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Tracking Regional Variation in Healthcare, Villa Elisabeth, Berlin, June 4-5, 2015

Treatment facilities for hemodialysis patients of working age in Germany: A GIS-supported analysis

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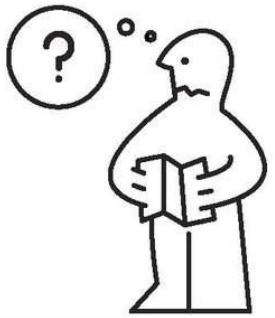
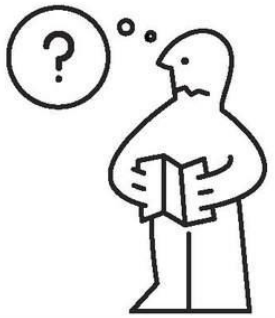
Background



Some epidemiological data from Germany

- more than 67,000 end-stage renal disease (ESRD) patients are treated with hemodialysis
- Annual incidence of hemodialysis patients: more than 13,000.
- 45% (about 30,000) patients of working age
- 1,100 (24%) of patients newly requiring hemodialysis in 2013 were 20 - 64 years old,
- on average 5-6 years waiting time for transplantation (if striven).



Employment in patients of hemodialysis

- After one year of hemodialysis, only 20% of the patients are full-time or part-time employed although
- on average 70-80% work performance of a healthy person could be rendered by these individuals - in absence of restricting comorbidities.

Why is employment for patients of working age important?

- social participation,
- quality of life,
- reduced risk of poverty,
- increased functional health status,
- increased long-term survival.

The literature on employment status

For example:
main explanatory variables for employment

- **not** patient-level determinants

but

- **appropriate dialysis facilities**

“Facility employment rate was positively associated independently with availability of a 5 p.m. or later dialysis shift …”
(Kutner et al. 2008)

Dialysis Facility Characteristics and Variation in Employment Rates: A National Study

Nancy Kutner, Tess Bowles, Rebecca Zhang, Yijian Huang, and Stephen Pastan

Rehabilitation/Quality of Life Special Studies Center, United States Renal Data System, Emory University, Atlanta, Georgia

Clin J Am Soc Nephrol 3: 111–116, 2008. doi: 10.2215/CJN.02907107

Efficiency demand vs. existing treatment facilities

- high time expenditure for the therapy **AND** pursuing professional activities

→ Demand: high level of spatial and temporal efficiency.

Our objective

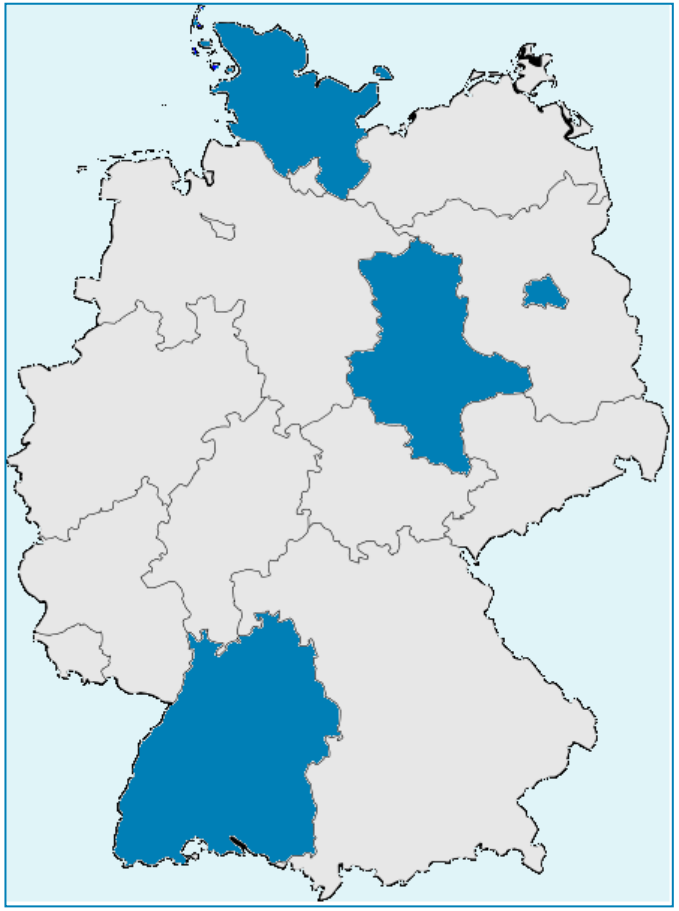
Examining selected regional examples

- **Question 1:** Do the recent dialysis facilities allow a full- or part-time employment of hemodialysis patients? To which extent?
- **Question 2:** Are there regional disparities in this specific health care facility characteristics resp. can patients continue to work if they want to do this?

