



Presented at the FIG Working Week 2023,
28 May - 1 June 2023 in Orlando, Florida, USA

FIG WORKING WEEK 2023

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Protecting
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Conquering
New Frontiers

To which extent is vitality (of rural regions) a geospatial variable? (conceptualizing vitality measurement methodology)

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Notions of (rural) vitality as boundary concept

- manifestation of an economic transition
- development of new social capital
- artefact of social migration and depopulation
- Indicator of social happiness and sustainability



Measuring rural vitality

- rural vitality is considered a **practical outcome** of human interactions within social, economic, infrastructure, environment and institutional dimensions
- measuring the construct rural vitality is by nature multi-dimensional
- understanding its values for policy is therefore also complex and contextual
- A methodology to measure needs to rely on multiple sources (possibly weighted)



Testing rural vitality

Obermichelbach – Tuchenbach

- Rurality index: -0,39 → intermediary
- 1397 Inhabitants 2020
- Centrally located, growing, not in Munich metropolitan area
- According to Kegler not resilient

Bayerisch Eisenstein

- Rurality index : 1,19 → rural
- 998 Inhabitants 2020
- Remote and shrinking
- According to Kegler not resilient



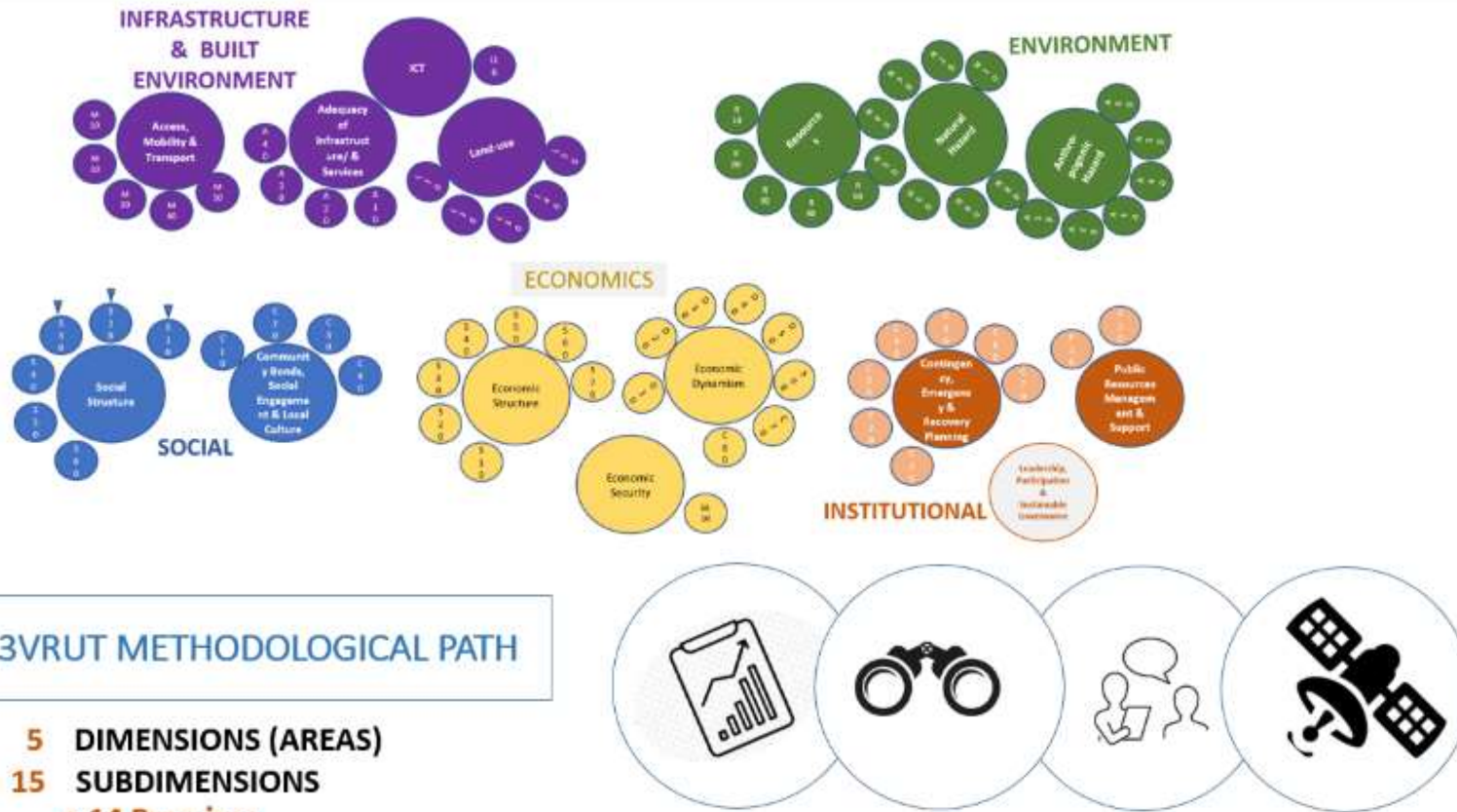
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Dimensions of vitality



