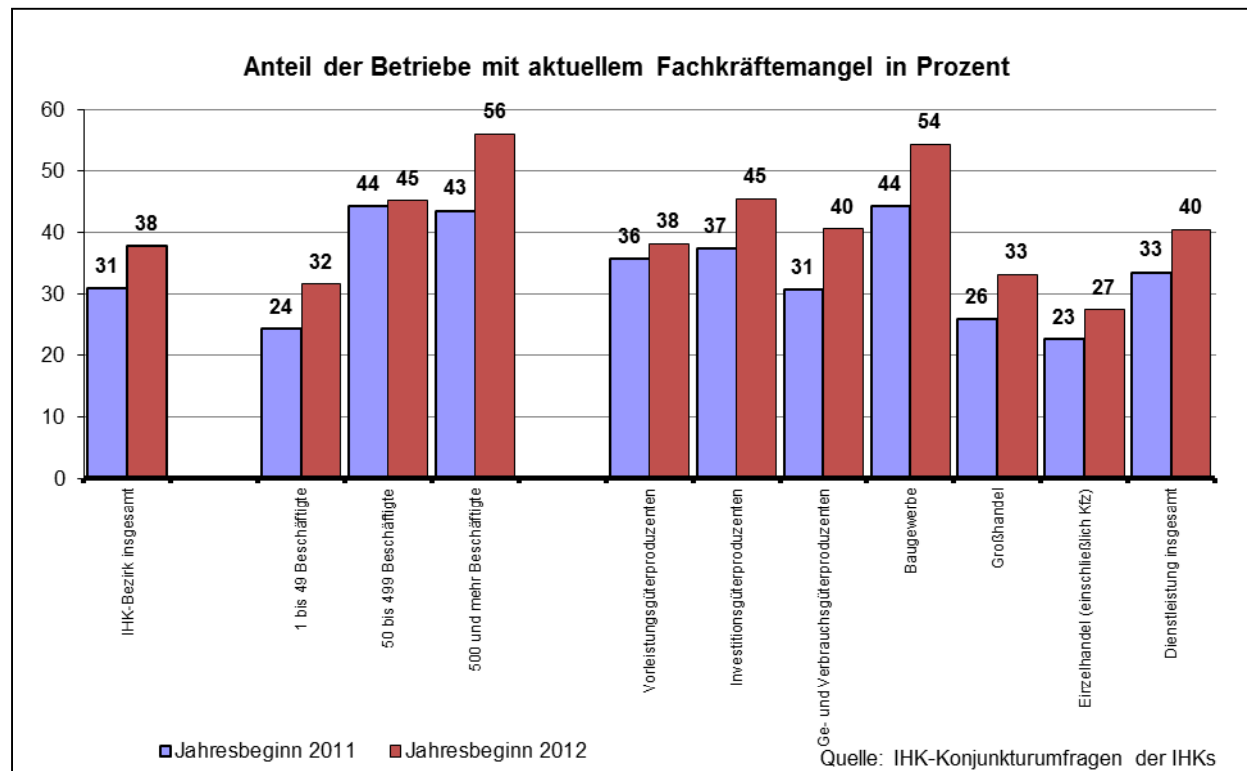
- Economic problems, above-average unemployment
- High municipal debts
- Below-average percentage of university graduates employed
- **38% of regional companies claim a shortage of skilled labour**

→ A university is a vital chance for the region!

Skill shortage?



Skill shortage?



Skill shortage?

Interferences for firms, because of ...

- ... production process are encumbered,
- ... staff costs will rise,
- ... productivity will decrease and/ or
- ... innovation processes could be restrained.

