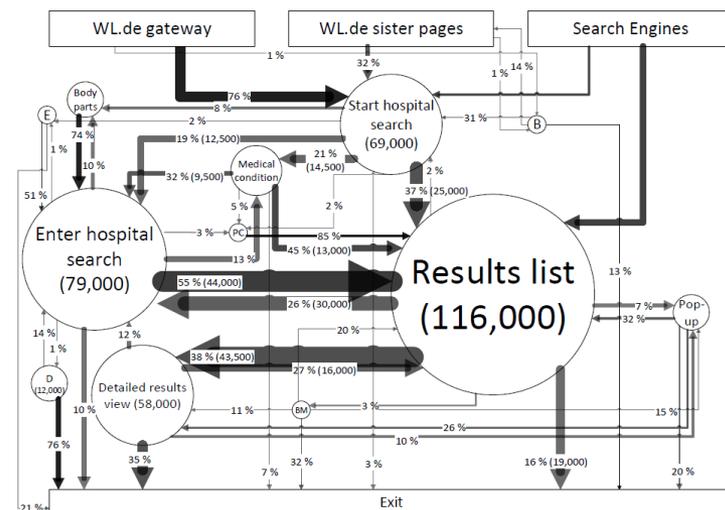


Nutzung von öffentlichen Qualitätsdaten in Deutschland: *eine Untersuchung der Nutzerdaten des Portals Weisse Liste.de*



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WHO Collaborating Centre for Health Systems, Research and Management

- Public reporting provides structural, process and outcome information to facilitate hospital choice and strengthen quality competition
- Patients rarely use this information in their decision-making, due to limited awareness of the data and complex and conflicting information.
- Almost no study has analyzed how users behave on public reporting portals, therefore we analyze:
 - Regional variations in public reporting usage
 - Usage frequency and intensity of different portal sections
 - If supplied information matches patient demand
 - Key user groups, their characteristics and usage patterns

- Web-usage mining techniques on server log data of 56 million user actions from 2013–2015 from Germany`s premier provider transparency portal weisse-liste.de
- Postal code and ICD search requests facilitate identification of geographical and treatment area usage patterns
- User clustering based on parameters like session length, referrer and page topic visited
- First-level markov chains illustrate common click paths and premature exits

Arzt ▾

Krankenhaus ▾

Pflege ▾

Entscheidungshilfen ▾

Service ▾

Finden Sie das passende Krankenhaus

2.000 Krankenhäuser mit 900.000 Bewertungen

Krankheit / Behandlung / Krankenhausname

Ort oder Postleitzahl

Umkreis

50 km ▾

Krankenhaus suchen



Sicher

Alle Daten geschützt vor Manipulationen.



Informativ

Methodik und Ergebnisse wissenschaftlich fundiert.



Unabhängig

Kosten- und werbefrei. Kein kommerzieller Hintergrund.