3VRUT METHODOLOGICAL PATH

- 5** DIMENSIONS (AREAS)
- 15** SUBDIMENSIONS
 - **14 Premium**
- 69** PREMIUM INDICATORS



Documented statistical data

Data on vitality

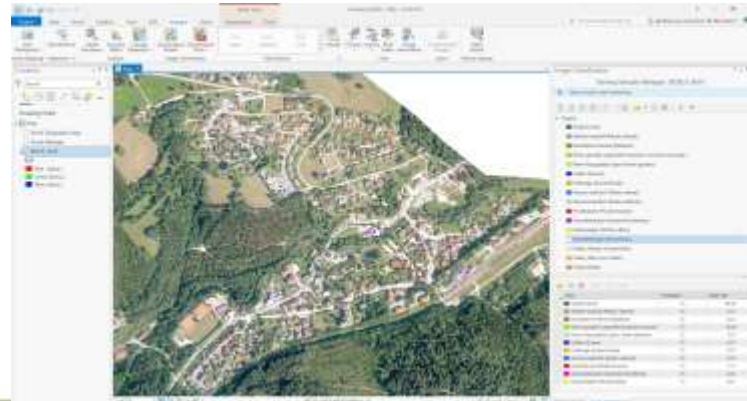
Direct observations



www.statistik.bayern.de



Geospatial / remote sensing data



6



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Calculation of overall vitality

$$\text{Indicator} = \frac{0,5 * x_{\text{Observation}} + x_{\text{Data from municipality}} + x_{\text{survey}} + x_{\text{Geostat}} + x_{\text{RS}} + x_{\text{time series}}}{x_{\text{number of available sources}}}$$

- Example streets quality in Tuchenbach:

$$\text{Streets} = \frac{0,5 * 2 + 2 + 2 + 1 + 1}{5} = 1,4$$



Vitality results



Bayerisch Eisenstein



Tuchenbach



Comparison Index ALL & RS



	Bayerisch Eisenstein	Tuchenbach	mögliche maximal Punktzahl
Vitalität	38,7	30,6	45
Vulnerabilität	21,4	22,4	32,5
Vielfältigkeit	57	14,7	22,5
Summe Punkte ALL	57,1	57,7	100

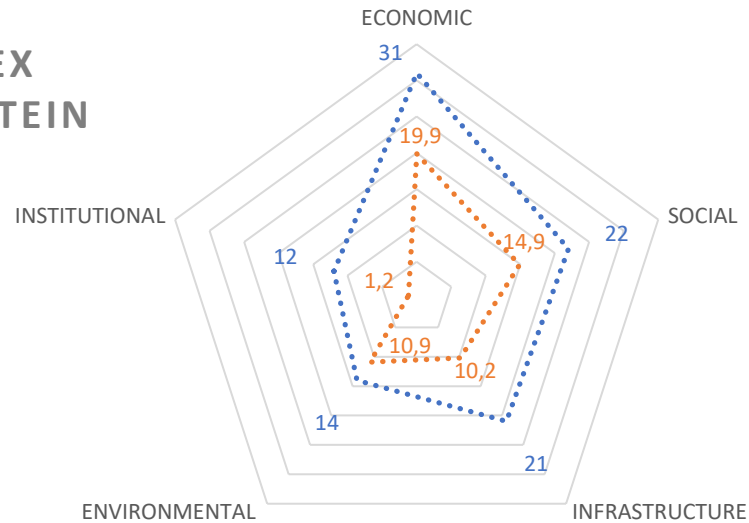


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IndexALL Bayerisch Eisenstein

