Interreg Baltic Sea Region

EUROPEAN UNION
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EU STRATEGY FOR THE BALTIC SEA REGION
FLAGSHIP

Implementing and validating a transnational fracture registry with a complication module

Jasper Frese, UKSH Campus Lübeck
Bone Innovation Summit, Lübeck

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Table of Content

Pilot Phase

UNIVERSITÄTSKLINIKUM
Schleswig-Holstein

- Nov. 2017 – Feb. 2018
- 238 patients
- Centraxx database
- Complications recorded
- Follow up letters about treatment outcome 6 months post-treatment

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Validating registry Data

- Many approaches, none standardised
- Data Quality in Medical Research – Nonnemacher et al.
- No publications about its application

Adaptive Monitoring

- Score Data Quality → Conduct SDV → Feedback and Improvement

Scoring Data Quality → Conduct SDV → Feedback and Improvement

Item	Level	Indicator	Enumerator	Denominator	Threshold	Specific Weight
Personnel	Organisation	Qualification of data entering personnel	Qualified personnel	Total personnel	100%	2
Length of Stay	Integrity	Value distribution	Noticeable values	Verified values	>8%	1
Body Mass Index	Integrity	missing entries for optional data elements	missing entries	Verified values	>10%	3
Inclusion Criteria	Correctness	Compliance with procedural rules	deviations	Verified values	>5%	6

Scoring Data Quality → Conduct SDV → Feedback and Improvement

$$Score = \frac{IW}{SW} \times 100$$

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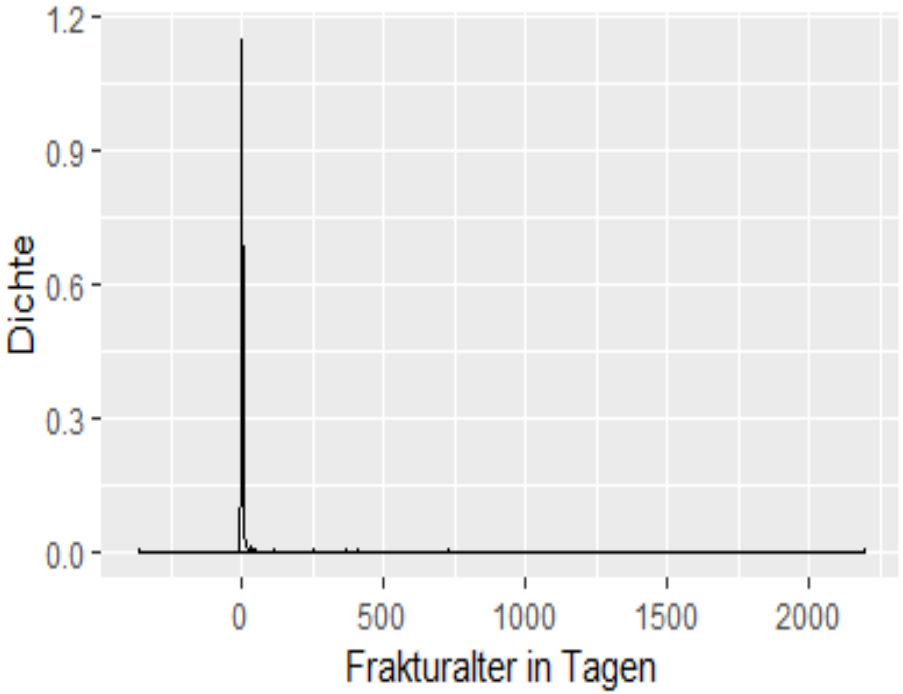

Scoring Data Quality → Conduct SDV → Feedback and Improvement

- $Score = \frac{IW}{SW} \times 100$
- $Score = \frac{6}{12} \times 100$
- $Score = 50$

Item [specific weight]	Result of SDV	Threshold	Individual weight
Personnel [2]	100%	100%	2
Length of Stay [1]	7,98	<8%	1
Body Mass Index[3]	50,8%	<10%	0
Inclusion Criteria [3 + 3]	Patient Age: 0% Fracture Age: 11%	<5%	3

Score Result	Data Quality	Recommended δ value
0-19	Very poor	0,01
20 – 39	poor	0,02
40 – 59	moderate	0,03
60 – 79	good	0,04
80 – 100	Very good	0,05

- Sample Size?