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DaTA

1. Survey with Graduates, 2012

© Evaluationsstelle HSNR, N = 1.769

2. Survey with Alumni, 2011

Online-survey, 3000 members of our alumni-network, N = 475

3. Survey with students (plans), 2011

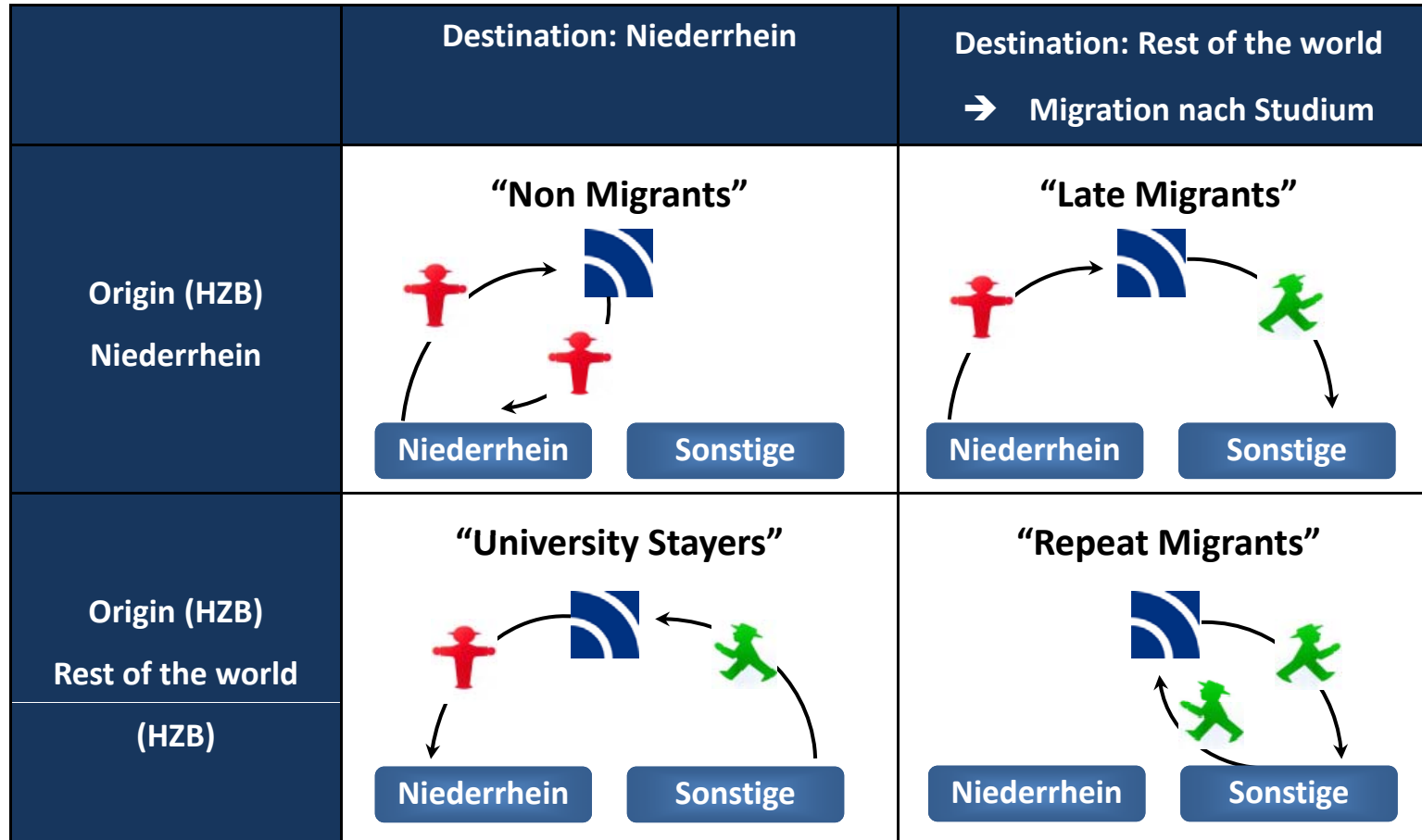
last semesters of study, N = 250

Hypotheses

Expectations

1. Many students stem from the region.
2. Especially regional students stay here after graduation.
3. Region is not very attractive for graduates from elsewhere to stay here after graduation.
4. Negative brain-flow-balance.

Types of mobility



Alumni 2011

	Stay	Migration	Σ
Origin Niederrhein	Non Migrants 12,4 vH	Late Migrants 30,5 vH	42,9 vH
Origin Other Regions	University Stayers 6,2 vH	Repeat Migrants 50,9 vH	57,1 vH
Σ	18,6 vH	81,4 vH	100

→ **Brainflow-Bilanz: - 24,3 vH**

Graduates 2012

	Stay	Migration	Σ
Origin Niederrhein	Non Migrants 15,0 vH	Late Migrants 15,5 vH	30,5* vH
Origin Other Regions	University Stayers 11,5 vH	Repeat Migrants 58,0 vH	69,5 vH
Σ	26,4 vH	73,5 vH	100

→ **Brainflow-Bilanz: - 4,0 vH**

* **Hochschulstatistik: Share of first year students from Niederrhein > 37 vH**

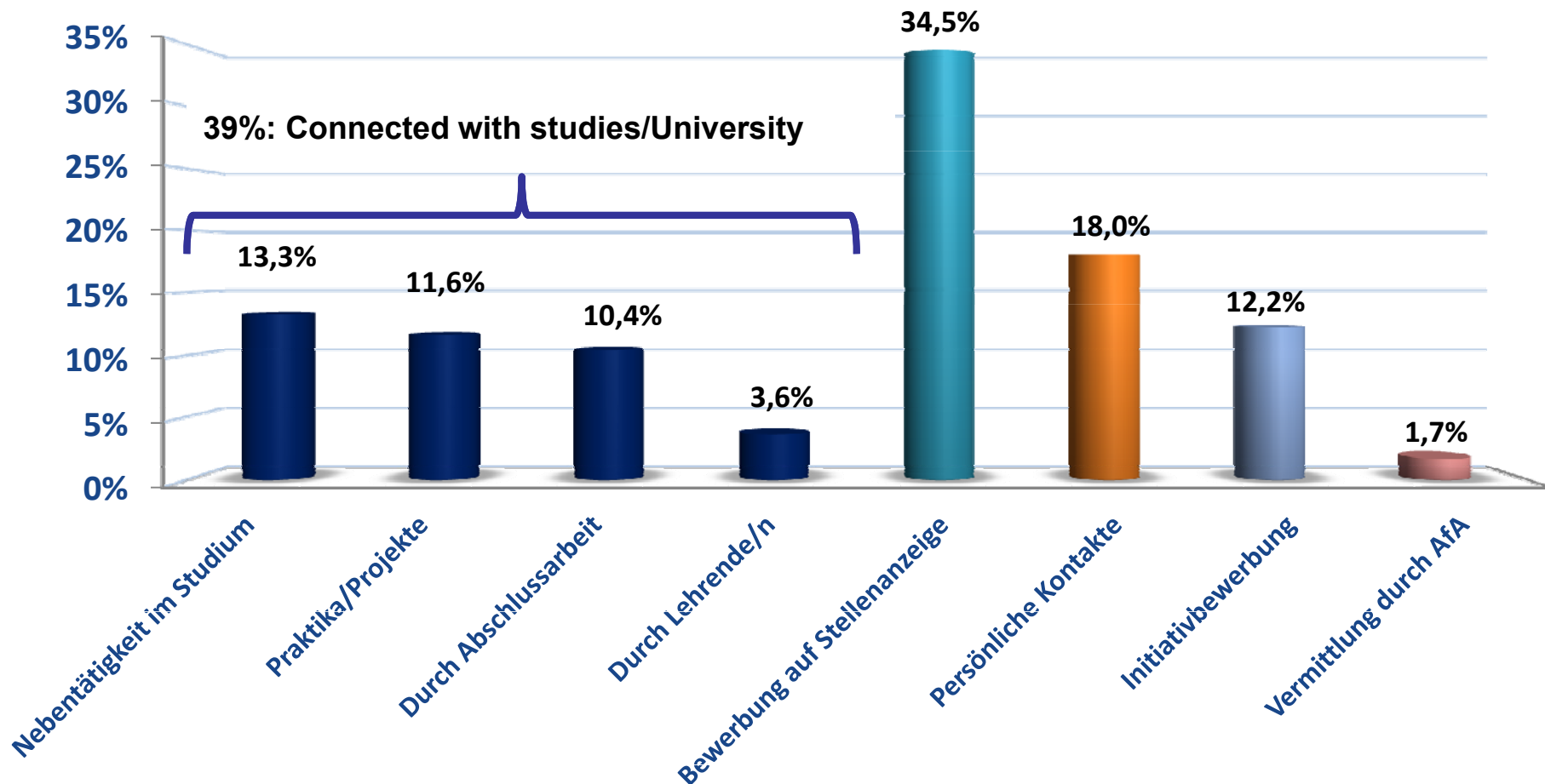
Graduates 2012

	Stay	Migration	Σ
Origin NRW	Non Migrants 68,0 vH	Late Migrants 14,6 vH	82,6 vH
Origin Rest of the World	University Stayers 6,5 vH	Repeat Migrants 10,9 vH	17,4 vH
Σ	74,5 vH	25,5vH	100