Die Schirmherrschaft



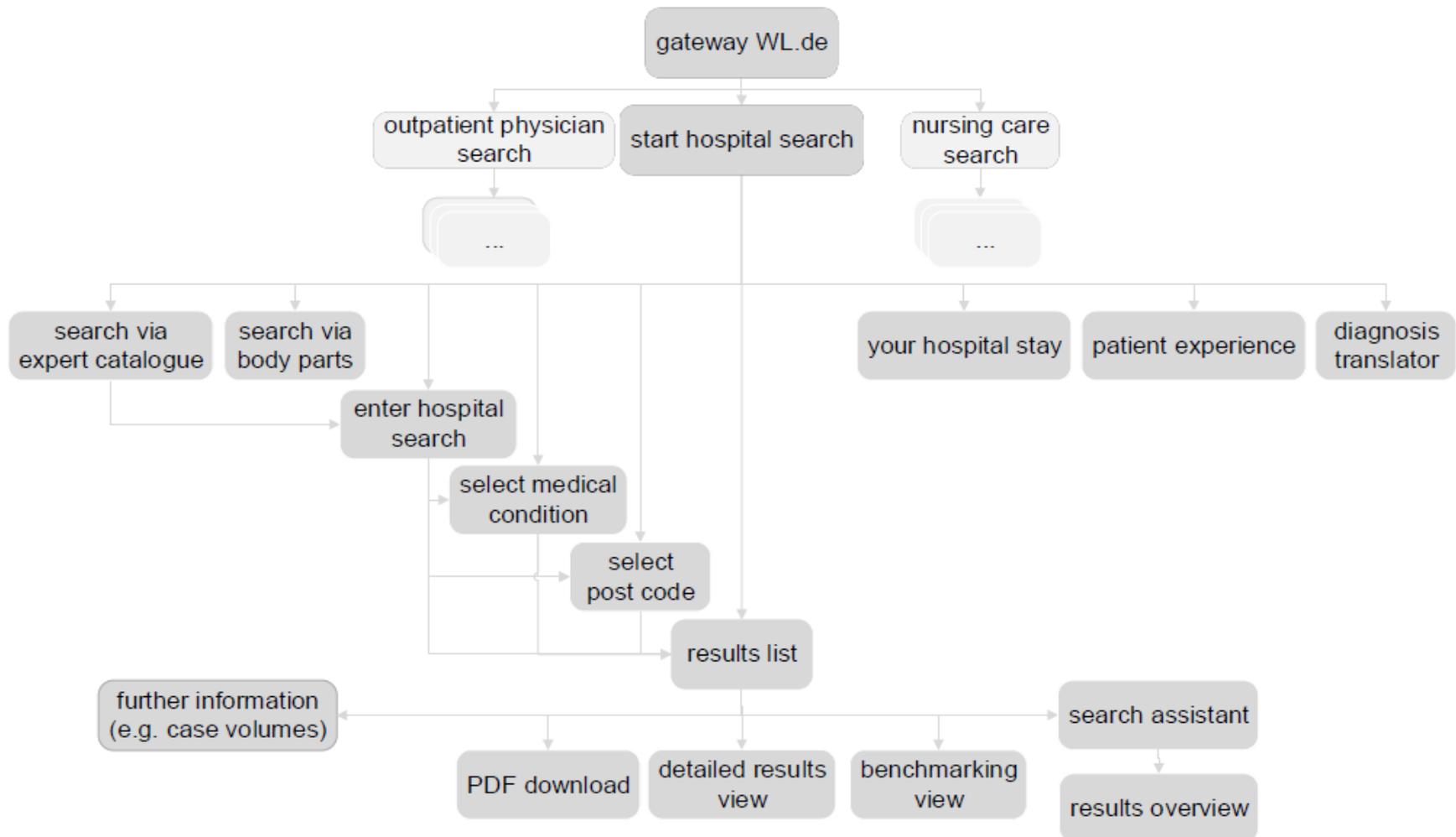
Der Beauftragte der Bundesregierung
für die Belange der Patientinnen und Patienten
sowie Bevollmächtigter für Pflege

Staatssekretär Karl-Josef Laumann, der Bevollmächtigte der Bundesregierung für Patienten und Pflege, ist der Schirmherr der Weissen Liste.

Er unterstützt den Ansatz der Weissen Liste, Bürgern im Gesundheitswesen Orientierung zu bieten und fundierte Wahlentscheidungen für Leistungsanbieter zu ermöglichen.

