Table 3: Availability of data in the context of space and health by spatial scale starting from county level

Dimension/ Spatial relevance	Indicator	Counties/metropolitan regions		Local level (municipalities)		Micro level (city, districts, neighborhoods)	
		Availability	**Sources/Examples**	**Availability**	**Sources/ Examples**	**Availability**	**Sources/Examples**
Social environment factors *Sociodemographic and socioeconomic factors, degree of urbanization, social infrastructure, community well-being, and safety*	Population density, housing density	Within portals of official statistics on European, national and state level, in (open) data portals of certain districts, within state, superordinate collective portals (e.g. metadata or OD catalogs), in listings of citizens' initiatives – partly available combined with geo-information	DESTATIS, statistikportal.de, statistical offices of the federal states, INKAR, ZEFIR, partly EUROSTAT, GISCO, Gov.data.de, metaver.de (for 7 federal states), INSPIRE geoportal, Geoportal.de, mCLOUD, offenedaten.de, census2011.de, a few OD portals of federal states/counties, GBE	Same as county level + municipal OGD or OD portals		Selected availability only	Partly within city statistics, city OGD or city OD portals, Open Data city census
	Average age of population, proportion of 65–79-year-olds per population, old-age dependency ratio, net migration, proportion of foreigners, population development						
	Tax revenues per inhabitant, municipal debt, GDP						
	Unemployment, employment rate, SGB II rate						
	Education						
	Gross wages & salaries, dispos. HH income						
	Public libraries	Official data (some of them not machine-readable), CSD	State library catalogs/statistics, OSM	Same as district level		CSD	OSM
	Cultural facilities (cinemas, theaters, museums, clubs, etc.)	Difficult to find in official statistics (hardly any open formats), CSD	Federal state statistics portals, OSM	Same as district level		CSD	OSM
	Broadband Internet	Partly official statistics, OGD, OS	INKAR, Broadband Atlas (BMVI), Thünen Land Atlas	Same as district level		Selected availability only	Broadband Atlas (BMVI), Thünen Land Atlas
	Living space per person	Official statistics, OS	Partly state-specific statistics portals, ZEFIR (SUF-File)	Same as district level		Selected availability only	Partly in city OD or statistics portal

	Injured/killed in road traffic	Official statistics, OS	Federal State Statistical Offices, ZEFIR (SUF)	Partly official statistics (Federal State Offices, municipal statistics)		Selected availability only	Partly in city portals
	Availability of footpaths & cycle paths	CSD	OSM	CSD	OSM	OS	OSM
	Crime	OGD (available only very heterogeneously, in part in non-machine-readable formats. Formats: since 2020 as .xls, until 2019 as PDF), often only upon request)	BKA	Same as district level	Some municipal OD portals, BKA	Partly in city OD portals, partly OGD for cities with ≥100,000 p.e.	Partly BKA, partly city-based, e.g. kriminalitaetsatlas.berlin.de
Availability, access to, and accessibility of health-related resources *Medical care, green and blue spaces, sports facilities*	Public transport infrastructure/public transport stops	Open company data, CSD	INKAR, OSM, opendata-oepnv.de, mCLOUD, Open Data DB	Official statistics, open company data, CSD	INKAR, OSM, opendata-oepnv.de, Open Data DB	Open company data, CSD	OSM, opendata-oepnv.de, Open Data DB
	Car occupancy	Official data/OGD	Federal State Statistical Offices, govdata.de	Partly in official statistics	Federal State Statistical Offices	Selected availability only	Partly in city portals
	Travel times to central and regional centers	Official data, CSD	INKAR, OSM, INSPIRE, geoportal.de	Same as district level		CSD[2]	OSM
	Accessibility of IC/ICE train stations, supermarkets, physicians, pharmacies						
	P.E. per physician						
	Places in care facilities						
	Number & accessibility of hospitals providing general care	Official statistics, CSD	INKAR, DESTATIS (Krankenhausatlas, OSM)	Same as district level		Same as district level	
	Number of hospital beds per 1000 inhabitants	Official statistics	INKAR, Federal State Statistical Offices	Same as district level, OS, (Thünen Landatlas)		OS	Thünen Landatlas