$$n_0 = \frac{p(1-p)}{\delta^2} \times z^2_{1-\alpha/2}$$

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Scoring Data Quality → **Conduct SDV** → Feedback and Improvement

$$n_0 = \frac{\mathbf{p}(1-\mathbf{p})}{\boldsymbol{\delta}^2} \times \boldsymbol{z}^2_{1-\alpha/2}$$

$$n_0 = \frac{0,05(1-0,05)}{0,03^2} \times 1,96$$

$$n_0 = 103$$

$$n\ ?$$

$$n = \frac{n_0 \cdot N}{n_0 + N}$$

$$N = 238$$

$$n_0 = 103$$

$$n = 73$$

Scoring Data Quality → **Conduct SDV** → Feedback and Improvement

1. Admission Date - 2.74%
2. Discharge Date - 8.22%
3. Treatment date - 9.59%
4. Height and weight - 5.48%
5. Employment status - 6.85%
6. Fracture side - 9.59%
7. Number of secondary diseases - 15.1%
8. Main diagnosis according to ICD-10 GM - 19.2%
9. Fracture Date - 17.8%
10. Occurrence of a complication - 20.5%
11. Type of fixation - 16.4%
12. Type of reduction - 26.0%

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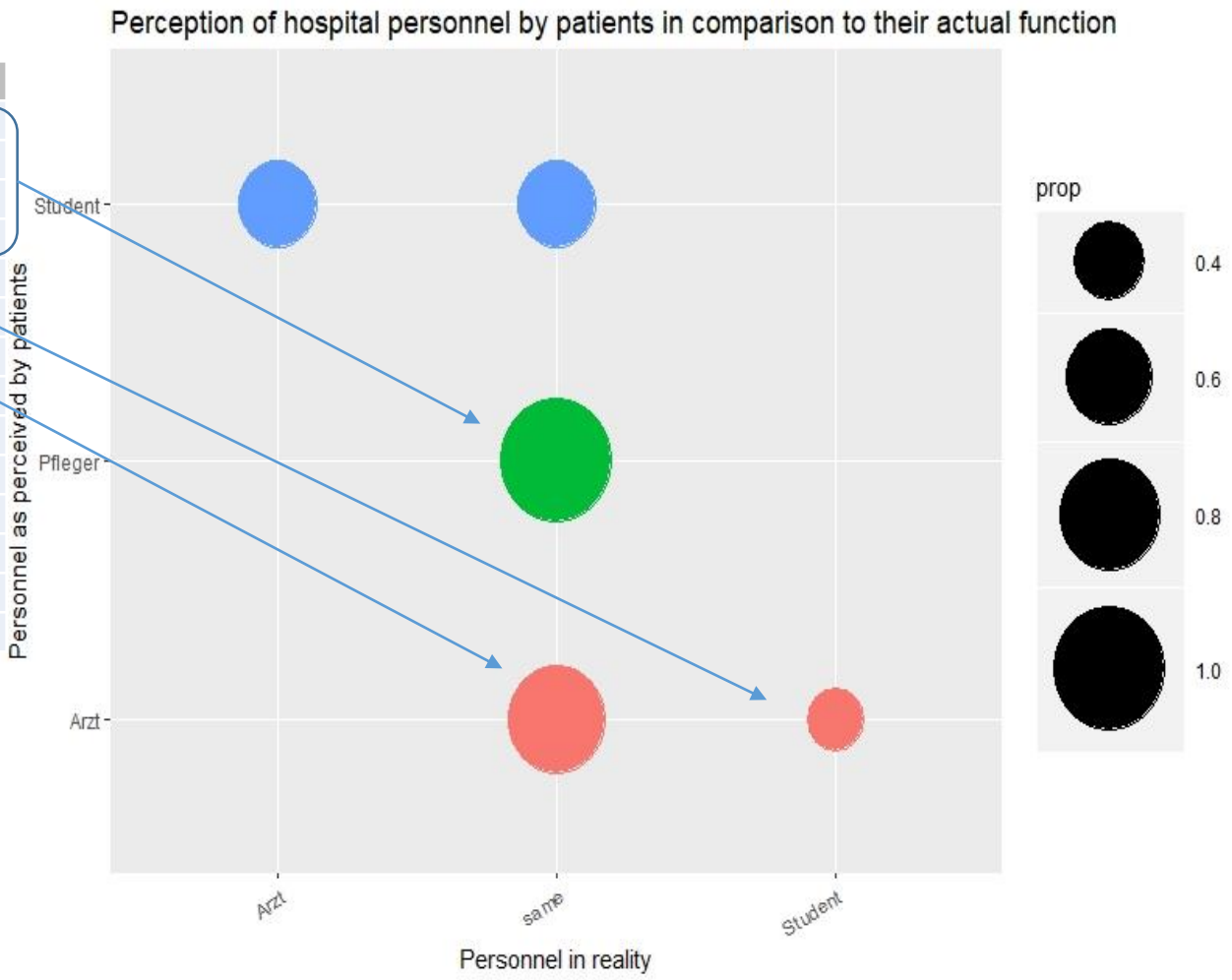
Scoring Data Quality → **Conduct SDV** → **Feedback and Improvement**

