Interreg CENTRAL EUROPE

Co-funded by the European Union

NUTSHELL@CE

Data visualization for participatory planning: PTSQC as an example

Policy-making training course
TU Wien | 12 February 2025

Tadej Brezina & Leo Kostka
TU Wien

WHAT WILL YOU LEARN IN THIS SESSION?

What the PTSQC concept looks like adapted for your Pilot Action region.

Quantitative analysis of PTSQC & population.

Quantitative analysis of PTSQC & workplaces.

Quantitative analysis of PTSQC & schools.

Perspectives on improvement and adaptation of PTSQC.

Do you know/recognize your Pilot Action region?

A small quiz … ☺

PTSQC IN YOUR PILOT ACTION REGION? 1

Slovenia

¤	Highest ranked transport means of the transport station¤			
Average course interval [min]¤	EC, IC, MV¤	Regional trains, Express buses¤	N/A¤	Other buses¤
<10¤	I.¤	I.¤	¤	III.¤
10 - 20¤	I.¤	II.¤	¤	III.¤
20- 30¤	II.¤	III.¤	¤	IV.¤
30 - 60¤	III.¤	IV.¤	¤	V.¤
60 - 120¤	IV.¤	V.¤	¤	VI.¤
120 - 180¤	V.¤	VI.¤	¤	VII.¤
180 - 240¤	¤	VI.¤	¤	VIII.¤
240 <¤	¤	¤	¤	¤

PTSQC IN YOUR PILOT ACTION REGION? 2

Crawinkel (Gotha-Gräfenroda)

¤	Highest ranked transport means of the transport station¤			
Average course interval [min]¤	ICE, IC and regional trains¤	N/A¤	Tramway¤	Buses¤
< 15¤	I.¤	¤	II.¤	III.¤
15 - 30¤	I.¤	¤	III.¤	III.¤
30 -60¤	II.¤	¤	IV.¤	IV.¤
60 - 90¤	III.¤	¤	V.¤	V.¤
90 - 120¤	IV.¤	¤	VI.¤	VI.¤
120 - 180¤	V.¤	¤	VII.¤	VII.¤
180 - 240¤	¤	¤	VIII.¤	VIII.¤
240 <¤	¤	¤	¤	¤

PTSQC IN YOUR PILOT ACTION REGION? 3

Ostrava - Moravian Silesia

¤	Highest ranked transport means of the transport station¤			
Average course interval [min]¤	Supercity, IC, Express, Rychlik, REX¤	Regional trains, Express buses¤	Trams, regional and city buses (Mestska doprava)¤	Other buses¤
<10¤	I.¤	I.¤	II.¤	III.¤
10 - 20¤	I.¤	II.¤	III.¤	III.¤
20- 30¤	II.¤	III.¤	IV.¤	IV.¤
30 - 60¤	III.¤	IV.¤	V.¤	V.¤
60 - 120¤	IV.¤	V.¤	VI.¤	VI.¤
120 - 180¤	V.¤	VI.¤	VII.¤	VII.¤
180 - 240¤	¤	VII.¤	VIII.¤	VIII.¤
240 <¤	¤	¤	¤	¤

PTSQC IN YOUR PILOT ACTION REGION? 4

Rzeszów

¤	Highest ranked transport means of the transport station¤			
Average course interval [min]¤	IC, EX, RE, EIP, EIC¤	Regional trains¤	Express and IC buses, local trains¤	Other buses including city buses¤
<10¤	I.¤	I.¤	II.¤	III.¤
10 - 20¤	I.¤	II.¤	III.¤	III.¤
20- 30¤	II.¤	III.¤	IV.¤	IV.¤
30 - 60¤	III.¤	IV.¤	V.¤	V.¤
60 - 120¤	IV.¤	V.¤	VI.¤	VI.¤
120 - 180¤	V.¤	VI.¤	VII.¤	VII.¤
180 - 240¤	¤	VII.¤	VIII.¤	VIII.¤
240 <¤	¤	¤	¤	¤

PTSQC IN YOUR PILOT ACTION REGION? 5

Bratislava

¤	Highest ranked transport means of the transport station¤			
Average course interval [min]¤	EC, IC, Regiojet, Rychlik, REX¤	Regional trains, Express buses, IC buses¤	Trams and urban buses (Mestská doprava)¤	Other buses¤
<10¤	I.¤	I.¤	II.¤	III.¤
10 - 20¤	I.¤	II.¤	III.¤	III.¤
20- 30¤	II.¤	III.¤	IV.¤	IV.¤
30 - 60¤	III.¤	IV.¤	V.¤	V.¤
60 - 120¤	IV.¤	V.¤	VI.¤	VI.¤
120 - 180¤	V.¤	VI.¤	VII.¤	VII.¤
180 - 240¤	¤	VII.¤	VIII.¤	VIII.¤
240 <¤	¤	¤	¤	¤