Physical environment	Public green/aquatic/recreational spaces, commercial/industrial/traffic areas[1]	Official statistics, OGD, CSD	ZEFIR, INKAR, OSM, BfK, state portals for geodata, INSPIRE, govdata.de, BKG, geoportal.de	Same as district level, partly on Municipal Portals		Partly on city statistics or OD portals, OS	In city portals, OSM
Climate and environment *Air pollution, climate exposure*	Thermal exposure (heat, cold)	OGD, OGEOD (as GRIDS)	OD des DWD	Same as district level, partly on Municipal OD Portals		Same as district level, partly data on city OD portals	
	UV radiation	OGEOD (as GRIDS, GJSON, .csv)	DWD, BfS-Geoportal	Same as district level, partly on Municipal OD Portals		Same as district level, partly data on city OD portals	
	Soil sealing	Official statistics, OGD, OD portals, CSD	INKAR, OSM, BfK, State portals for geodata	Same as district level		Partly in local portals, CSD	In city portals, OSM
	Particulate matter, ozone, CO_2, nitrogen oxides	CSD, subject data on request at UBA, partly in state portals (often not machine-readable)	UBA, partly in federal state/county portals, luftdaten.info	Same as district level	UBA, partly in municipal portals, luftdaten.info	Same as district level	UBA, partly in city portals, luftdaten.info, www.codefor.de
	Noise	Available heterogeneously as OD/OGEOD	Partly in federal state portals	Same as district level	Partly in municipal portals	Same as district level	Partly in city portals
	Drinking water quality	Only available on a small scale, mainly in non-open formats				With municipal water suppliers, in some cases information only available upon request	
	Radon	OGEOD als GJSON, .csv	BfS-Geoportal	Same as district level		Same as district level	

[1]Data available as proportion values or per 1000 p.e. km², [2]own calculations based on data needed/possible

BfS = Bundesamt für Strahlenschutz (Federal Office for Radiation Protection), BKA = Bundeskriminalamt (Federal Bureau of Investigation), BMVI = Bundesministerium für Verkehr und digitale Infrastruktur (Federal Ministry of Transport and Digital Infrastructure), CSD = Crowd-Sourced Data, DB = Deutsche Bahn, HH = Household, INKAR = Indikatoren und Karten zur Raum- und Stadtentwicklung (Indicators and maps of spatial and urban development), KBA = Kraftfahrzeugbundesamt (Federal Motor Transport Authority), OD = Open Data, OGD = Open Government Data, OGEOD = Open Geo Data, OSM = OpenStreetMaps, OS = Open Science, SUF = Scientific Use File, ZEFIR = Zentrum für interdisziplinäre Regionalforschung (Center for Interdisciplinary Regional Research)

Further information, including links to the resources mentioned, as well as an overview of small-scale portals (city level) can be found in the web visualization that accompanies the publication: "Open Data for Health Map", https://sciencemap.github.io/Open-Data-for-Health.

Table 4: Overview of data access, data types and licenses by administrative level (last updated April 2021)

