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FWF Der Wissenschaftsfonds.

Project N° I3148-G27

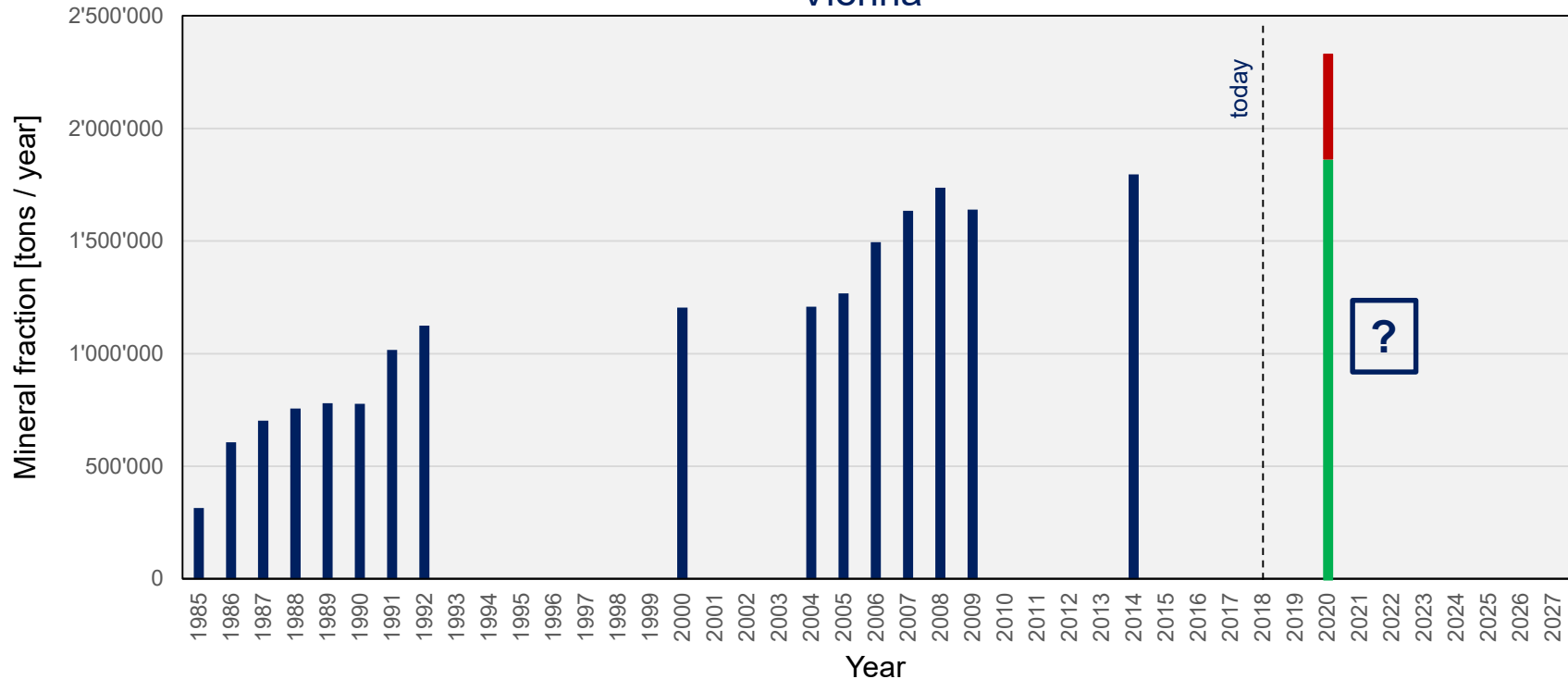
The Viennese building stock 1920 to 2018

Ulrich KRAL & Ferdinand REIMER

Workshop “Towards a knowledge base for material reserves and resources in buildings & infrastructures”
29-30 October 2018, Odense, Denmark.

EU recycling target for C&D waste 70% by 2020

C&D waste generation Vienna



Data sources

MA22 (2016). Abfallmengen nach Wiener Erzeuger 2004 bis 2009.

MA22 (2016). Abfallmengen nach Wiener Erzeuger 2009. Wien.