PTSQC IN YOUR PILOT ACTION REGION? 6

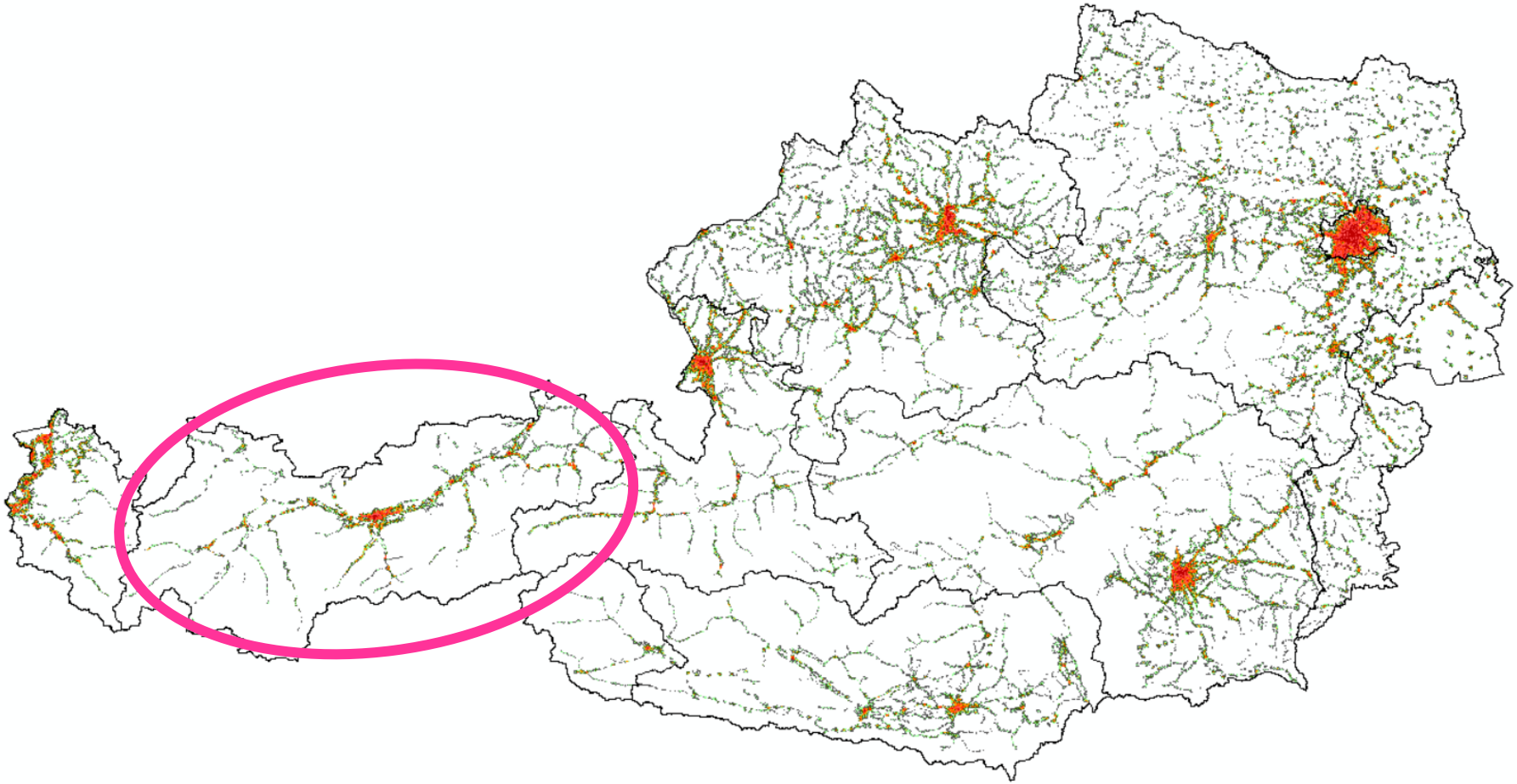
Valle del Savio

¤	Highest ranked transport means of the transport station¤			
Average course interval [min]¤	+ Frecce IC and regional trains¤	N/A¤	N/A¤	Buses¤
< 15¤	I.¤	¤	¤	III.¤
15 - 30¤	I.¤	¤	¤	III.¤
30 -60¤	II.¤	¤	¤	IV.¤
60 - 90¤	III.¤	¤	¤	V.¤
90 - 120¤	IV.¤	¤	¤	VI.¤
120 - 180¤	V.¤	¤	¤	VII.¤
180 - 240¤	¤	¤	¤	VIII.¤
240 <¤	¤	¤	¤	¤

Quantitative analysis using PTSQC

Some examples from
recent TUW FVV work

EXAMPLE REGION TYROL



PROVINCE OF TYROL: HEATMAP OF STOP SHARES

Anteil Hst. WTS [%] (n=3.348)		Verkehrsmittelkategorie			
		Fernverkehr, REX	S-Bahn / U-Bahn, Regionalbahn, Schnellbus, Lokalbahn	Straßenbahn, Metrobus, O-Bus	Bus
Intervallklasse	< 5 min	0,15	0,21	0,60	0,36
	5 <= x <= 10 min	0,21	0,15	0,48	2,00
	10 < x < 20 min	0,36	0,33	0,18	6,30
	20 <= x < 40 min	0,36	1,28	0,03	13,92
	40 <= x <= 60 min	0,30	0,51	0,15	17,03
	60 < x <= 120 min	0,00	0,30	0,12	26,02
	120 < x <= 210 min	0,00		00	10,19
	> 210 min	0,00		,00	7,53
	0*	0,03	0,00	0,00	10,87