→ Brainflow-Bilanz bezogen auf NRW: **- 8,1 vH**

University – influence on migration

How did you find your first job



Migrationsverhalten nach Fachbereichen

	Chemie	Design	Electrotechnical engineering	Mechanical engineering	Oecotrophologie
Origin Niederrhein (%)	22,8	25,4	39,7	34,1	24,5
Destination Niederrhein (%)	20,3	11,8	22,4	38,1	29,2
Brainflow-Bilanz (%)	-2,5	-13,6	-17,3	+4,0	+4,7
	Social Sciences	Textil-/Clothing	Economics	Engineering and Economics	Health
Origin Niederrhein (%)	30,3	9,2	42,2	42,4	24,0
Destination Niederrhein (%)	42,1	9,9	26,5	27,7	32,2
Brainflow-Bilanz (%)	+11,8	+0,7	-15,7	-14,7	+8,2

→ Differences by faculties

Graduate Migration Patterns and Determinants

Descriptive Analysis: Interesting results concerning migration determinants:

- Migration propensity differs considering **different fields of study**
- **A temporary stay abroad:** does not alter frequency of graduate migration, but generally raises the migration distance
- **Duration of Job Seeking:** Graduates, who stay in the region, find jobs faster
- **Starting salary:** A high starting salary seems to act as pull factor to other regions

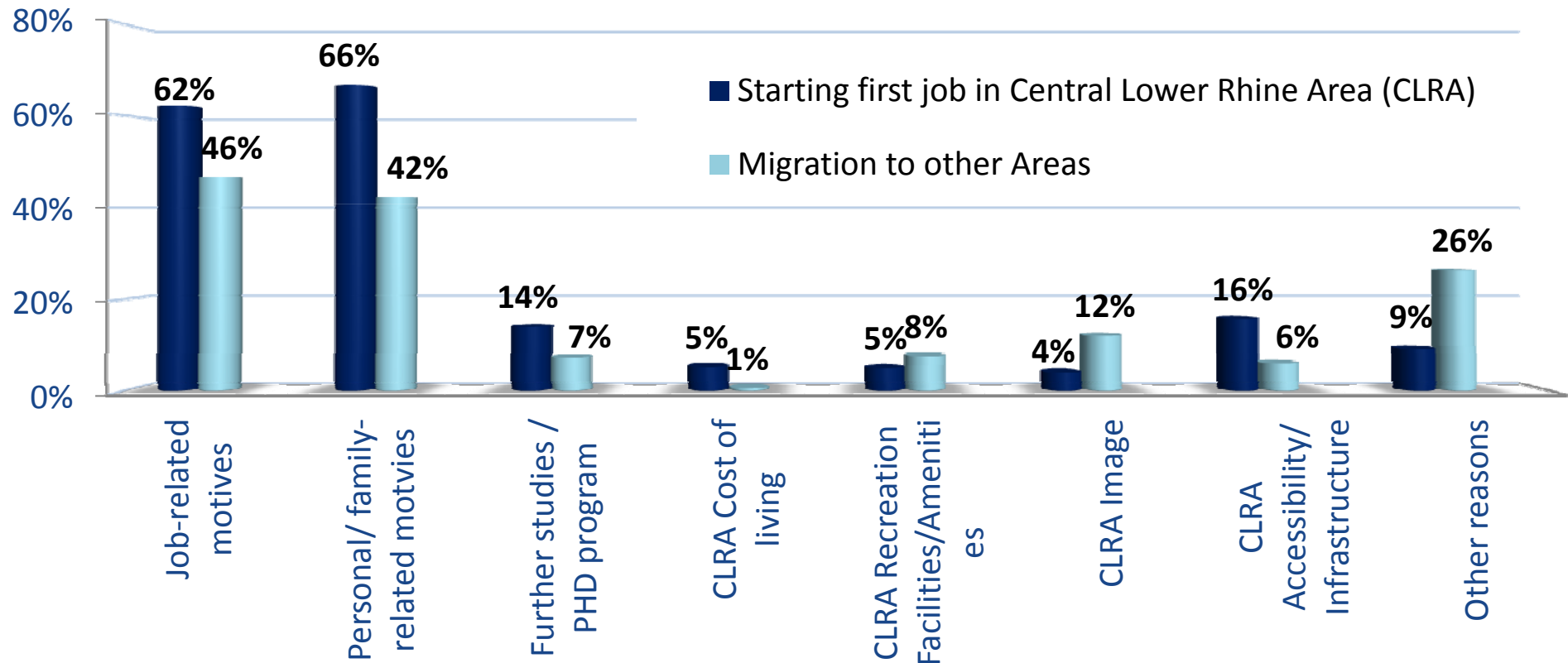
2. Graduate Migration Determinants and Motives

Results of Empirical Analysis:

1. The **university catchment area** is very regionally oriented
2. NR UAS exhibits a **negative brainflow-balance**
3. The **propensity of migration** is much higher for external students
4. **Two important migration motives:** job-related and family-related/personal reasons

2. Graduate Migration Motives

Only two important migration motives:



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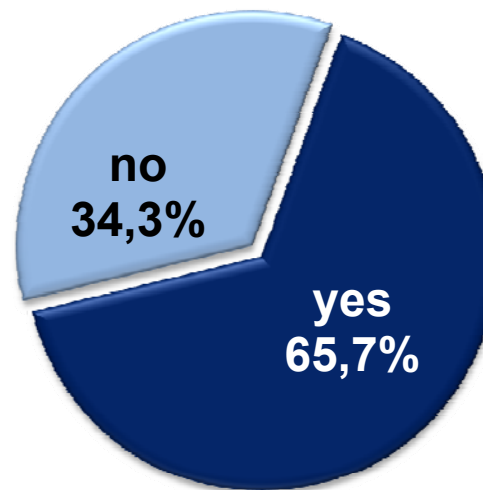
Possible Reasons for the Brain Drain

1. Region is not attractive enough
2. The regional economy can not absorb the graduates
 - a) They need more skilled workers rather than high skilled
 - b) The regional firms need other graduates
3. Missing Information about one another

Reasons for the Brain Drain

1. Hypothesis: The Niederrhein area is not attractive for younger people.

- **False, because...**
 - ... only few graduates assess the soft site-related factors as an important reason for leaving the region/ for staying in the area
 - ... nearly two-thirds of all graduates who left the region would have stayed if they had received a better working opportunity,



Reasons for the Brain Drain

2. Hypothesis: The absorption capacity of the regional economy is not sufficient
 - a) The Niederrhein does not need high-skilled, the region needs skilled workers (qualification Mismatch).