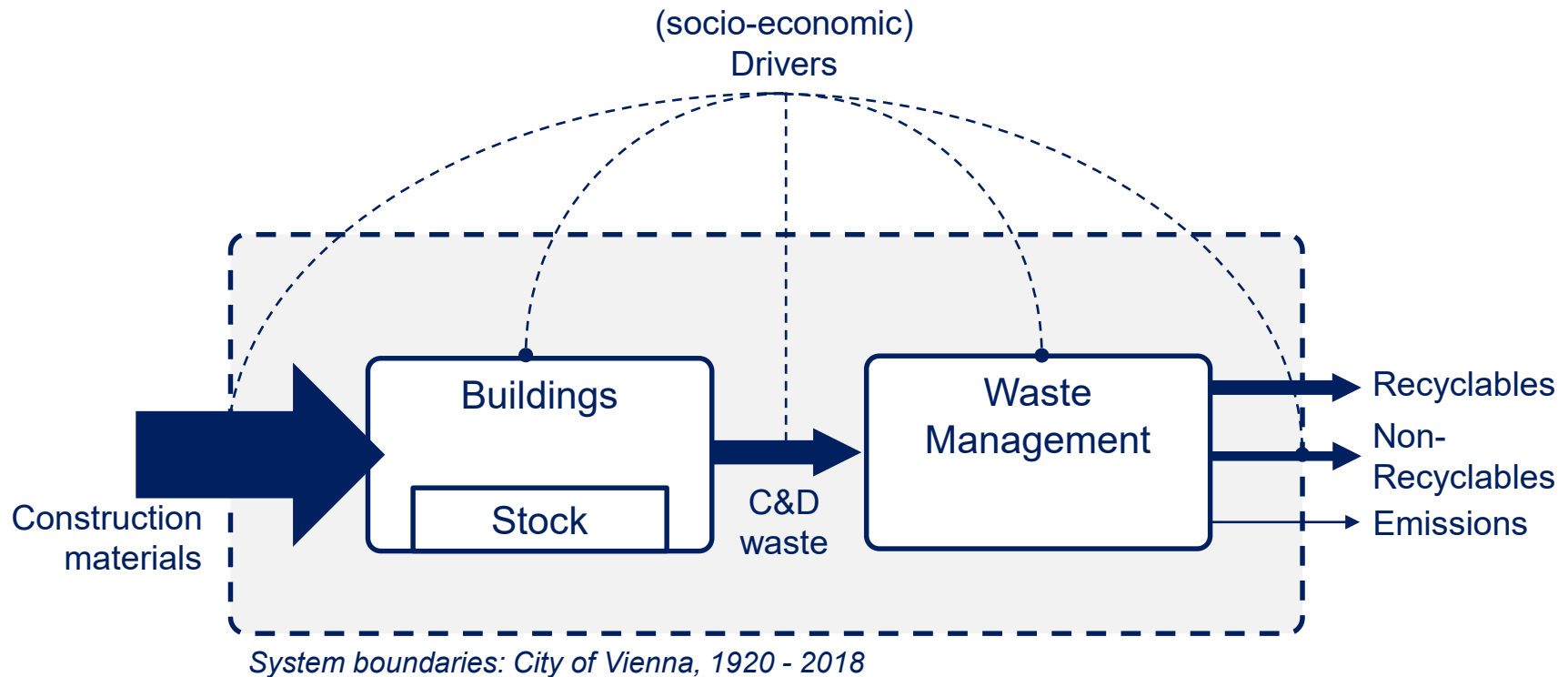
MA22 (2011). Abfallstatistik Wien 2008. K. Kellner. Wien.