Selection of regional examples

Selection criteria

- Treatment facilities per million inhabitants
- hemodialysis units (beds) per million inhabitants
- Outpatient hemodialysis units per million inhabitants
- Prevalence hemodialysis patients per million inhabitants
- Share of people under the age of 65 in the total population



Methods

The survey

Primary survey (web pages, e-mailing, phone)

Survey variables

- Location(s),
- Administrative status (dialysis company (PHV, KfH), hospital company, outpatient practice),
- Availability of late shift times (days, starting time, closing time, evening shifts, over night treatment etc.)
- Distance to the railway station or public transport and to the city center,
- Relative location (city center, periphery, residential area, hospital area, industrial area etc.)

Descriptive analysis

Application of a geographical information system (QuantumGIS)

Results

Administration (all facilities = 193)

Province	companies (KfH, PHV)	Hospitals / hospital companies	outpatient practices
Baden-Württemberg	12 (13 %)	4 (4 %)	75 (83 %)
Berlin	8 (30 %)	1 (4 %)	18 (66 %)
Sachsen-Anhalt	8 (20 %)	4 (10 %)	29 (70 %)
Schleswig-Holstein	2 (6 %)	4 (12 %)	28 (82 %)
Mean	30 (16 %)	13 (7%)	150 (77 %)

Type of settlement (all facilities = 193)

Province	major cities (> 100,000 inh.)	medium-sized (20,000-100,000 inh.)	small towns (5,000-20,000 inh.)	village (< 5,000 inh.)
Baden-Württemberg	19 (21 %)	58 (64 %)	14 (15 %)	-
Berlin (Bezug Stadtteile)	7 (26 %)	18 (67 %)	2 (7 %)	-
Sachsen-Anhalt	8 (20 %)	26 (63 %)	7 (17 %)	-
Schleswig-Holstein	6 (18 %)	14 (41 %)	12 (35 %)	2 (6 %)
Mean	40 (21 %)	118 (61 %)	35 (18 %)	2 (1 %)

Results

Timing (all facilities = 193)

Province	Over night treatment
Baden-Württemberg	11 (12 %)
Berlin	6 (22 %)
Sachsen-Anhalt	6 (15 %)
Schleswig-Holstein	4 (12 %)
Mean	27 (14 %)

Compatibility with employment (all facilities = 193)

Province	Fulltime employment (end of treatment 10:30 PM or later)	Part-time employment (end of treatment 7:00 PM or later or Tues/Thu/Sat afternoon)
Baden-Württemberg	35 (38 %)	46 (51 %)
Berlin	11 (41 %)	20 (74 %)
Sachsen-Anhalt	9 (22 %)	15 (37 %)
Schleswig-Holstein	5 (15 %)	15 (44 %)
Mean	60 (31 %)	96 (50 %)

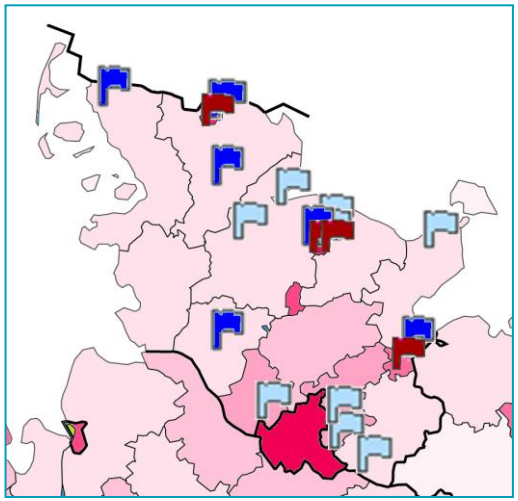
Results

Relative facility location: the example of Baden-Württemberg

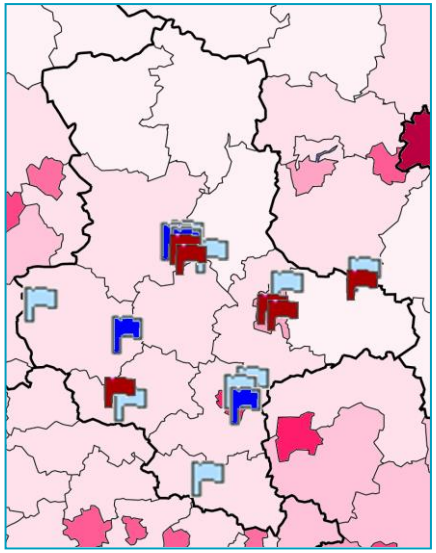
Province	
Industrial area	25 %
In / nearby hospital	25 %
residency area	18 %
mixed area (living, business, shopping)	22 %
central	13 %
periphery	4 %