[Zum Internetauftritt des Patientenbeauftragten](#) ➔

Sitemap



Descriptive figures

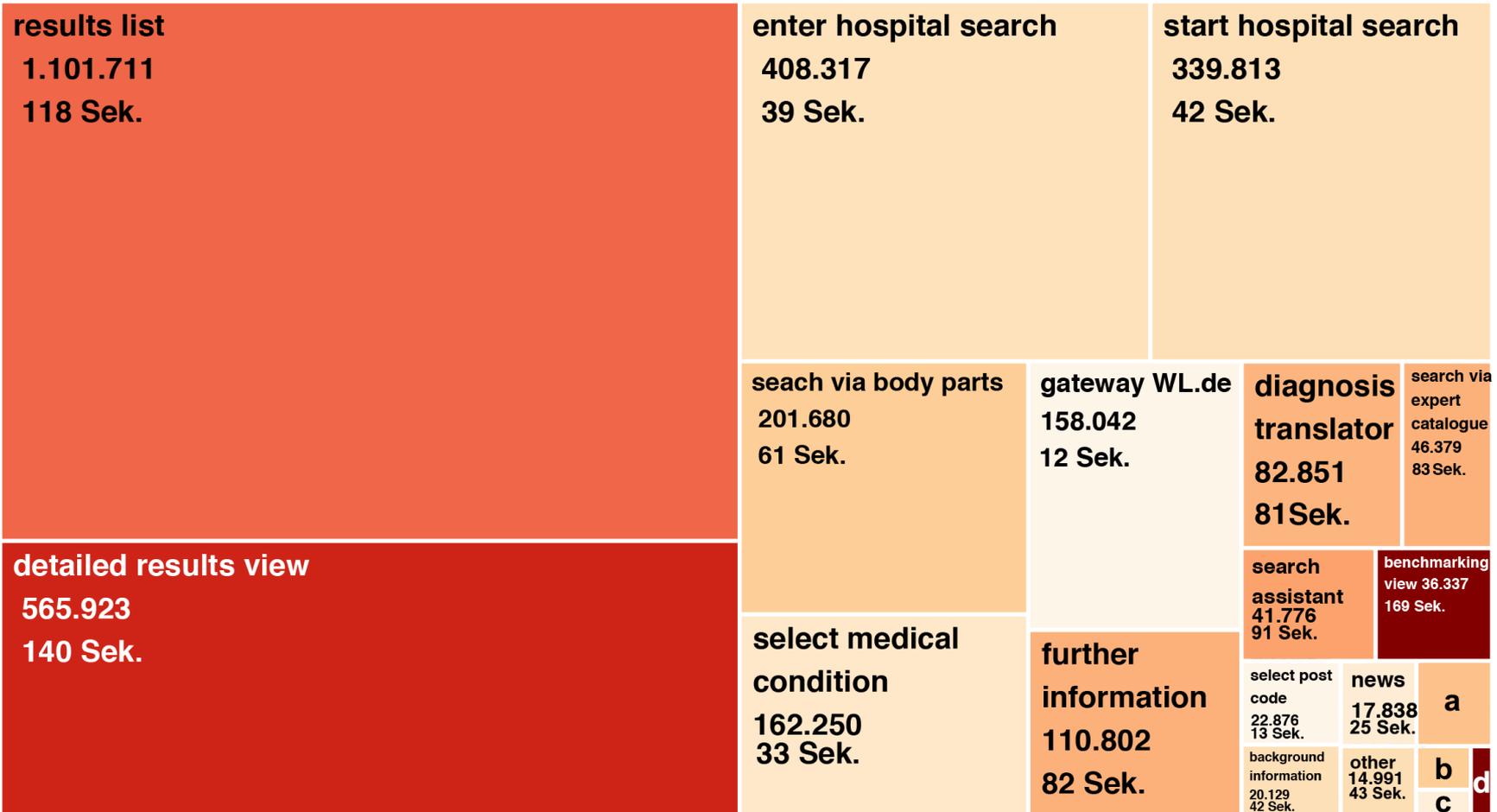
In 2015, the *wl.de* had 2,750 daily users, with 25% mobile traffic, a bounce rate of 38% and only 48% actually examining hospital quality information.

From 2013 to 2015, user traffic grew at 38% annually.

On average users spent 7 minutes on the portal, with 7.4 clicks and 54 seconds between clicks.

	2013	2014	2015
Unique visits per day	1,445	2,122	2,753
Growth p.a.		47%	30%
Visits per 1,000 hospital admissions	28	40	52 ¹
Clicks per visit	10.8	8.4	7.4
Time in sec per visit	566	456	399
Time in sec per click	52	54	54
<i>Bounce visits</i>	22%	32%	38%
<i>Successful visits</i>	66%	53%	48%
<i>Mobile visits</i>	11%	23%	25%
<i>Google search engine referrer</i>	23%	42%	38%
<i>Google AdWords referrer</i>	0%	0%	14%
<i>Direct entry</i>	35%	27%	24%

Heatmap



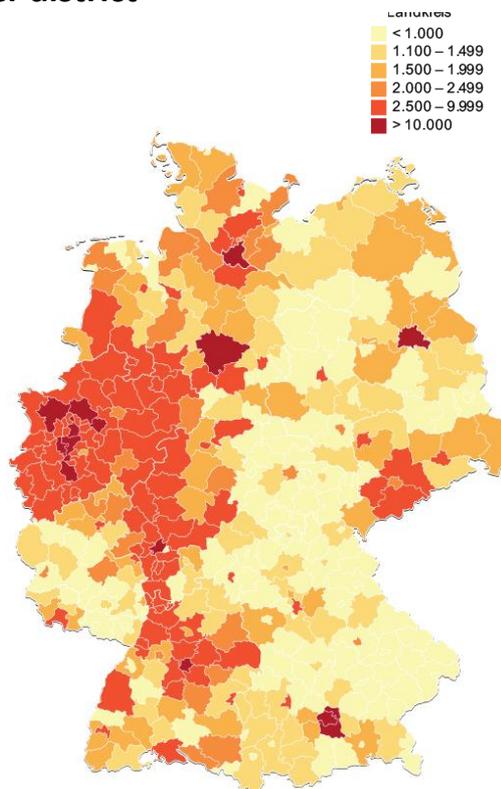
1. website element/topic
2. Number of clicks
3. Average time on topic area