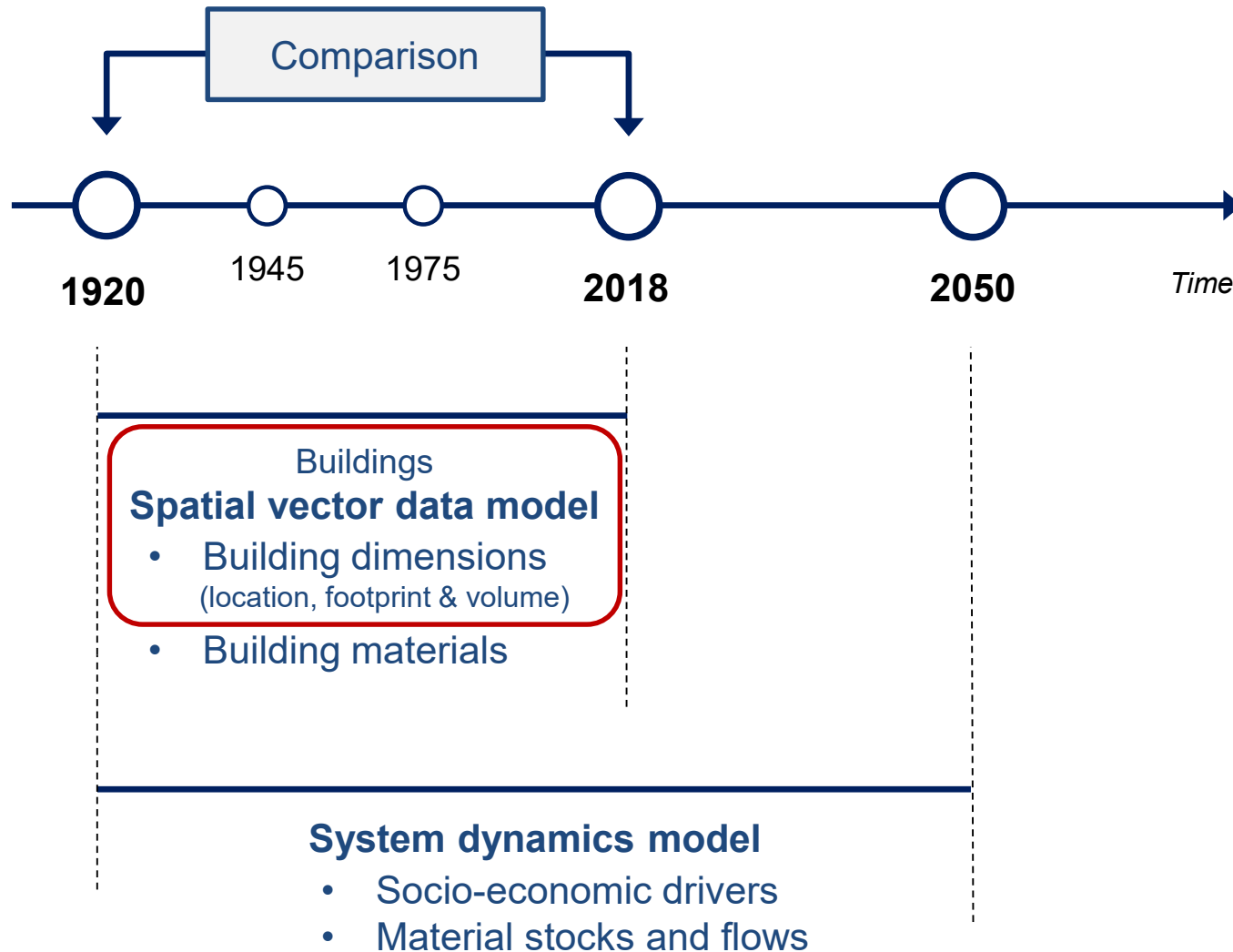
UBA (2016). Abfallanfall in Wien für das Jahr 2014 nach Schlüsselnummer (ohne kommunale Abfälle). Wien.

Ableidinger, M., K. Arbter, W. Hauer, S. Sciri and U. Volk (2007). Wiener Abfallwirtschaftskonzept 2007: Ist-Zustand der Wiener Abfallwirtschaft.