The current status: evening and overnight shift times

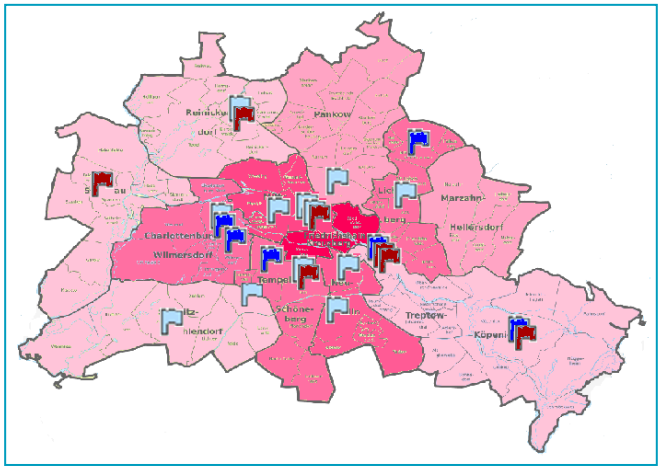
Schleswig-Holstein



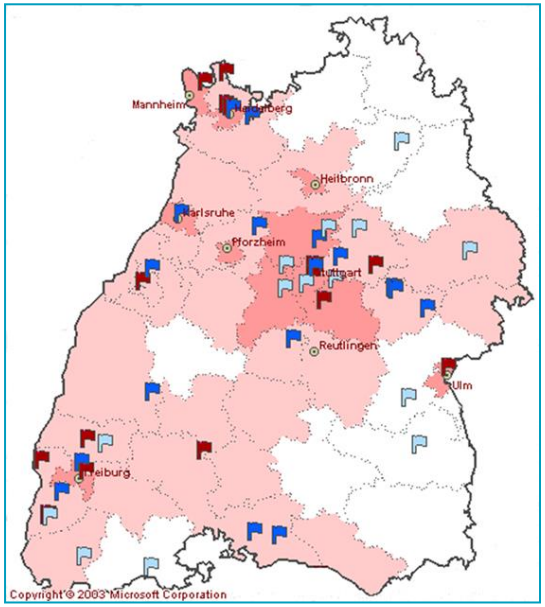
Sachsen-Anhalt



Berlin

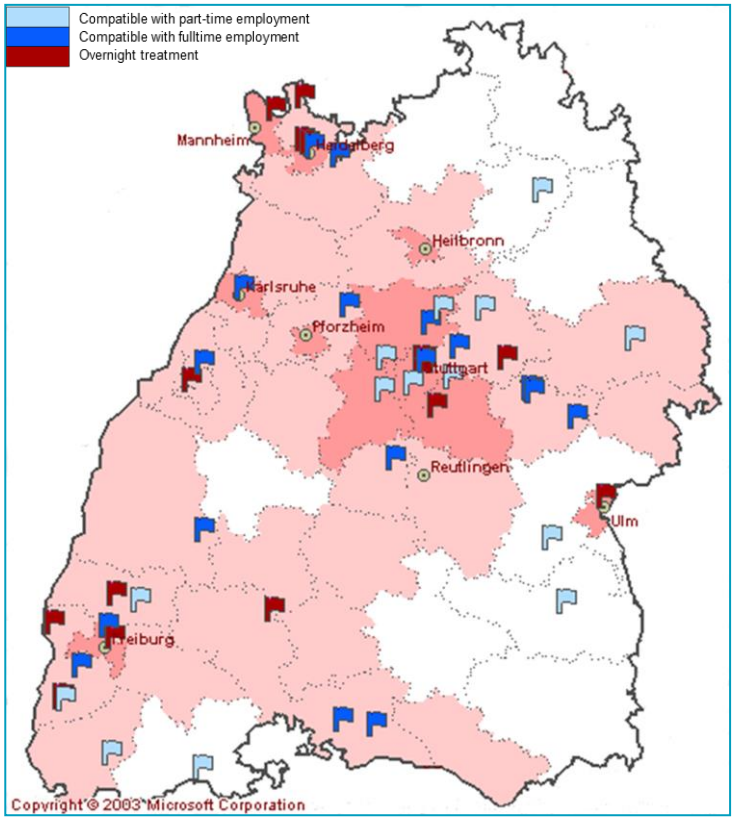


Baden-Württemberg



Compatible with part-time employment
Compatible with fulltime employment
Overnight treatment

The example of Baden-Württemberg 2009 and 2015



Changes between 2009 and 2015:

City size	Closed centers	New centers
Major cities	7 (8 %)	9 (10 %)
Medium-sized	10 (11 %)	28 (31 %)
Small towns	6 (7 %)	7 (8 %)
	23 (25 %)	44 (48 %)

New centers

Fulltime employment compatible: 9 facilities
Part-time employment compatible: 9 + 4 facilities

Closed centers

Fulltime employment compatible: 12 facilities
Part-time employment compatible: 12 + 2 facilities

Summary and Conclusions

- Significant **regional disparities** in treatment services
- **Better facility offers in major cities** or regional units with above-average rates of working aged people
- Many facilities are **located in the industrial areas / periphery** (more time, private transportation)
- **Conclusions** (literature and survey results):
  - **Attention should be paid on occupation and its preservation** (pre-dialysis / start of treatment). Employment possibilities are often restricted and patients are in need to move the place of residence or work.
  - **stronger focus on patient needs** (needs-based care)
  - **Improvements in center locations** (improved self-determined life)
  - Increased employment would **reduce the expenditure of social insurances**.
  - The improvement of facility offers can **not be regulated by supply and demand**. Thus, incentives and controlling measures are necessary.

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Many thanks for your attention!

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