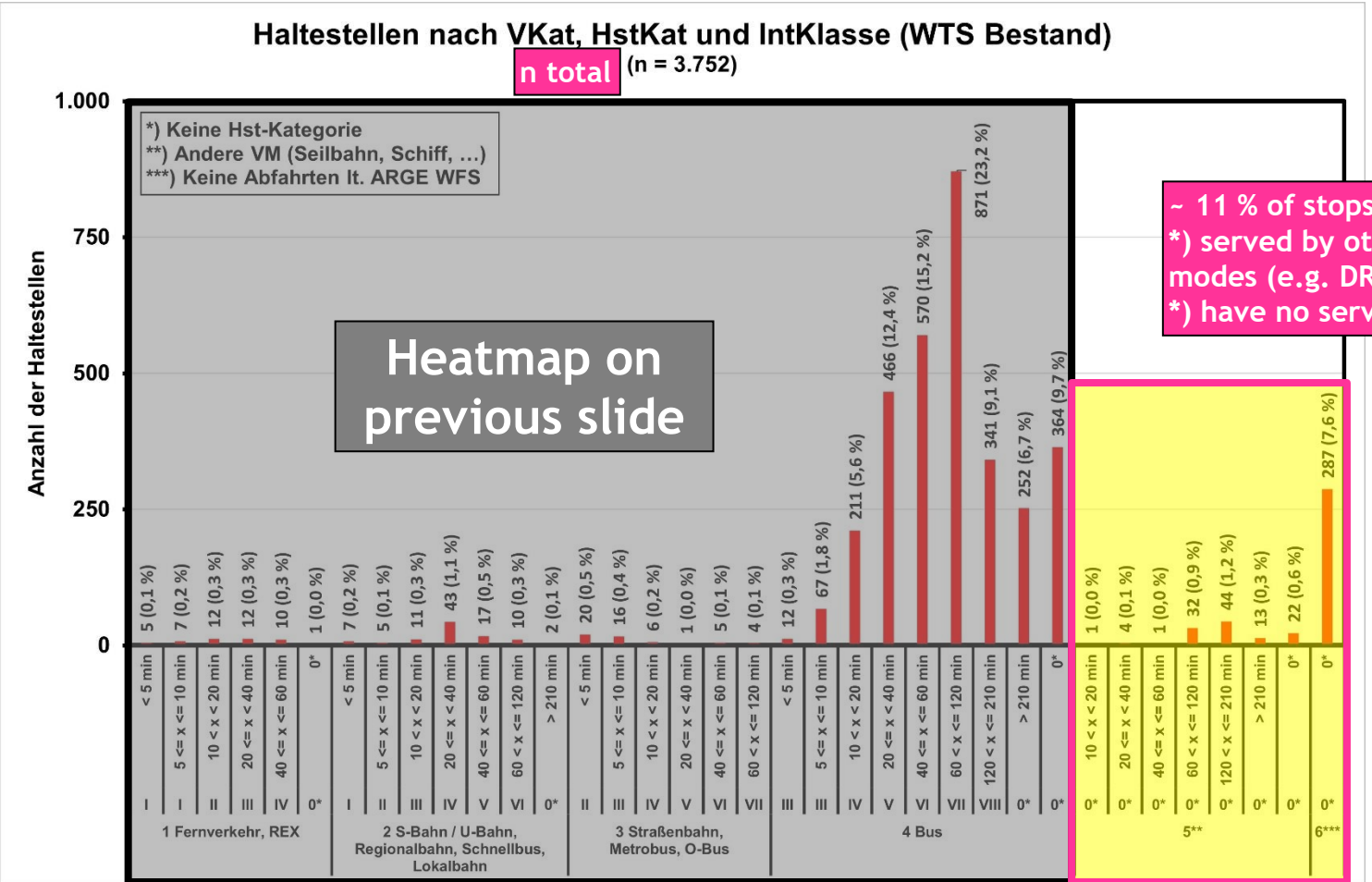
n total*

5 stops

871 stops

~ 11 % of stops have no sufficient services

PROVINCE OF TYROL: FREQUENCY OF STOPS

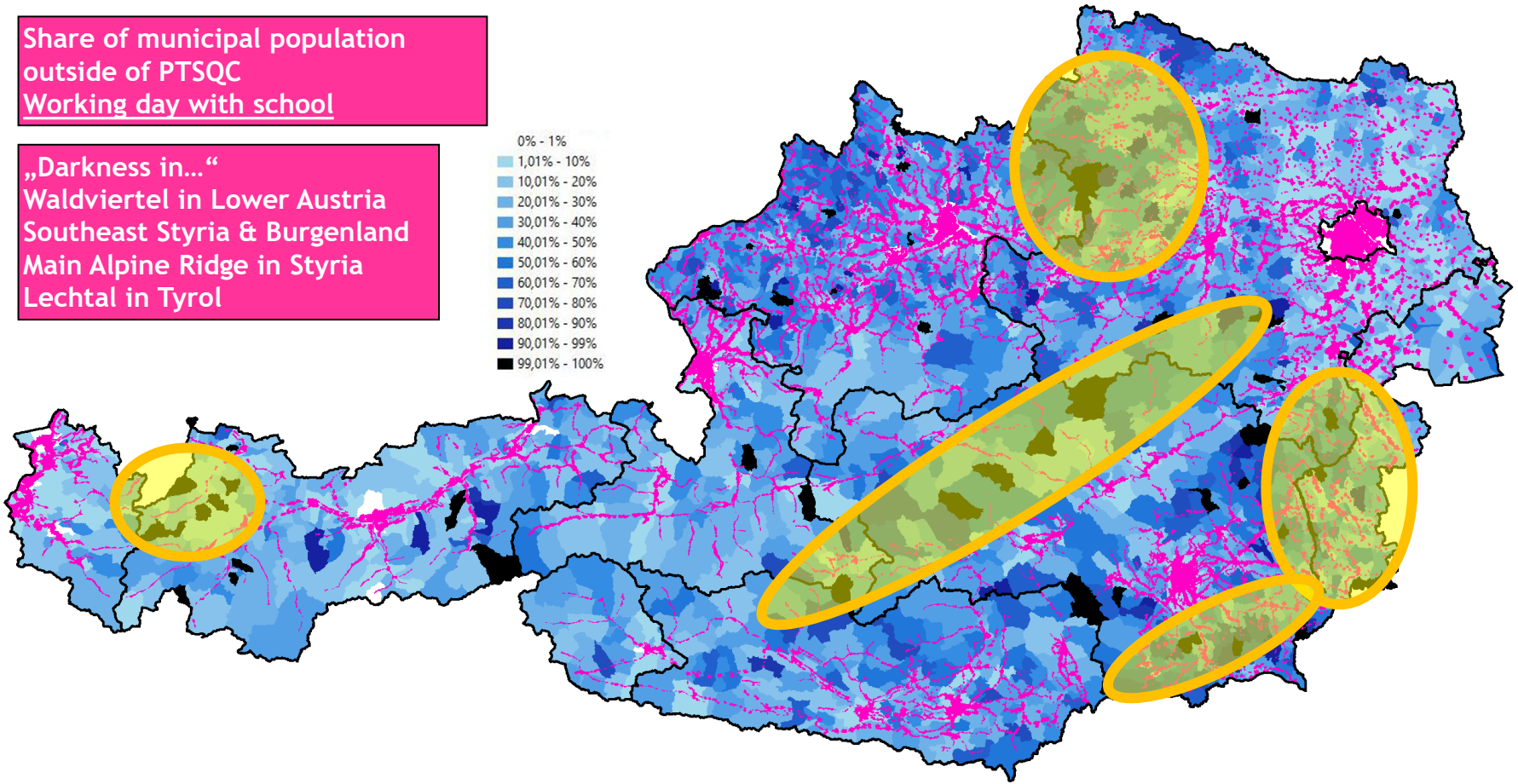


~ 11 % of stops are
*) served by other transport modes (e.g. DRT only) or
*) have no services at all