Reasons for the Brain Drain

	Employee		Ratio of university graduates		Expectancy Value	Deviation	
	Graduates	Total	regional in vH	NRW in vH		absolute	absolut
Manufacturing	8.250	84.202	9,8	8,7	7.286	964	13,2
Water supply; sewerage; waste management and remediation activities	284	4.486	6,3	6,5	290	- 6	-1,9
Construction	414	18.599	2,2	3,5	652	- 238	-36,5
Wholesale and retail trade; repair of motor vehicles and motorcycles	3.757	74.810	5,0	4,3	3.235	522	16,1
Transporting and storage	271	21.335	1,3	2,5	529	- 258	-48,8
Information and communication	838	7.373	11,4	22,3	1.644	- 806	-49,0
Financial and insurance activities	906	11.506	7,9	12,5	1.434	- 528	-36,8
Real estate activities	147	2.213	6,6	10,1	224	- 77	-34,5
Professional, scientific and technical activities	2.971	18.916	15,7	24,8	4.694	- 1.723	-36,7
Administrative and support service activities	868	26.074	3,3	3,6	946	- 78	-8,3
Public administration and defence; compulsory social security	2.797	17.564	15,9	16,8	2.951	- 154	-5,2
Education	3.504	9.228	38,0	35,8	3.299	205	6,2
Human health and social work activities	5.543	48.841	11,3	11,5	5.593	- 50	-0,9
Arts, entertainment and recreation	251	3.150	8,0	8,3	261	- 10	-3,8
Other services activities	619	9.421	6,6	13,7	1.295	- 676	-52,2
Total	31.420	357.718	8,8	10,6	34.332	- 2.912	-8,5
Regionalfactor	0,83						
Strukturfaktor	0,91						
Locationfaktor	0,92						

Reasons for the Brain Drain

2. Hypothesis: The absorption capacity of the regional economy is not sufficient

Shift-Analysis:

- Compared to the federal average the Niederrhein has fewer university graduates.
- Partly this has structural reasons: industrial sectors with few academics are overbalanced.
- Partly this has other reasons: Business orientated services have less academic quotas compared to other regions in the state.

Reasons for the Brain Drain

2. Hypothesis: The absorption capacity of the regional economy is not sufficient

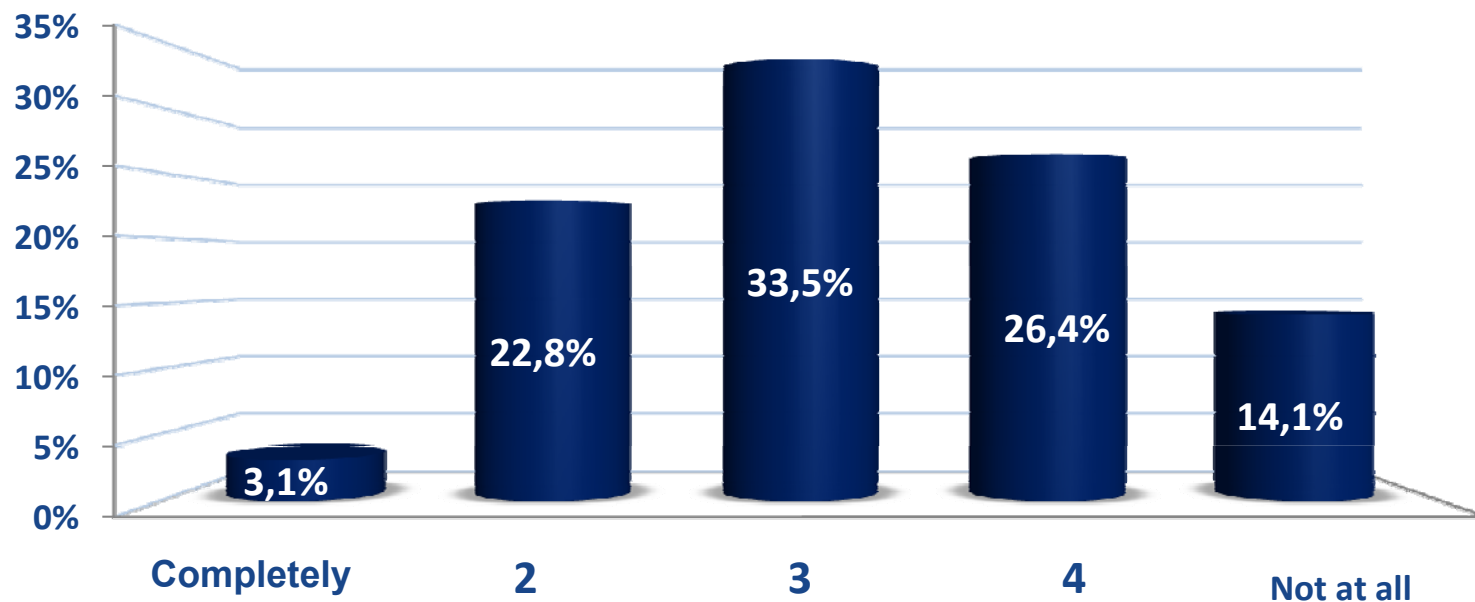
b) The regional economy needs other graduates than those the university educates (occupational Mismatch).

- A comparison of the regional economic structures and the structure of the faculties shows:
 - This fits!
 - The development is positive (e.g. health care).
 - On the one hand the NR UAS can not offer everything the region needs (e.g. civil engineering); but most of it!
 - On the other hand NR UAS offers programs with national performance (flagships).

Reasons for the Brain Drain

3. Hypothesis: Regional firms do not know enough about the NR UAS and the students do not know enough about the regional economy

How well are you informed about the regional economy in the compass of the NR UAS



Reasons for the Brain Drain

- **The NR UAS graduates do not know the regional economy very well.**
- **Activities have to be introduced to improve the alternately information flow.**

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Conclusion

- **The share of academics is under average at the CLRA that's especially relevant for business orientated services**
- **Actually we need a Brain Grain but the NR UAS can fulfill this mission only particularly,**
- **Because the BrainFlow- Balance is negative.**
- **The regional standard of living and the regional image can not explain the emigration of the graduates**
- **Job opportunities and social relations are the most important migration determinants.**

Conclusion

- **Many graduates want to stay in the region but leave them because they do not find an adequate job.**
- **Insufficient information of the graduates and the regional economy are one of the main barriers for a stay in the region.**

Thank you for your attention!