VERTEILUNG
RESILIENZ- INDEX
BAYERISCH EISENSTEIN



	sehr gut	gut	mittelmäßig	schlecht	sehr schlecht
ECONOMIC	>24	24 bis 18	18 bis 12	12 bis 6	<6
SOCIAL	>17	17 bis 13	13 bis 9	9 bis 5	<5
INFRASTRUCTURE	> 18	18 bis 14	14 bis 10	10 bis 6	<6
ENVIRONMENTAL	> 12	12 bis 9	9 bis 6	6 bis 3	<3
INSTITUTIONAL	> 10	10 bis 8	8 bis 6	6 bis 4	<4

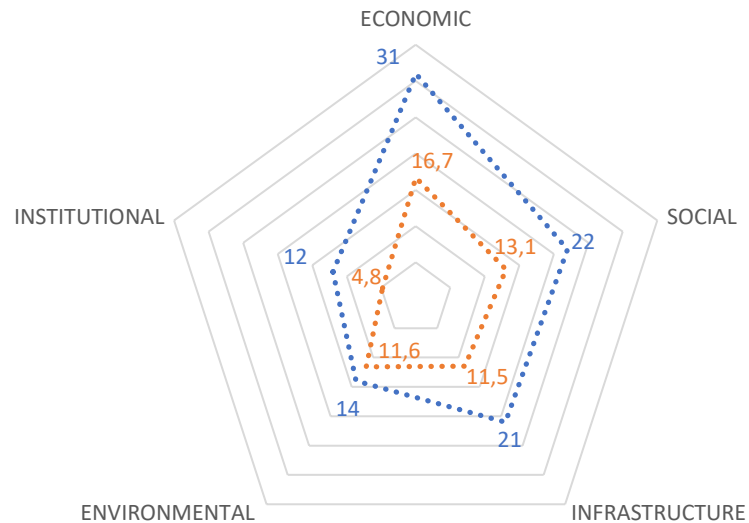
..... maximal mögliche Punktzahl je Indikatorgruppe
 erreichte Punktzahl je Indikatorgruppe



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IndexALL Tuchenbach



	sehr gut	gut	mittelmäßig	schlecht	sehr schlecht
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Resilienz- Index_{ALL}



	Bayerisch Eisenstein	Tuchenbach	maximum possible
Vitality	18,7	20,6	45
Vulnerability	21,4	22,4	32,5
Versatility	17	14,7	22,5
Sum ALL Points	57,1	57,7	100
Vitality	4	5	10
Vulnerability	2,5	3	5
Versatility	8,5	7	11
Sum ALL Points RS	15	15	26



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Is vitality a spatial variable?

- Most of the results in two different locations yield similar vitality values, suggesting that it may not be a **spatial** variable, or the **scale of the cases** is too small to yield significant / representative values
- Were perhaps the cases wrongly chosen to yield a representative result?
- Still, it is important to rely on multiple indicators which make these hidden connections and cause-effect relations also visible because they are crucial for policy-making and spatial (usually land) interventions and allocations
- Perhaps a major dimension of rural vitality lies not in the vitality of space per se, but in the ability of specific influential actors to mobilize resources (financial, human and spatial), allowing certain geographical positions to prosper



Notions of rural vitality

-> the variation of rural vitality is not necessarily socially or spatially discrete, but rather fuzzy, overlapping, fluid, and dynamic in both time and space

-> impact for designing an integrated methodology (relying on both RS and statistics) : weighting sources of (socio-spatial) measurements may be useful to generate final assessment



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Vitality

- Thank you



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