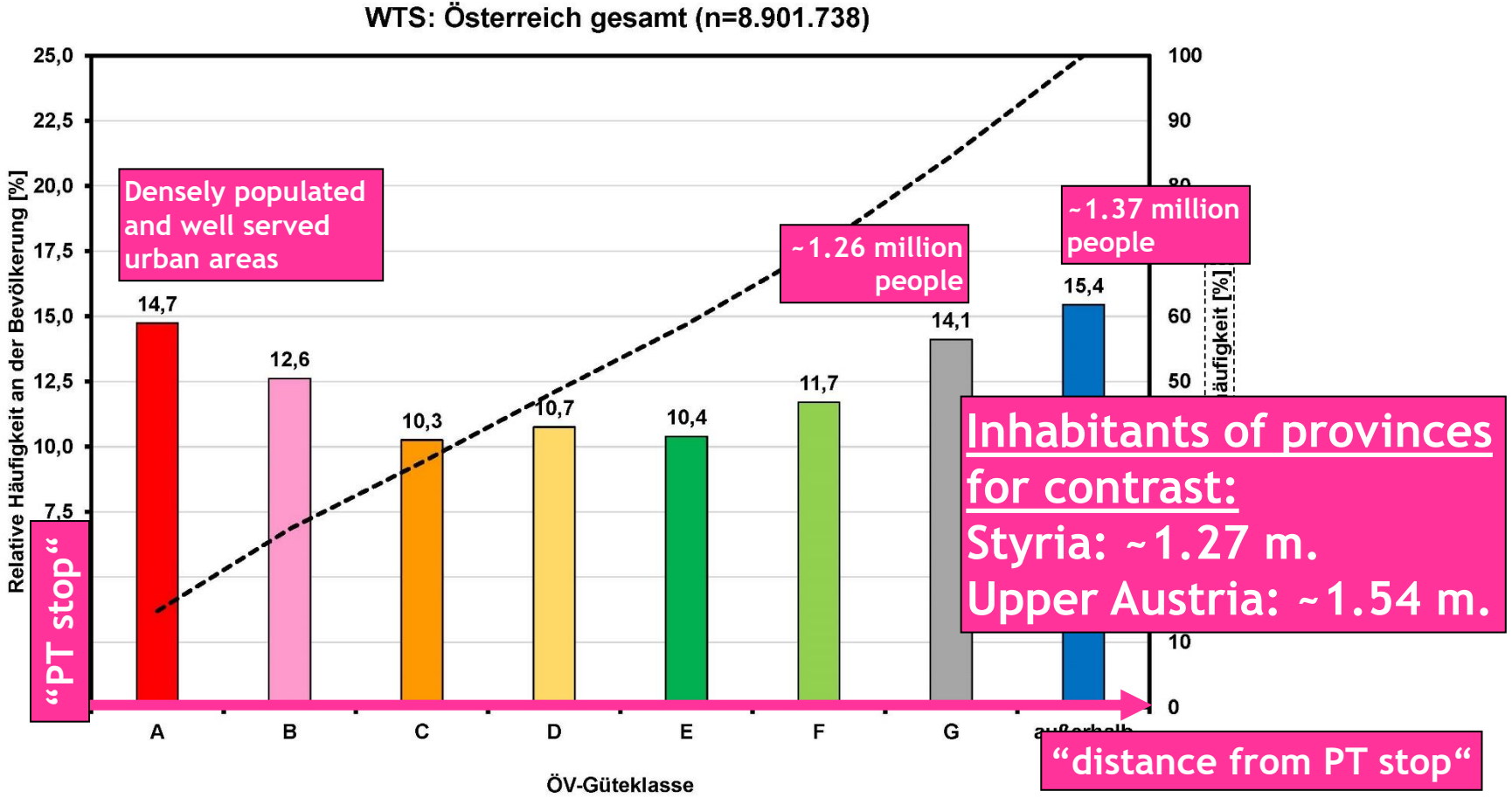
MUNICIPALITIES: POPULATION OUTSIDE OF PTSQC

Share of municipal population outside of PTSQC
Working day with school

„Darkness in…“
Waldviertel in Lower Austria
Southeast Styria & Burgenland
Main Alpine Ridge in Styria
Lechtal in Tyrol

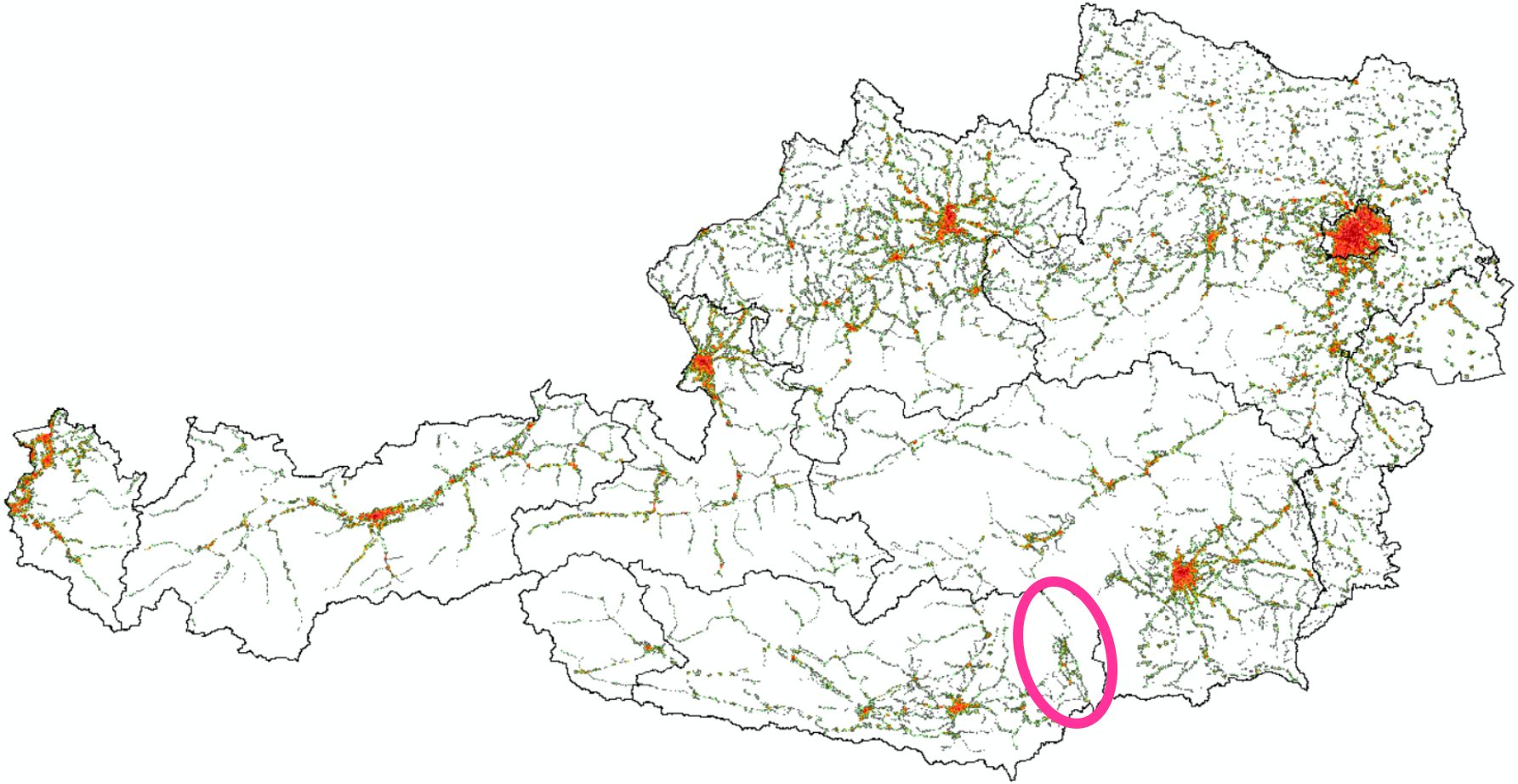


AUSTRIA: POPULATION DISTRIBUTION BY PTSQC



Inhabitants of provinces for contrast:
Styria: ~1.27 m.
Upper Austria: ~1.54 m.