National and international portals							Portals of the federal states and metropolitan regions						
Level	Title/description	Data type				License	State/region	Title/description	Data type				License
International	Open Data Portal of the EU			orange	green	CC BY 4.0	Brandenburg	GDI Brandenburg			orange		Per resource
International	European Data Portal	red	blue	orange		Per resource	Brandenburg	Landscape & Environment Information				green	Per resource
International	EUROSTAT	red		orange		CC BY 4.0	Brandenburg	Open Data Brandenburg	red		orange		DL-DE->BY-2.0
International	GISCO	red		orange		CC BY 4.0	Brandenburg	Geobroker LGB			orange		Per resource
International	INSIPRE Geoportal	red	blue	orange		Per resource	Brandenburg	Open Geodata Brandenburg			orange		DL-DE->BY-2.0
International	OPENAIRE	red	blue	orange		CC BY 4.0	Bremen	GDI Bremen			orange		Per resource
International	GEOSS Portal			orange	green	Per resource	Bremen	Environment Information Bremen				green	Per resource
International	OpenFlightMap		blue			OFMA General Users	Bremen	Demographic Monitoring	red		orange		Per resource
National	BKG – Open Data		blue	orange		DL-DE->BY-2.0	Germany	Atlas Regional Statistics	red	blue	orange		DL-DE->BY-2.0
National	GDI-DE – Geodata Germany	red	blue	orange		Per resource	Hamburg	GDI Hamburg					DL-DE->BY-2.0
National	DESTATIS	red			green	DL-DE->BY-2.0	Hamburg	Geodataportal Hamburg	red	blue	orange		Per resource
National	Deutsche Bahn Open Data		blue			CC BY 4.0	Hamburg, SHS	Statistical Office Hamburg & SH	red	blue	orange		DL-DE->BY-2.0
National	Esri Germany Open Data	red	blue	orange	green	Per resource	Hesse	GDI Hessen			orange		DL-DE->BY-2.0
National	Citizen Project Open Data	red	blue	orange	green	Per resource	Hesse	Statistical Office Hesse	red	blue	orange		DL-DE->BY-2.0
National	Portal for open government data	red		orange	green	Per resource	MR Hamburg	Geoportal MR Hamburg	red	blue	orange	green	Per resource
National	GovData[1]	red	blue	orange	green	Per resource	MR Rhein-Neckar	Open Data MR Rhein-Neckar			orange		Per resource
National	mCLOUD of BMVI		blue	orange	green	Per resource	MV	GDI MV			orange		Per resource
National	Open Data Portal Municipalities	red		orange	green	Per resource	MV	Statistical Office MV	red	blue	orange		DL-DE->BY-2.0
National	IÖR-Monitor		blue	orange	green	Per resource	MV	Map Portal Environment MV				green	Per resource
National	Metaver – Metadata Network		blue	orange	green	Per resource	MV	Environmental Information MV				green	Per resource
National	OpenStreetMap Germany		blue	orange		OdbL	Lower Rhine	Geoportal Lower Rhine	red		orange		Per resource
National	Federal Environmental Agency				green	Per resource	Lower Saxony	GDI Lower Saxony			orange		Per resource
National	Climate Data Center Portal				green	Per resource	Lower Saxony	Lower Saxony Environmental Portal				green	Per resource
National	German Weather Service				green	Per resource	Lower Saxony	Statistical Office Lower Saxony	red	blue	orange		DL-DE->BY-2.0
National	Statistics portal	red		orange	green	DL-DE->BY-2.0	MR Northeast	Regional Monitoring Lower Saxony	red	blue	orange	green	Per resource
National	Zensus 2011	red				DL-DE->BY-2.0	MR Northwest	Regional Monitoring MR Northwest	red	blue	orange		DL-DE->BY-2.0
National	Open Data ÖPNV		blue			Per resource	NRW	GDI NRW			orange		Per resource

Left portion:

Level	Name	1	2	3	4	License
National	Data download page of the BBSR	red	blue	orange	green	DL-DE->BY-2.0
National	Germany Atlas interactive 2020	red	blue	orange	green	DL-DE->BY-2.0
National	Data compilation of GBE	red		orange		DL-DE->BY-2.0
National	Spatial monitoring indicators	red	orange	orange	green	Per resource
National	Regional Database Germany	red				DL-DE->BY-2.0
National	Federal Office for Radiation Protection				green	Per resource
National	Postal code areas		blue			ODbL
National	INSPIRE Germany	red	blue	orange	green	Per resource
National	Geofabrik GmbH		blue	orange	green	ODbL 1.0
National	Atlas of Accidents	red				DL-DE->BY-2.0
National	ZEFIR	red				Own regulations
National	Thünen Atlas	red	blue	orange	green	Per resource
National	Care Atlas Germany	red	blue			Per resource
National	CODE-DE			orange	green	Own license
National	Data-Portal BMBF	red				DL-DE->BY-2.0
National	Federal Agency for Nature Conservation				green	Per resource
National	wasser.de				green	Per resource
National	Federal Institute of Hydrology				green	Per resource
National	German Library Statistics	red				Own regulations
National	Police crime statistics	red				DL-DE->BY-2.0
National	ESRI Crime	red				DL-DE->BY-2.0
Portals of the federal states and metropolitan regions						
BA-WÜ	GDI Baden-Württemberg			orange		DL-DE->BY-2.0
BA-WÜ	Geoportal Spatial Planning			orange		Per resource
BA-WÜ	State Statistical Office	red	blue			DL-DE->BY-2.0
BA-WÜ	Data and map service of the LUBW				green	Per resource
BA-WÜ	Environmental portal BA-WÜ				green	Per resource
BA-WÜ	State Office for Geoinformation			orange		Per resource
BA-WÜ	GDI Baden-Württemberg			orange		Per resource
BA-WÜ	Ministry of Rural Areas	red	lightgreen	green		DL-DE->BY-2.0
BA-WÜ	KITopenData			lightgreen		Per resource

Right portion:

Region	Name	1	2	3	4	License
NRW	Open.NRW	red		orange	green	Per resource
NRW	NRW Local environmental data			orange	green	Per resource
NRW	OpenGeodata.NRW					Per resource
NRW	Open Data Portal	red	blue	orange	green	DL-DE->BY-2.0
NRW	Statistical Office NRW	red		orange		DL-DE->BY-2.0
NRW	GBE – Data portal at district level	red	blue	orange		Per resource
NRW	Ministry of School & Education	red				DL-DE->BY-2.0
Upper Rhine region	GeoRhena			orange		Per resource
East Württemberg	Regional Association			orange		Per resource
Stuttgart region	RegioRISS Stuttgart			orange	green	Per resource
RP	GDI Rhineland Palatinate			orange		Per resource
RP	Open Government Data Portal RP	red		orange	green	Per resource
RP	Statistical Office RP	red	blue	orange		DL-DE->BY-2.0
RP	Environmental portal RP				green	Per resource
Ruhr region	Regional Association Ruhr			orange		Per resource
Ruhr region	Open Data Portal Ruhr			orange		Per resource
Ruhr region	Geodata Portal	red		orange	green	Per resource
Saarland	GDI Saarland			orange		Per resource
Saarland	Statistical Office Saarland	red	blue	orange		DL-DE->BY-2.0
Saarland	Environmental portal Saarland				green	Per resource
Saarland	GDI Saarland			orange		Per resource
Saxony	GDI Saxony			orange		Per resource
Saxony	Open Data Saxony	red		orange	green	DL-DE->BY-2.0
Saxony	Statistical Office	red	blue	orange		DL-DE->BY-2.0
Saxony	Environmental portal Saxony				green	Per resource
Saxony	Open Geodata Saxony			orange		DL-DE->BY-2.0
Saxony-Anhalt	State geodesy Saxony-Anhalt			orange		DL-DE->BY-2.0
Saxony-Anhalt	Statistical Office	red	blue	orange		DL-DE->BY-2.0
Saxony-Anhalt	Environmental Information Network				green	Per resource
SHS	GDI SHS			orange		Per resource
SHS	Environmental Portal SHS				green	Per resource

Region	Portal	Social (red)	Access (blue)	Physical (orange)	Climate (green)	License
Bavaria	GDI Bavaria			■		Per resource
Bavaria	Open Data Bavaria	■		■	■	Per resource
Bavaria	Bavarian State Office for Statistics	■	■	■		DL-DE->BY-2.0
Bavaria	Environmental Information Systems Bavaria				■	Per resource
Berlin	GDI Berlin		■	■	■	Per resource
Berlin	Environmental Portal Berlin (ISU)				■	Per resource
Berlin	Crime Atlas Berlin	■				DL-DE->BY-2.0
Vogelsberg	Geoportal Vogelsbergkreis			■		Per resource
Rhine-Main	Geoportal of the regional association	■	■	■	■	Per resource

Region	Portal	Social (red)	Access (blue)	Physical (orange)	Climate (green)	License
SHS	Digital Atlas North			■		Per resource
SHS	Open Data Portal SHS	■		■	■	Per resource
Schwelm	Geodata portal Ennepe-Ruhr-Kreis			■		Per resource
South Hesse	GDI South Hesse			■		Per resource
Southwestphalia	GDI Southwestphalia			■		Per resource
Thuringia	GDI Thuringia			■		Per resource
Thuringia	Statistical Office	■	■	■		Per resource
Thuringia	Institute for Environment & Geology				■	Per resource
Thuringia	Environmental Portal Thuringia				■	Per resource

Color	Meaning
■ (red)	Open data on the social environment (social condition, sociodemographic and socioeconomic factors)
■ (blue)	Open (geo)data on availability, access, and accessibility of health-related resources
■ (orange)	Open (geo)data on the physical environment
■ (green)	Open subject/geo-data on climate and environment

[1]Only for the federal states of Brandenburg, Bremen, Hamburg, Mecklenburg-Western Pomerania, Saarland, Saxony, Saxony-Anhalt

BA-WÜ= Baden Württemberg, DWD = Deutscher Wetterdienst (German weather service), GDI = Geodateninfrastruktur (Spatial Data Infrastructure), MR = Metropolitan Region, MV = Mecklenburg-Western Pomerania, NRW = North Rhine-Westphalia, RP = Rhineland Palatinate, SHS = Schleswig-Holstein

Further information, including links to the resources mentioned, as well as an overview of small-scale portals (city level) can be found in the web visualization that accompanies the publication: „Open Data for Health Map", https://sciencemap.github.io/Open-Data-for-Health.