Hochschule Niederrhein
University of Applied Sciences



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Regional- und Strukturforschung
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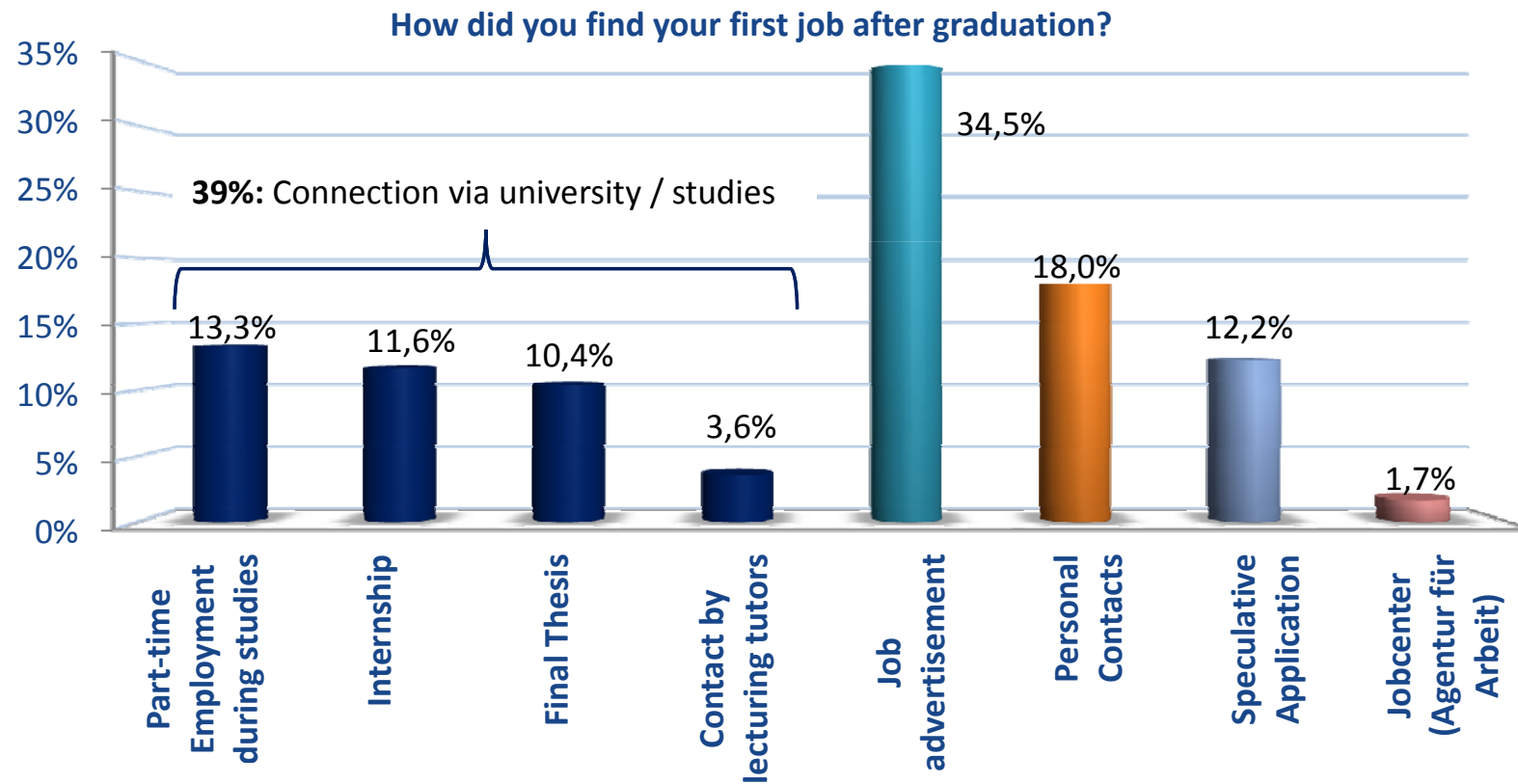
3. Discussion

The three roles of HEI:

1. HEI as source of academic knowledge
2. HEI as provider of academic education
3. **HEI as regional system builder**
 - Especially important in old industrial regions facing economic challenges
 - Concerning graduation migration policy, how can NR UAS act as regional system builder?