EXAMPLE REGION LAVANTTAL



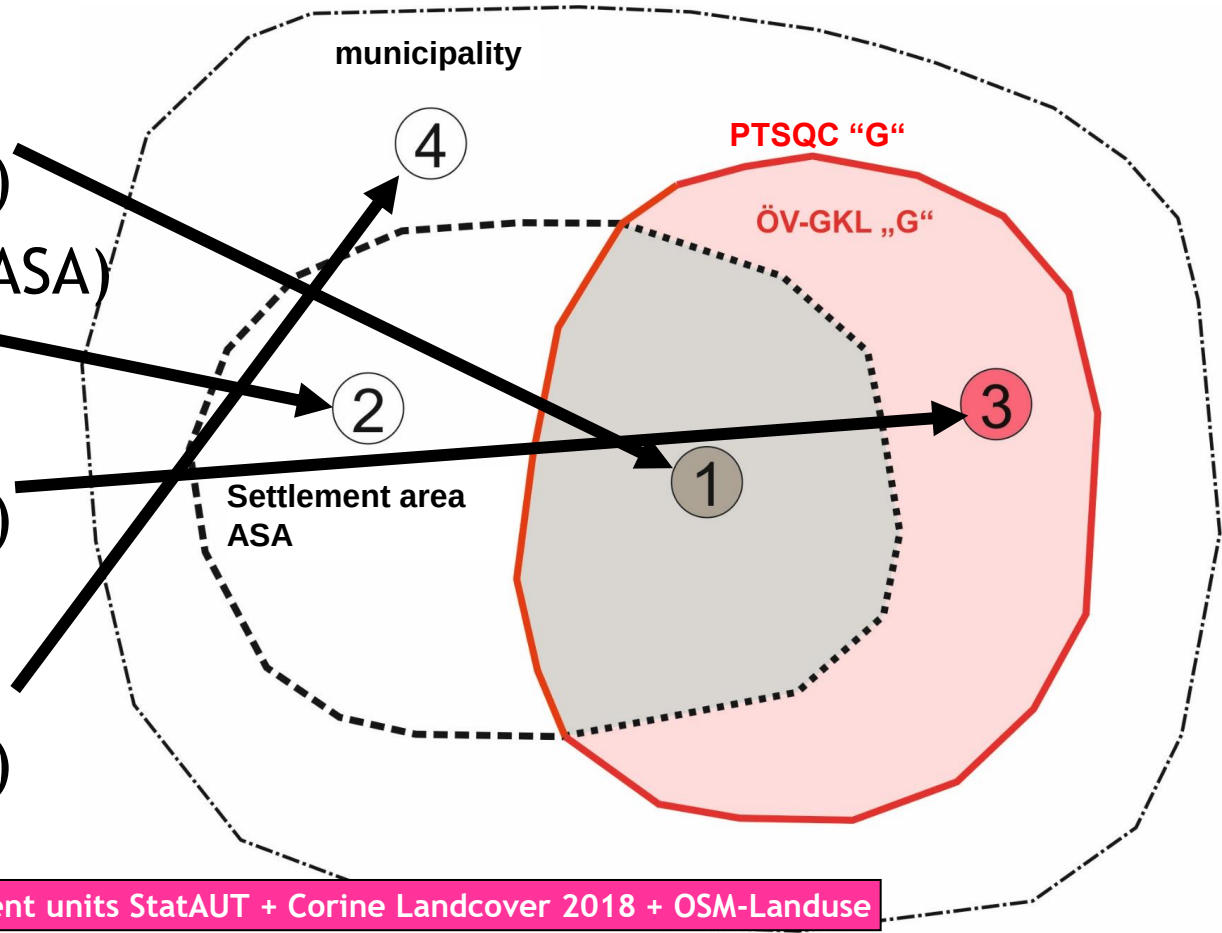
PTSQC & SETTLEMENT STRUCTURE

(1) PTSQC within Settlement area (ASA)

(2) Settlement area (ASA) outside of PTSQC

(3) PTSQC outside of Settlement area (ASA)

(4) Municipal area outside of PTSQC and Settlement area (ASA)

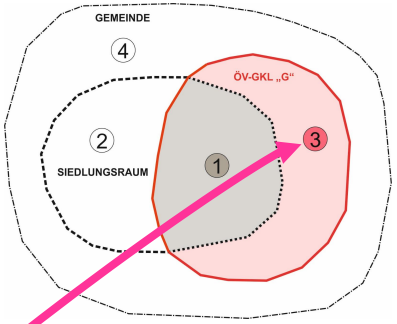


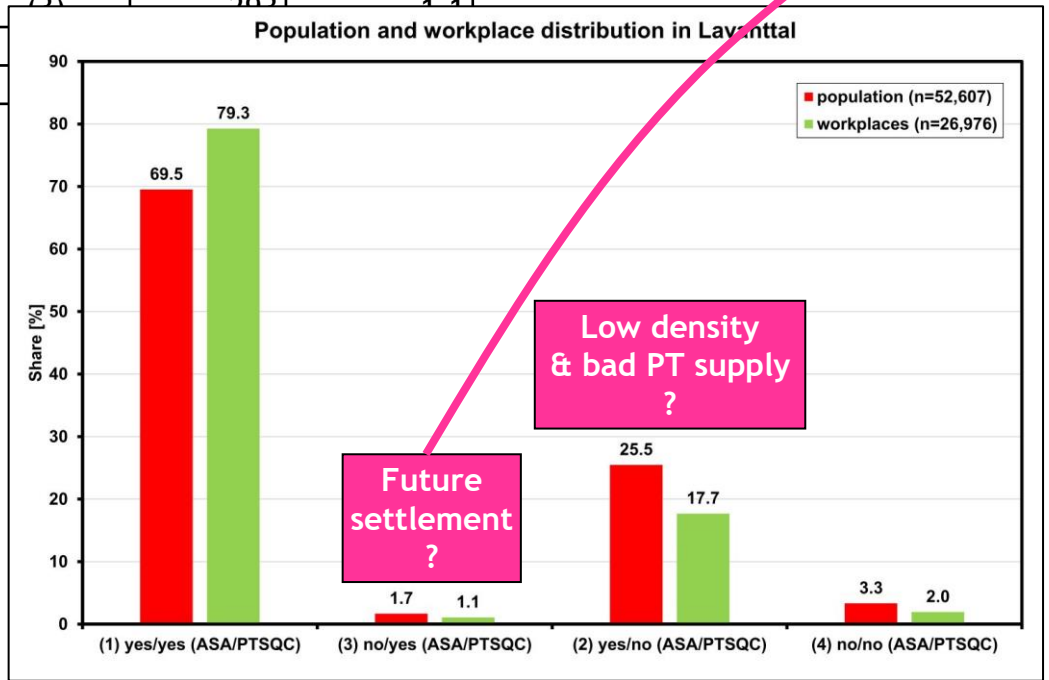
Adapted Settlement Area (ASA) = Settlement units StatAUT + Corine Landcover 2018 + OSM-Landuse