Personnel_as_perceived	Personnel_in_reality
Nurse	same
Nurse	same
Nurse	same
Nurse	same
Doctor	Student
Doctor	same
Doctor	same
Doctor	same
Student	Doctor
Student	Doctor
Student	Doctor
Student	same
Student	same
Student	same



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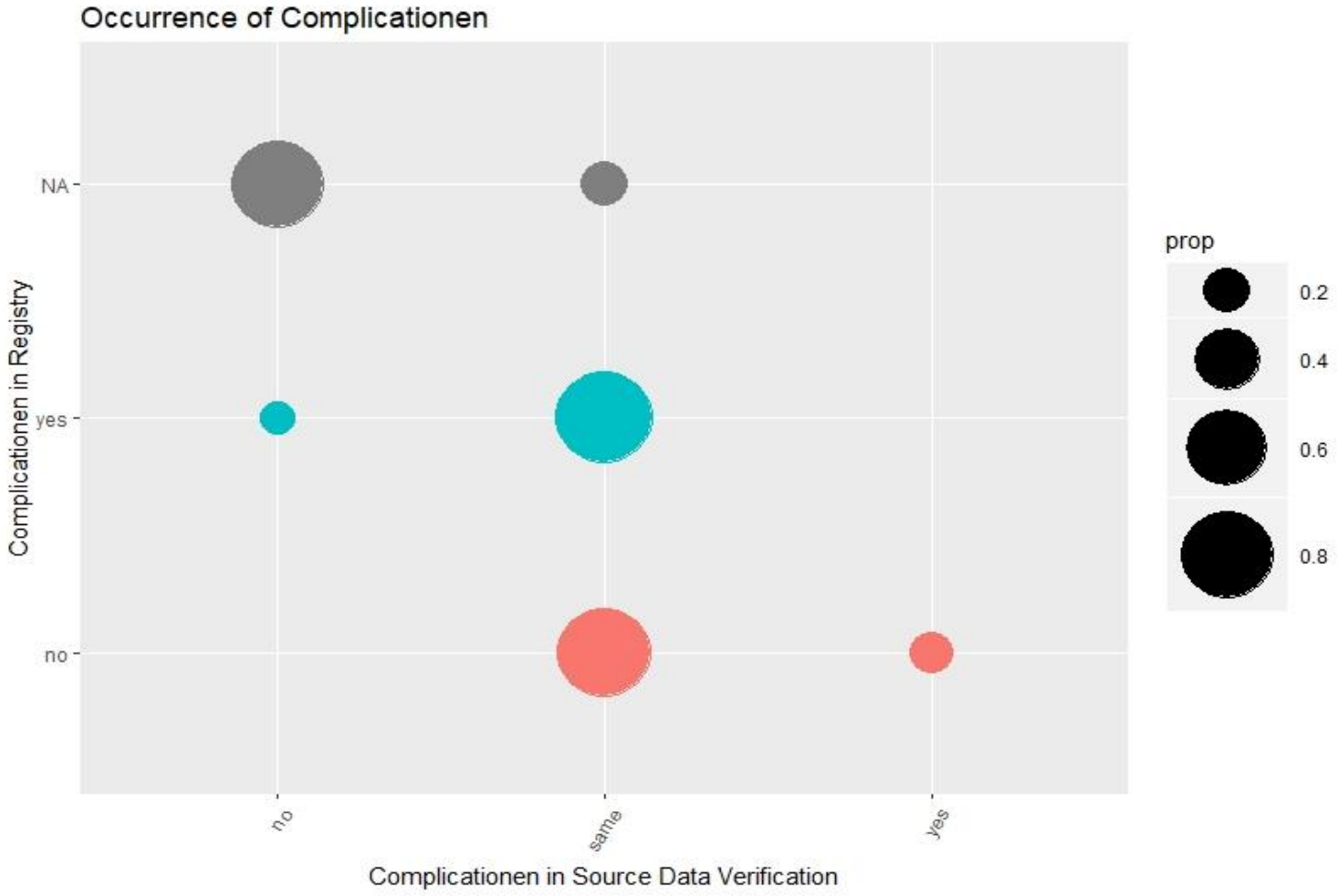