3. Discussion

1. The university can embrace and support a role as „employment broker“:



3. Discussion

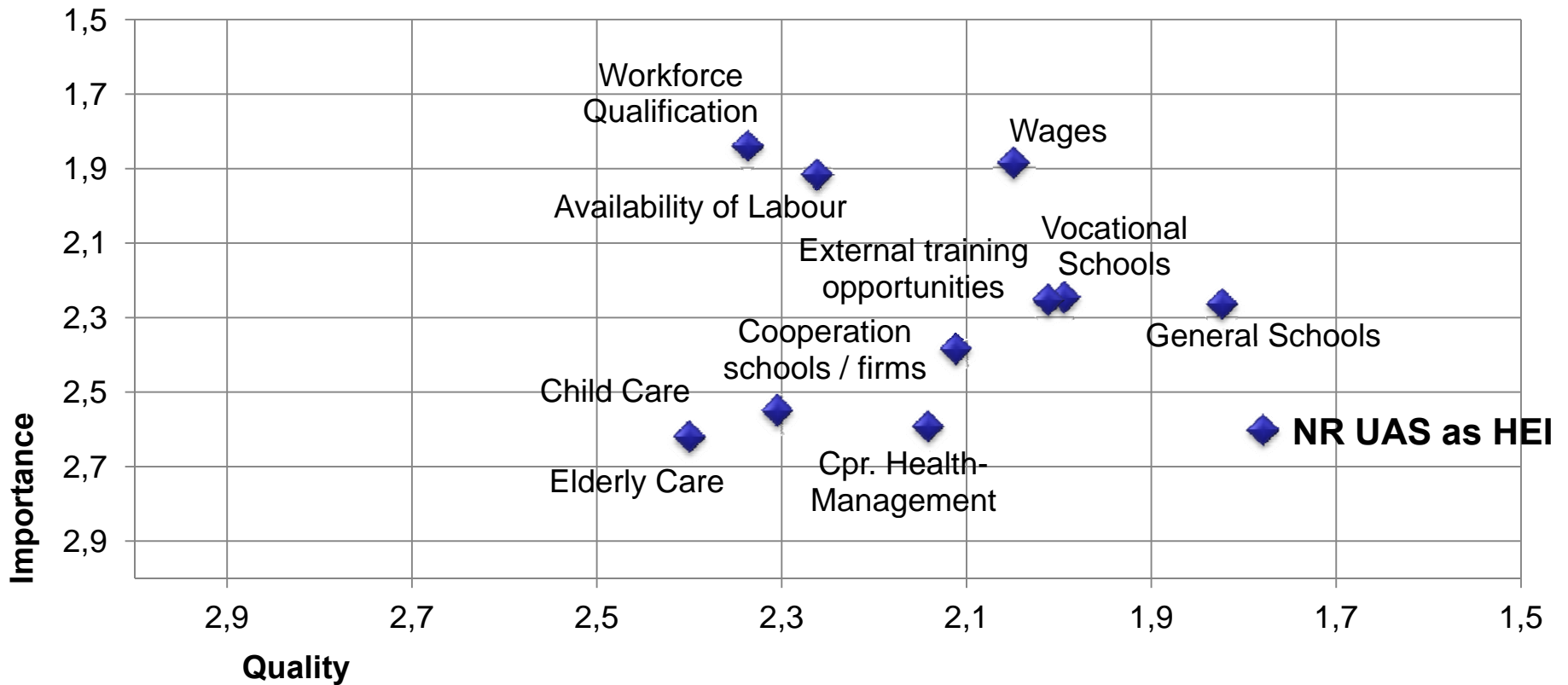
2. The university can improve graduates' knowledge about possible local employers

		Knowledge of local economy and possible future employers					
		Complete knowledge	2	3	4	No knowledge	Total
I would have stayed in the CLRA given a better job offer	Yes	14	128	159	138	62	501
	No	10	37	89	85	60	281
Migrating graduates		24	165	248	223	122	782

3. Discussion

3. The university needs to underline its importance for local companies

Local companies evaluate NR UAS as good, but unimportant location factor concerning „labour and qualification“



3. Conclusion

For old industrial regions facing economic problems...

- ... a HEI is a vital chance for the development of human capital
- ... high importance of graduates who can be attracted to the region in the long run
- ... pull-factor of well-performing regions has to be faced
 - additional advantages have to be offered
 - regionally originated students are easier „to keep“ in the region

To improve the level of regional human capital, a HEI can...

- ... embrace and support a role as „employment broker“,
- ... improve graduates' knowledge about possible local employers
- ... needs to underline its importance for local companies

Literature

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Appendix – Additional Information

Analysis based on three graduate surveys in 2012

1. Official university graduate survey

Online, Conducted in a biannual interval rythm, N=1700

2. Survey of Alumni networks

Online questionnaire, N=475

3. Survey of students in final semester

→ Possibility to compare migration plans with actual migration patterns, N = 225

2. Graduate Migration Patterns and Determinants

Online Survey of Alumni Network, N = 475 (no time limit after grad.)

	No Migration after graduation	Migration after graduation	Σ
Origin in CLRA	Non Migrants 12.4 %	Late Migrants 30.5 %	42.9 %
Origin in any other region	University Stayers 6.2 %	Repeat Migrants 50.9 %	57.1 %
Σ	18.6 %	81.4 %	100

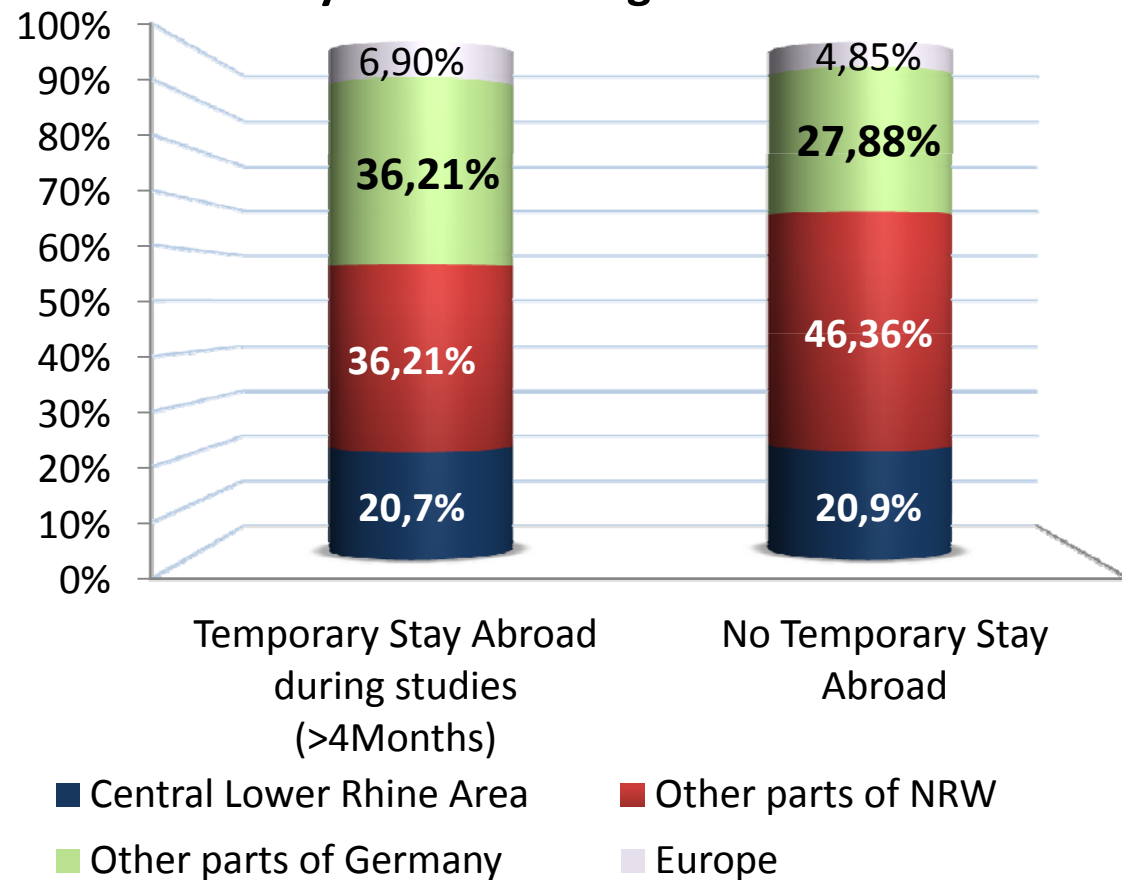
→ Brainflow Balance – 24.3 %

Appendix – Additional Information

International Experience...