size of recangle = number of clicks per website element

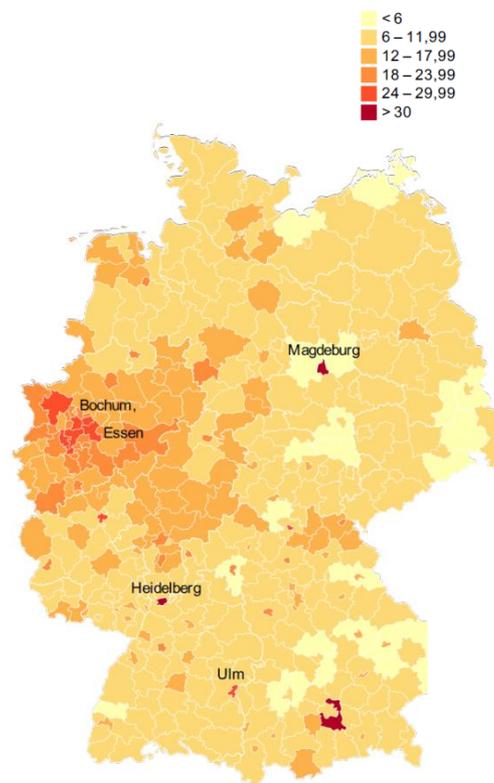


Regional user patterns

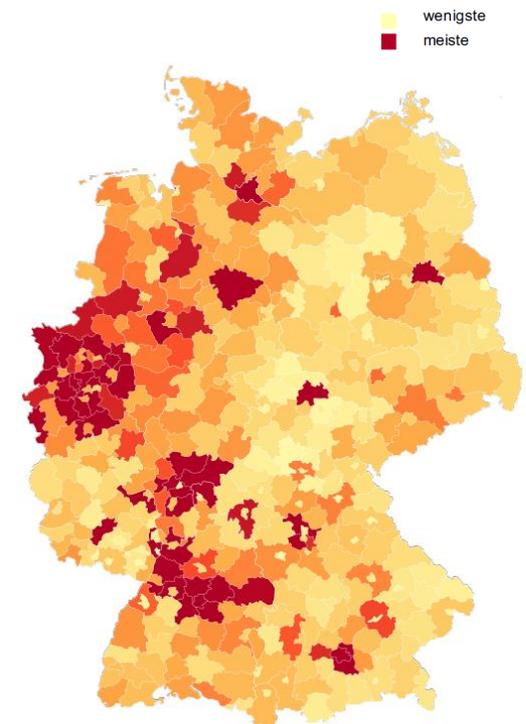
Total search requests per district



Total search requests per 1,000 inhabitants per district



Total search requests per hospital beds/1,000 inhabitants per district



Demand vs. Supply of information

Information for several requested oncologic and orthopedic conditions is not available

Medical condition	ICD code	number searches	Weigh. Score ¹	diagnoses, in 2014	ranking (searches)	quality indicators available
osteoarthritis of hip	M16	52,575	0.31	167,500	1	✓
osteoarthritis of knee	M17	49,460	0.27	185,399	2	✓
malignant neoplasm of prostate	C61	15,720	0.23	68,522	5	✗
full-term uncomplicated delivery	O80	19,769	0.22	91,860	3	✓
cervical disc disorders	M50	5,953	0.20	29,894	26	✗
Internal derangement of knee	M23	17,525	0.18	97,990	4	✗
benign prostatic hyperplasia	N40	9,349	0.16	57,947	12	✗
malignant neoplasm of esophagus	C15	3,661	0.12	29,504	41	✗
aortic aneurysm and dissection	I71	3,639	0.12	29,451	42	✗
malignant neoplasm of breast	C50	15,091	0.11	132,926	7	✓
malignant neoplasm of kidney	C64	2,416	0.10	23,140	59	✗
malignant neoplasm of colon	C18	8,206	0.10	81,421	15	✗
other intervertebral disc disorders	M51	15,118	0.10	156,893	6	✗
acquired deformities of fingers, toes	M20	5,512	0.10	57,542	28	✗
malignant melanoma of skin	C43	2,307	0.10	24,148	64	✗
malignant neoplasm of rectum	C20	5,828	0.09	61,420	27	✗
malignant neoplasm of ovary	C56	2,501	0.09	26,605	58	✓
malignant neoplasm of pancreas	C25	4,566	0.09	48,645	36	✗
malignant neoplasm of liver	C22	2,630	0.09	29,218	53	✗
major depressive disorder,1 episode	F32	11,234	0.09	125,623	10	✗