EXAMPLE REGION LAVANTTAL

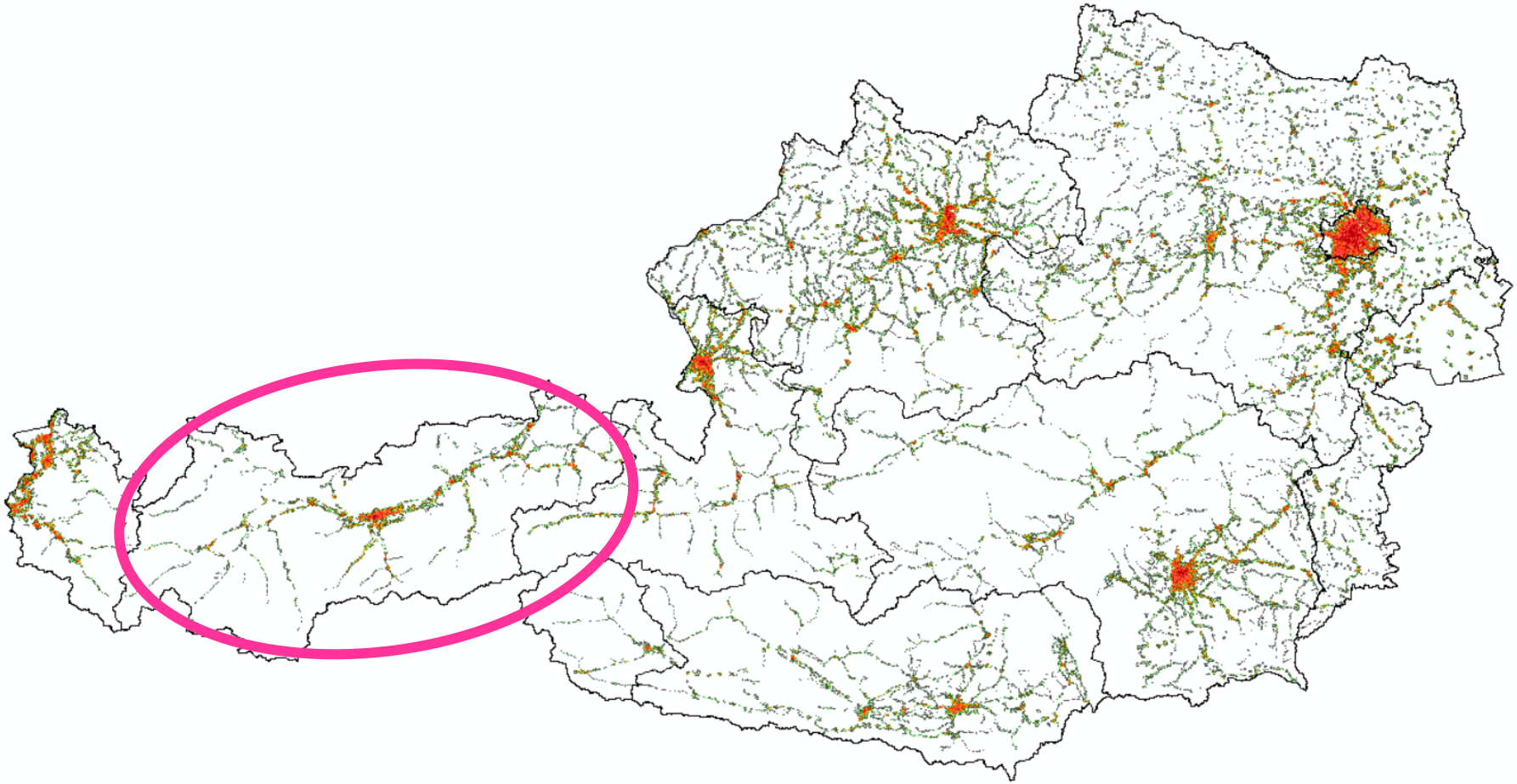
Dataset	in ASA	in PTSQC	Scheme	People	Share [%]
population (n=52,607)	yes	yes	(1)	36,567	69.5
	no	yes	(3)	886	1.7
	yes	no			25.5
	no	no	(4)	1,753	3.3
workplaces (n=26,976)	yes	yes	(1)	21,383	79.3
	no	yes			
	yes	no			
	no	no			