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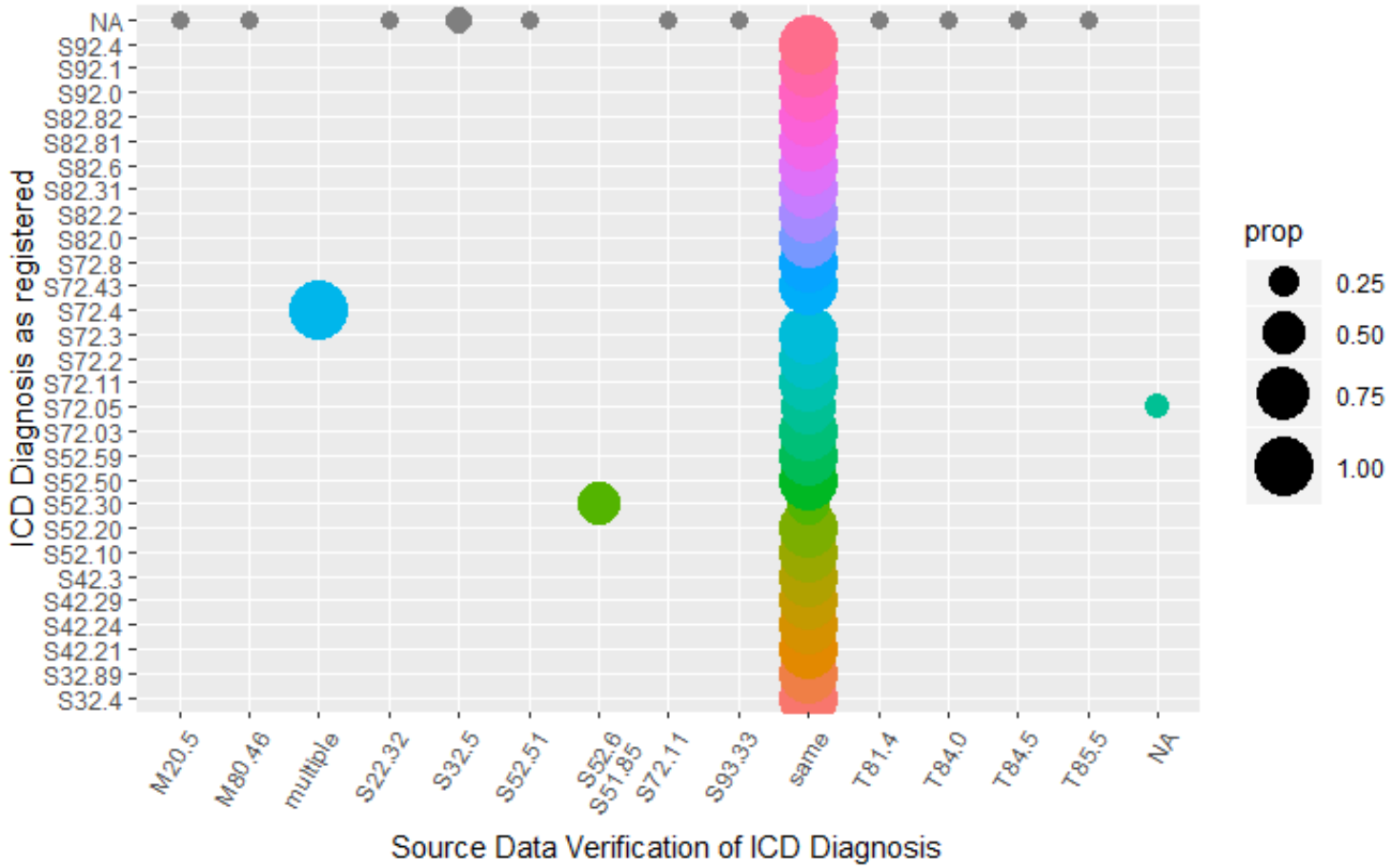
Scoring Data Quality → **Conduct SDV** → **Feedback and Improvement**