Note: 1. Number of searches weighted by diagnosis incidence in 2014

orthopedics

cancer

User clustering

- Ten distinct user types with particular usage patterns and interests are identified.
- Different types of professional and non-professional users need to be addressed individually to avoid high premature exit rates.
- Of all users, 37% enter hospital information correctly upon entry, while 47% require support in their hospital search.

User clustering

User cluster	Share [%]	∅ # clicks	∅ visit [sec]	betw. Clicks [sec]	return visitors [%]	view results [%]	search steps/results ¹	visit workday [%]	visit work time [%]	desk top usage [%]	access via
Intensive Work Timers	19	15.2	693	45	29	100	0.45	100	100	100	100% search engine
Intensive Free Timers	17	16.4	731	46	13	100	0.42	43	0	100	100% search engine
Diagnosis Translator	13	5.7	182	32	19	-	-	100	100	100	100% search engine
Challenged Aborts	12	6.1	255	48	8	-	-	53	12	69	100% search engine
Patient Experts	9	16.7	851	54	24	100	0.33	63	12	66	100% direct
Curious	7	14.9	747	49	28	78	0.60	83	53	83	35% payer, 30% media
Professionals	7	15.9	884	53	56	100	0.32	100	100	100	100% direct
Results Mobiles	7	14.5	696	49	8	100	0.50	65	30	0	100% search engine
Explorers	4	13.4	571	47	14	72	0.67	77	48	80	100% health website
Other	5	6.5	456	72	40	-	-	79	42	74	100% direct
Average User	100	12.7	596	47	22	67	0.42	76	51	83	67% search engine

Note: Clustering based on click stream data and repeated sampling from data sample from 01/2015 – 05/2015 1. Search steps required relative to number of results viewed

The results indicate that:

- Public reporting needs to be oriented on the interests of its users, with more outcome quality information for oncology and orthopedics.
- Customized reporting can address different needs and skill levels of professional and non-professional users.
- Search engine optimization and hospital quality advocacy can increase website traffic.

Thank you!

All materials will be shortly available:

Pross C, Averdunk L-H, Stjepanovic J, Busse R, Geissler A.

Health care public reporting utilization: User clusters, web trails, and usage barriers on Germany's public reporting portal Weisse Liste.de.

BMC Medical Informatics and Decision Making (accepted). 2017.

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Clickstream variables

Variable	Mean	SD	description
number of clicks	13	15	user click on website element (request)
time per click	600	909	Time in seconds passed between clicks
successful visit	68%		success = view of hospital search results
work time access	51%		weekdays 9.00 am - 6.00 pm
mobile device	17%		use of handheld device
returning	22%		returning visitor with previous visit
referrer			webpage where the user came from
direct entry	21%		WL.de directly entered in URL bar
search engine	68%		WL.de entered via search engine (e.g. google)
health magazines	4%		patient health magazines(e.g. Apothekenumschau)
health insurance	3%		statutory health insurance websites
media	2%		online news sites
internal link	2%		other WL portals (e.g. nursing care)
other	1%		

Information for clustering

Variable	Mean	SD	description
start hospital search	10%	15%	initiate search based on medical and geograph. info
select medical condition	5%	12%	
search via body parts	3%	11%	select medical condition via human body part map
search via catalogue	1%	7%	select medical condition via ICD/OPS expert list
select post code	1%	3%	
search results	23%	24%	list of hospitals offering relevant care in geo area
detailed results view	13%	23%	detailed information about one selected hospital
benchmarking	1%	4%	direct comparison for selected criteria/hospitals
PDF brochure download	0%	1%	Download info about selected hospital(s)
diagnosis translator	11%	31%	Find medical descriptions for ICD/OPS codes
your hospital stay	1%	5%	
patient experience	0%	3%	Information about patient experience survey
background info	0%	3%	background info about WL.de transparency project
latest news	0%	2%	
sister sites	10%	21%	information on outpatient physicians, nursing care