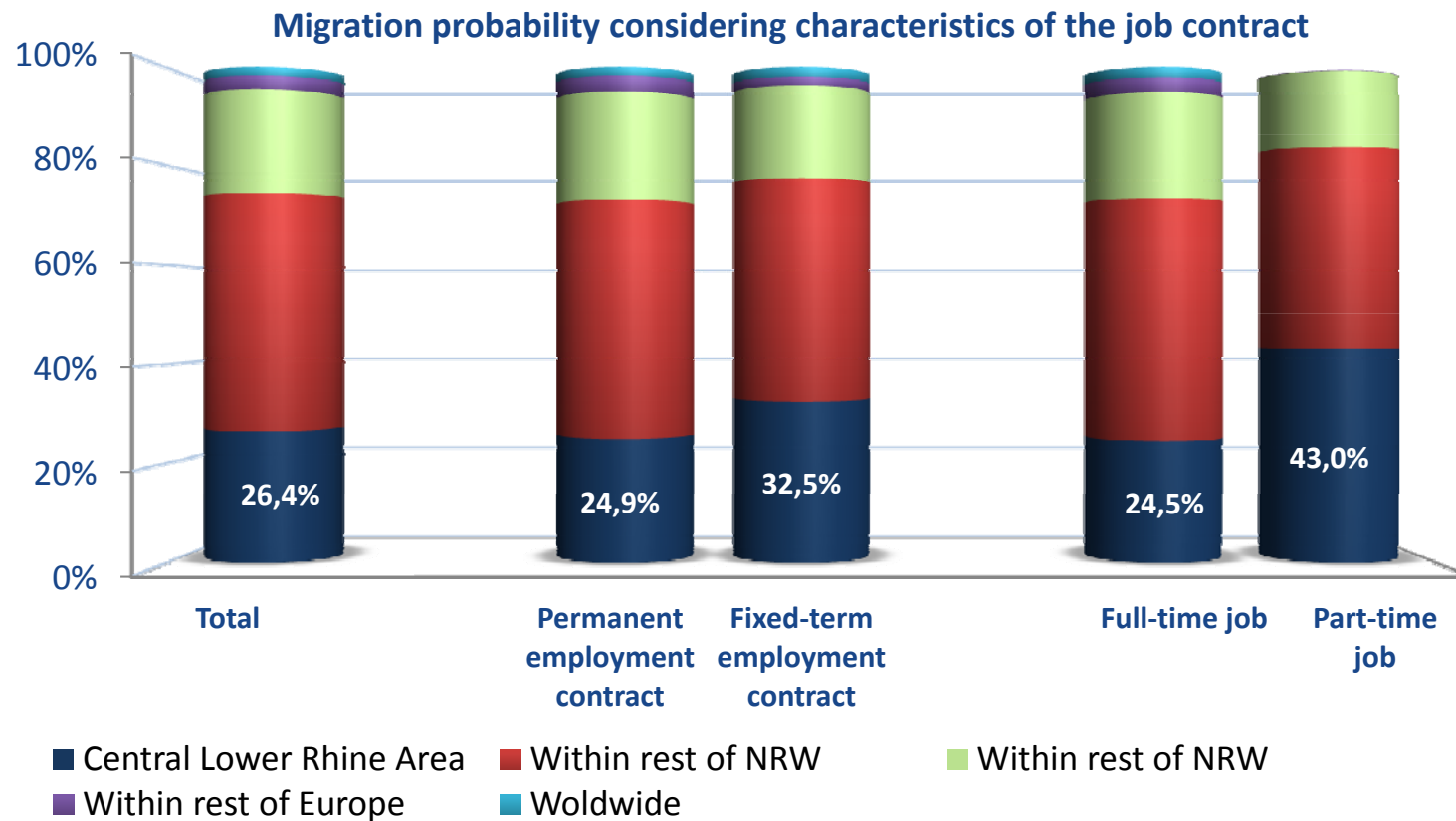
- has no influence on migration probability
- but raises the distance range of migrating graduates