+ 9.8 percentage points

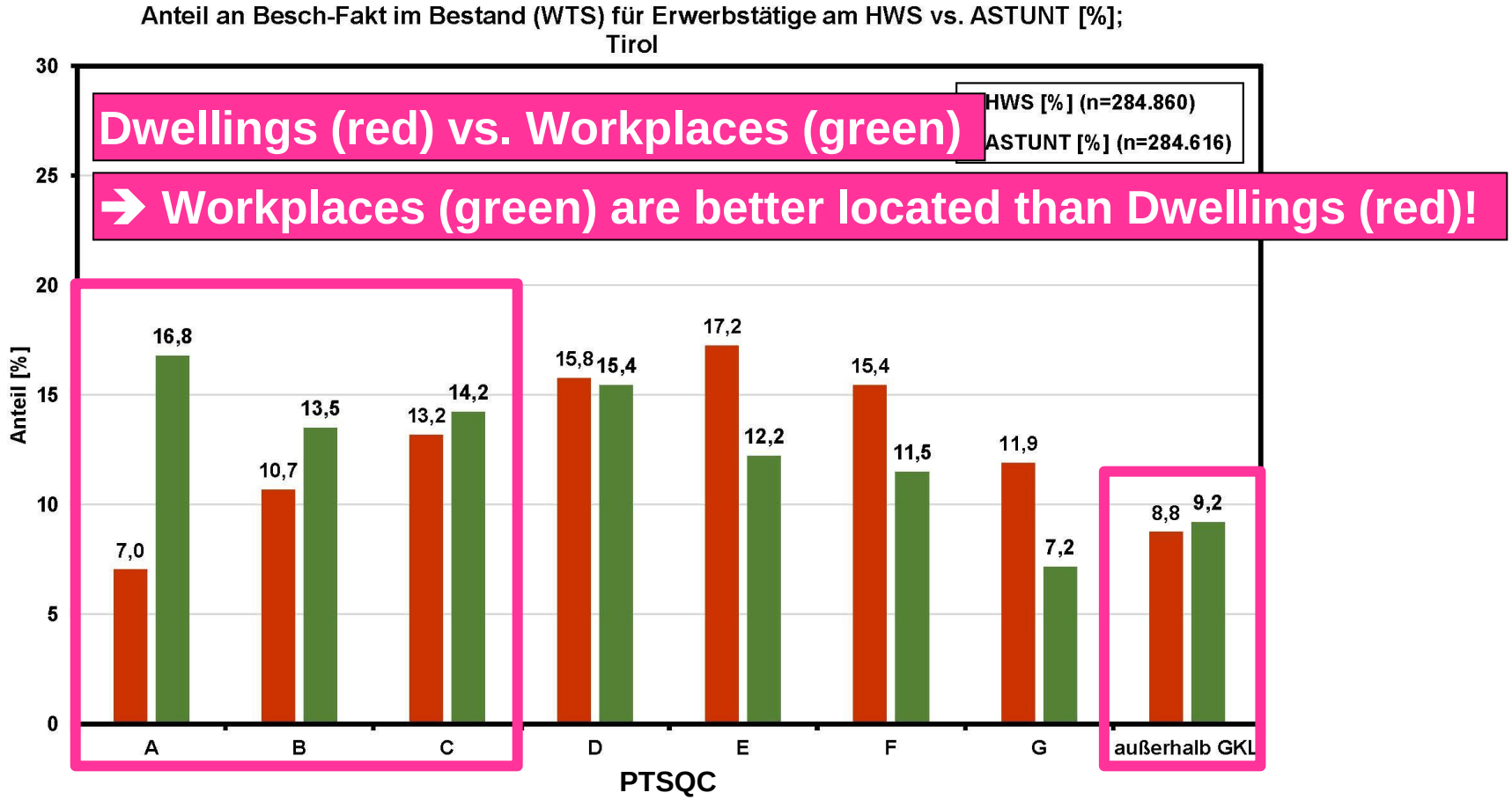




EXAMPLE REGION TYROL



TYROL PROVINCE: DWELLINGS VS. WORKPLACES

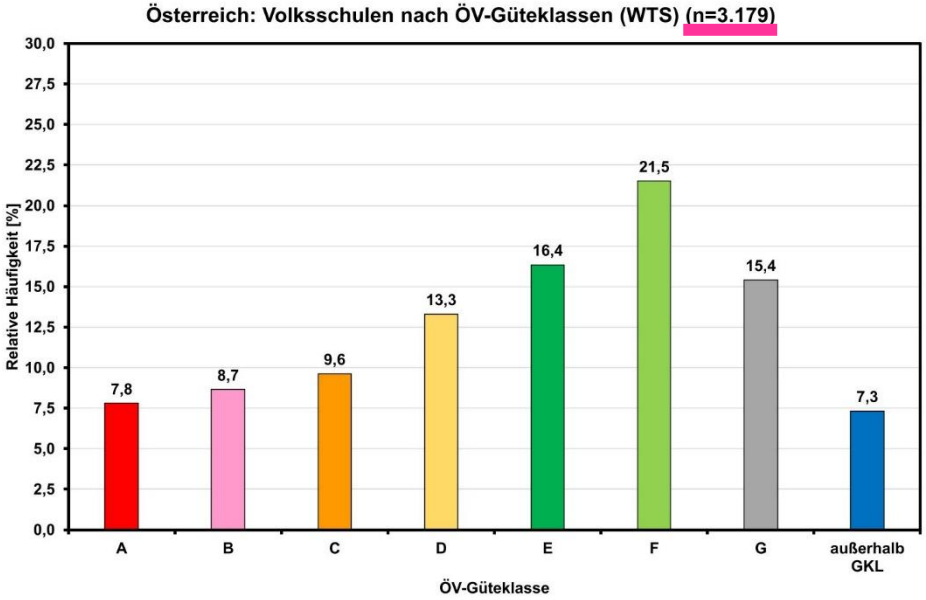


Dwellings (red) vs. Workplaces (green)

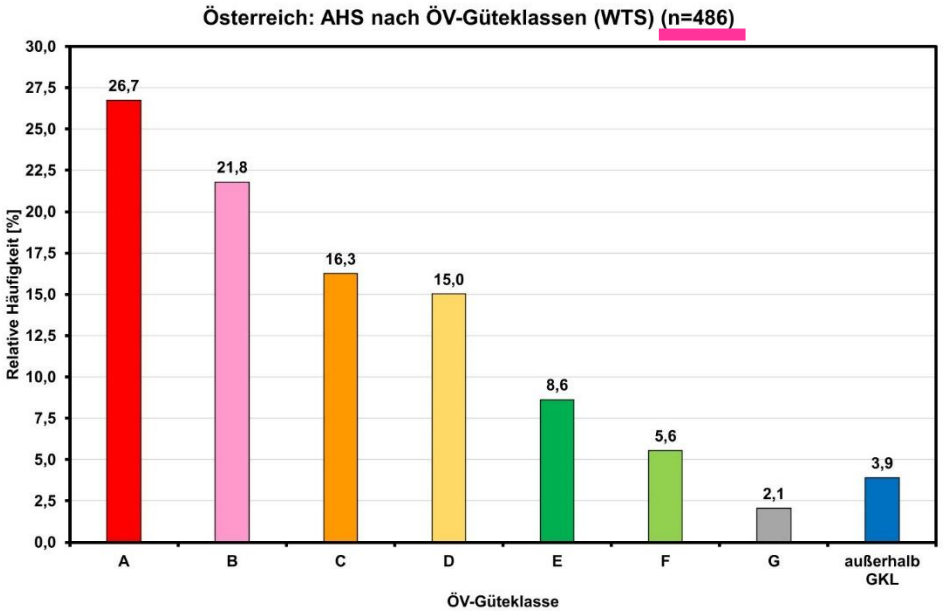
➔ Workplaces (green) are better located than Dwellings (red)!

AUSTRIA: LOCATION OF SCHOOLS

Elementary schools (6-10)



High schools (Gymnasium) (11-18)