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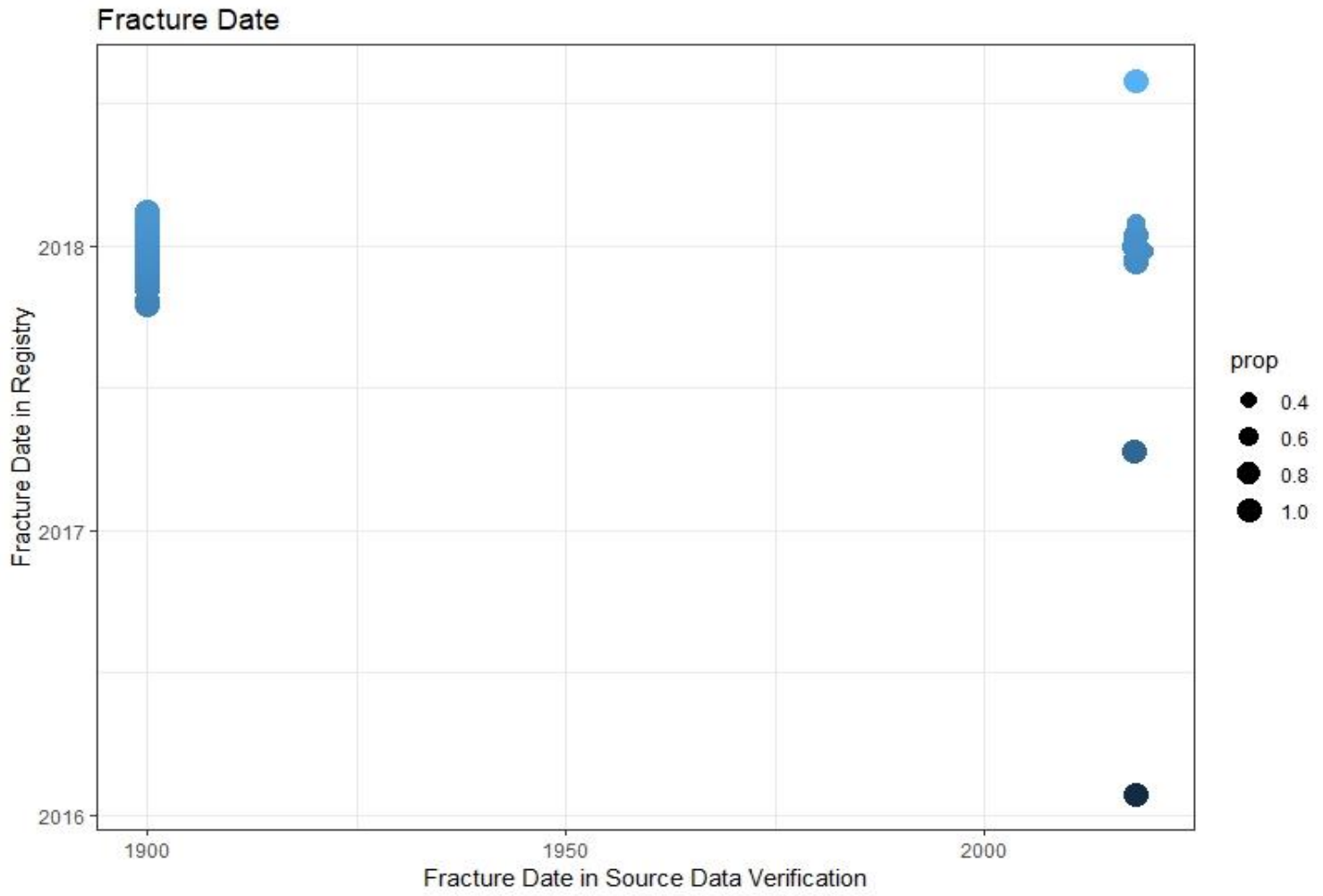

Outlook

- Repeat Process
- Optimize Scoring Parameters
- Promote Method – applicability for other registries
  - Standardization → Comparability

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Thank you!