Migration probability after a temporary stay abroad during the studies



Appendix – Additional Information

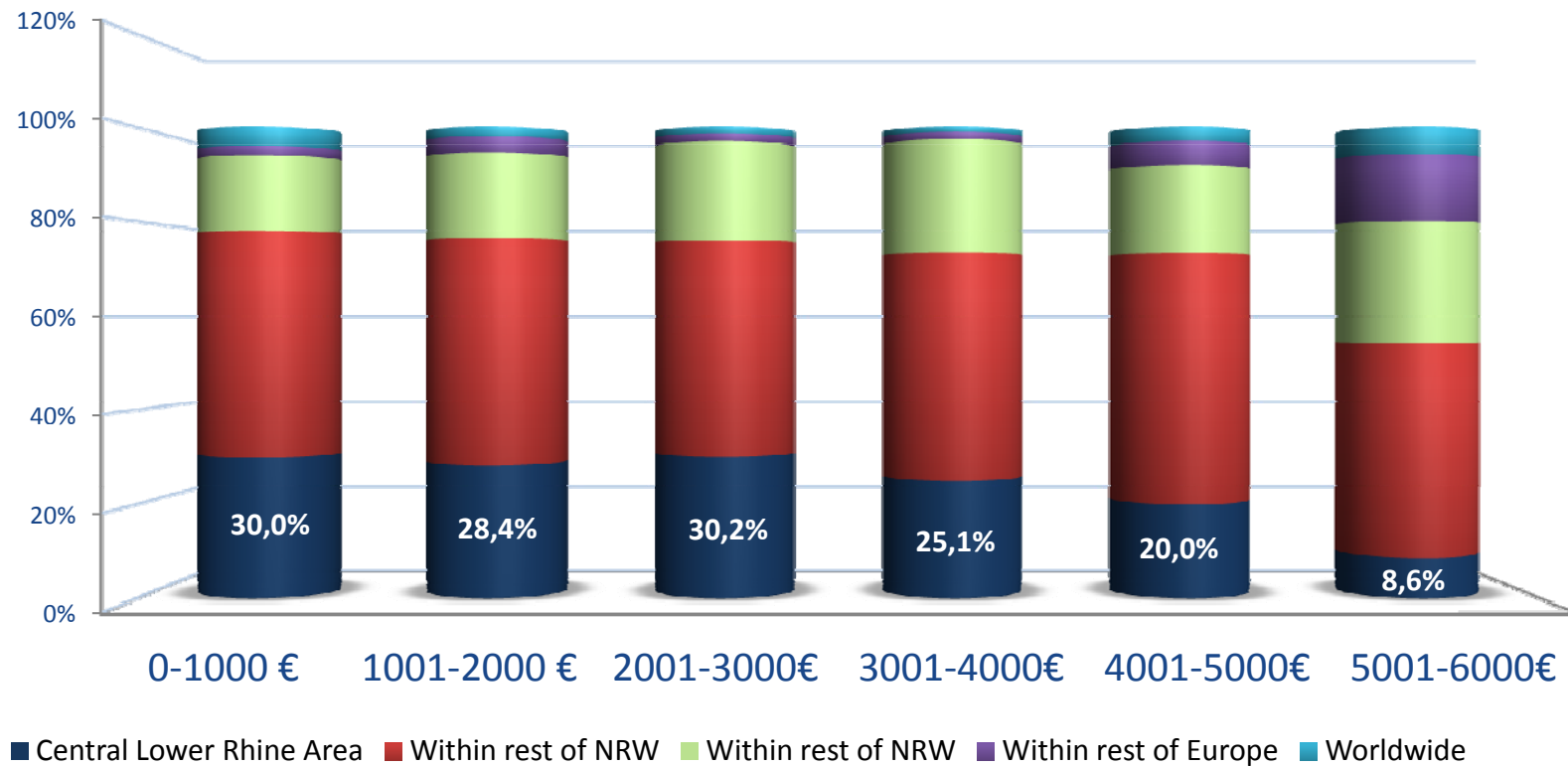
Graduates accept contracts of lower attractiveness to remain in the region



Appendix – Additional Information

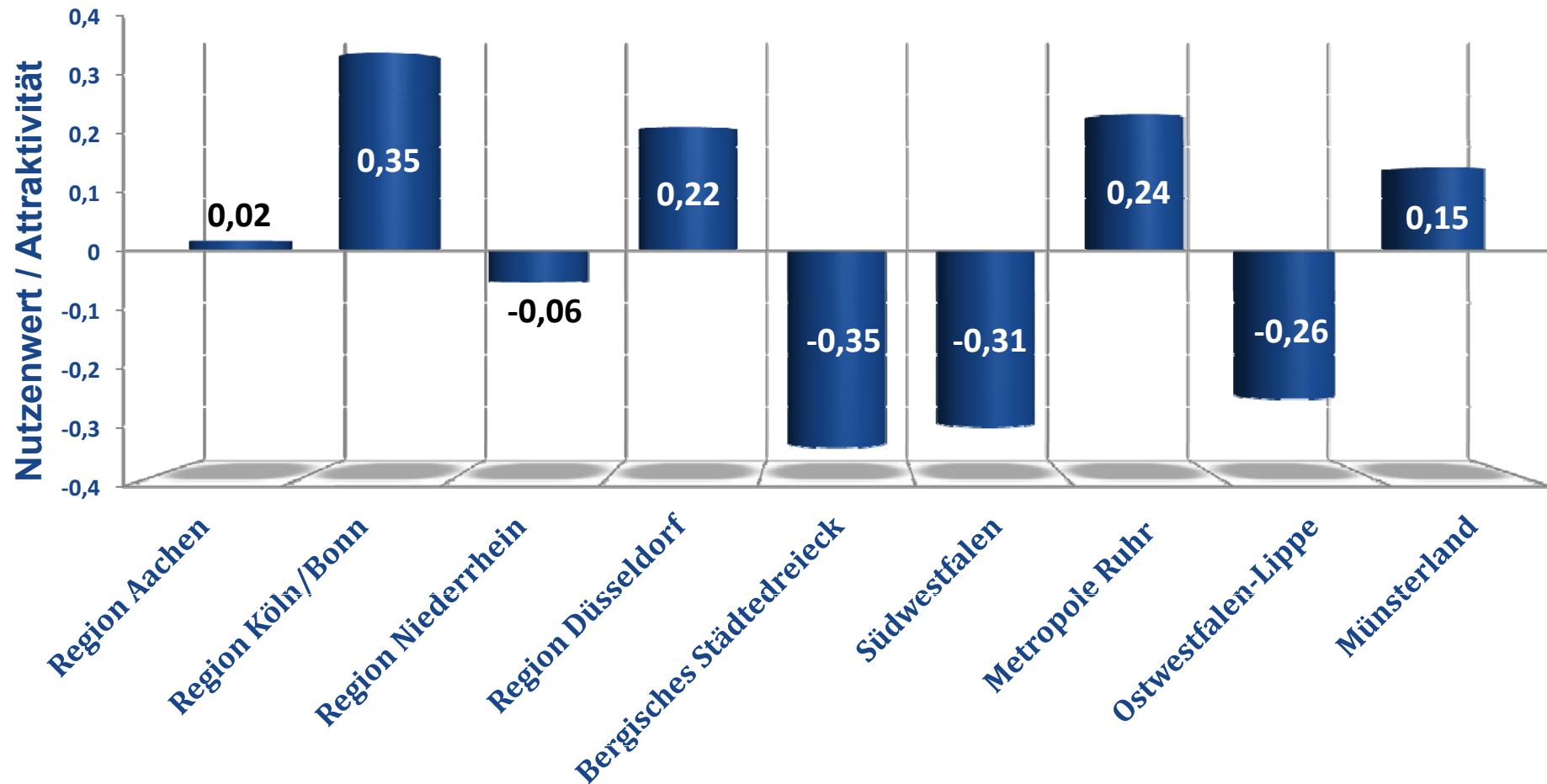
High Starting Salaries are a Pull Factor

Migration Probability considering the starting salary of graduates



Appendix – Additional Information

Attractiveness of economic regions in North-Rhine-Westphalia based on a survey of MINT graduates



1. Introduction

Universities induce expenditure effects, knowledge spillovers, produce human capital

To support the University Region → Importance of local focus