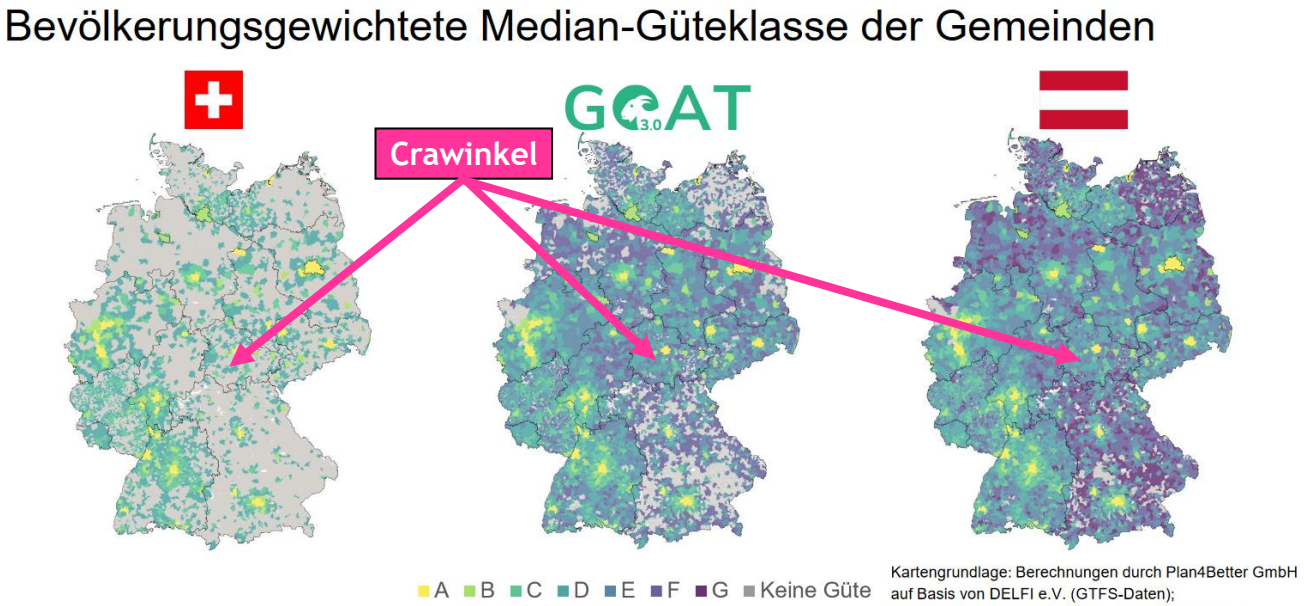
When disagreggated to district or municipality:
useful for monitoring of site selection and PT supply

Adaptation of PTSQC: GOAT Germany

TU Munich

ADAPTATION OF PTSQC FOR GERMANY: “GOAT“

- Mixture of criteria from AT and CH
- CH criteria: almost 30 % of pop. outside of PTSQC.
  AUT criteria: only 3 % of pop. outside of PTSQC.



Source. TUM/Plan4Better; S. Seisenberger, Elias Pajares

Adaptation of PTSQC: Bike&Ride Austria

AustriaTech for
Klimaschutzministerium

ADAPTATION OF PTSQC: BIKE&RIDE

NUTSHELL@CE submission …

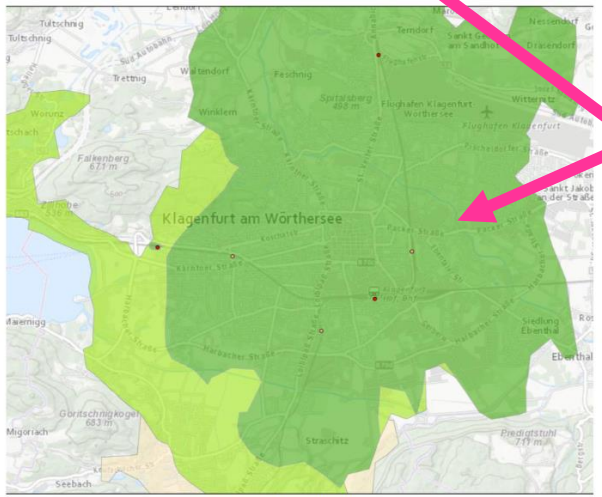
"The existing Swiss and Austrian PTSQC model, which only considers walking access to public transport stops/stations and frequency of different public transport service categories at stops, **will be adapted (1) to cover bicycles and e-bikes/e-scooters** as access mode …" *(Activity 1.2, p.81)*

*But **AustriaTech** (with alittle help from TUW FVV) has been faster …*

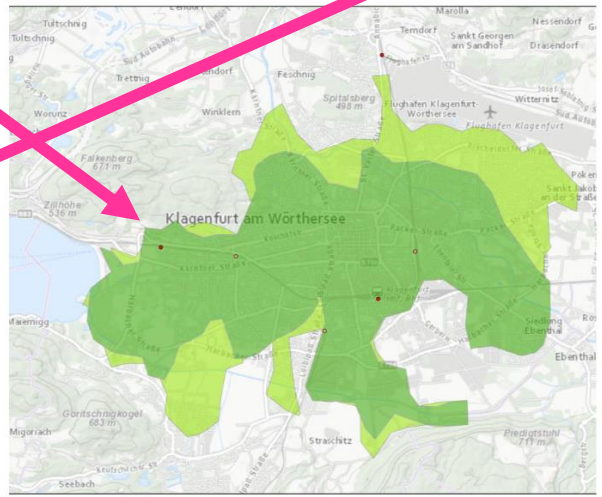
ADAPTATION OF PTSQC: BIKE&RIDE AUSTRIA

- Adaptation of existing, walking-based PTSQC for B&R in 2023
- Calculation of bicycle-routing, 15 min. riding time for bikes & e-bikes (pedelecs) on “basic cycling network“
- “safe cycling network“ (defined by TUW FVV)

Contrast to PTSQC: 2 distance classes only!



Basis Radverkehrsnetz



Sicheres Radverkehrsnetz

Haltestellenkategorie gemäß ÖV-Güteklassen	Distanz zur Haltestelle	
	2,5 km (Fahrrad)	3,6 km (E-Bike)
I	A	A
II	B	B
III	C	C
IV	D	D
V	E	E
VI	F	F
VII	G	G
VIII	H	H

Source. AustriaTech

PTSQC Austria:
Further applications

PTSQC & SETTLEMENT DEVELOPMENT IN VIENNA REGION

Verracon consultancy for „Planungsgemeinschaft Ost“ (Planning body for Vienna, Lower austria and Burgenland provinces)

100 m raster cells

Intersection of PTSQC with population & employees, social infrastructure, touristic points of interest, zoning classes and settlement cores

Invention: **PTSQC PLUS**

→ last arrival at “corresponding“ PT stop gives PTSQC extra information

→ e.g. PTSQC with last arrival at 1923h “C“ → “C_{19}“

PTSQC IN AUSTRIA: FURTHER APPLICATIONS

Provinces of Burgenland, Upper Austria: Check suitability for settlement zones

Province of Styria: Changes to PT services; Monitoring the expansion of PT services

City of Vienna: Assessment of zoning plans

City of St. Pölten: Zones for parking regulations

Federal Ministry for Climate Action: Funding criterion for micro-public transport

City of Graz: Evaluation of locations for multimodal mobility hubs

End of session 2

Session 3 …

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NUTSHELL@CE

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TU Wien

https://www.tuwien.at/

tadej.brezina@tuwien.ac.at
leo.kostka@tuwien.ac.at

0043-1-58801-23127
0043-1-58801-23131

facebook.com/FVV.TUW/

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