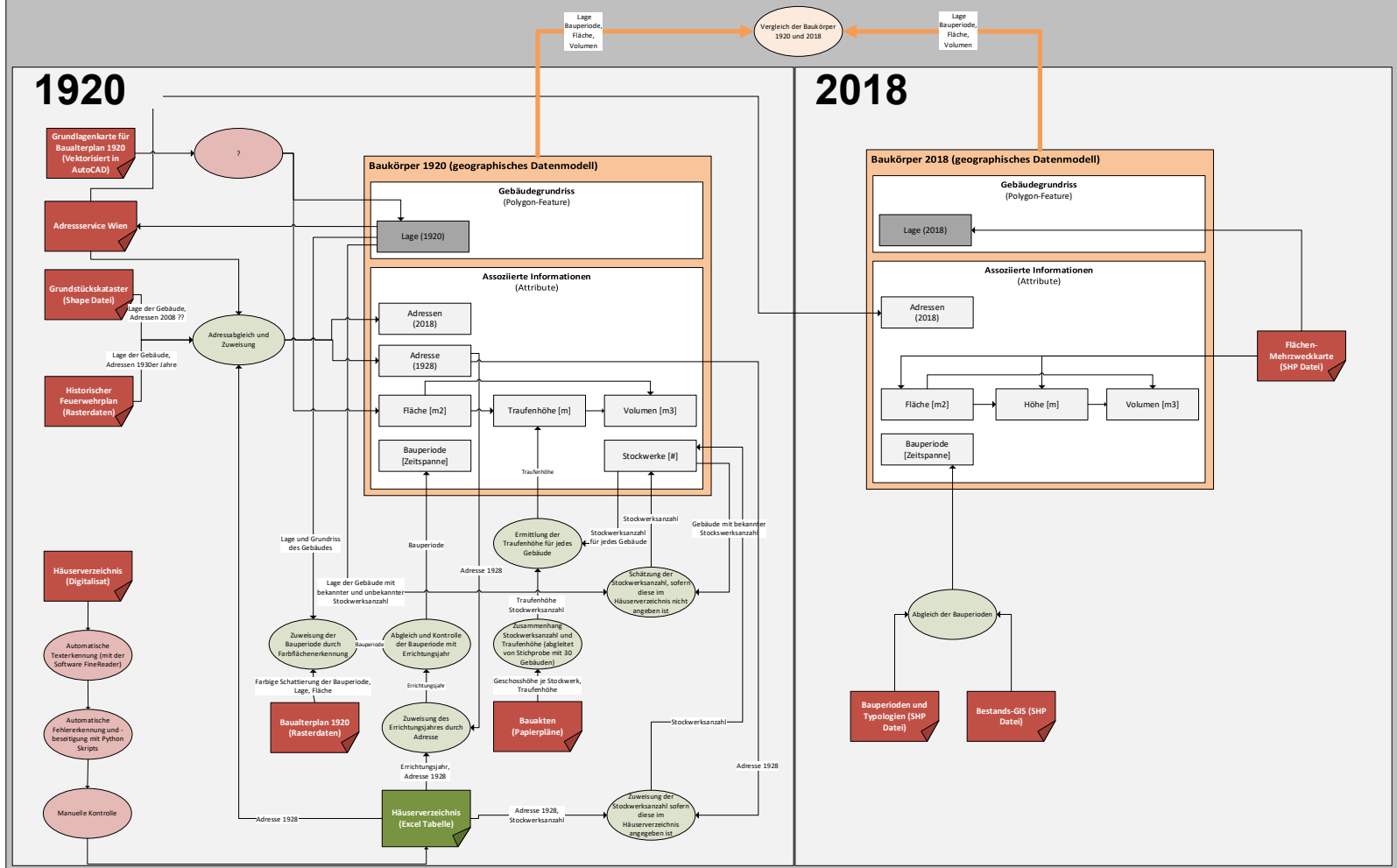
Sündermann, G. (1994). Verwertungsmöglichkeiten für Hochbaurestmassen Thesis, Wien, Techn. Univ., Dipl.-Arb., 1995.

Predicting C&D waste & recyclables





Geographische Datenmodelle

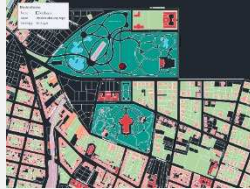


Processing historical data

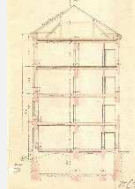
Raw data

Building statistic,
addresses 1928

City map
1920



Construction
Plans < 1920



Building periods
1920



Fire brigade
map 1930



Addresses
2018

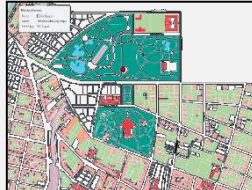


Preparing raw data

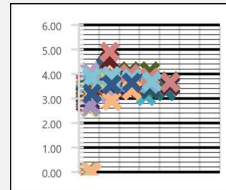
Machine readable data

Building statistic,
addresses 1928

City map
1920



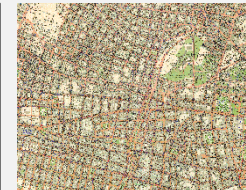
Story heights



Building periods
1920



Fire brigade
map 1930



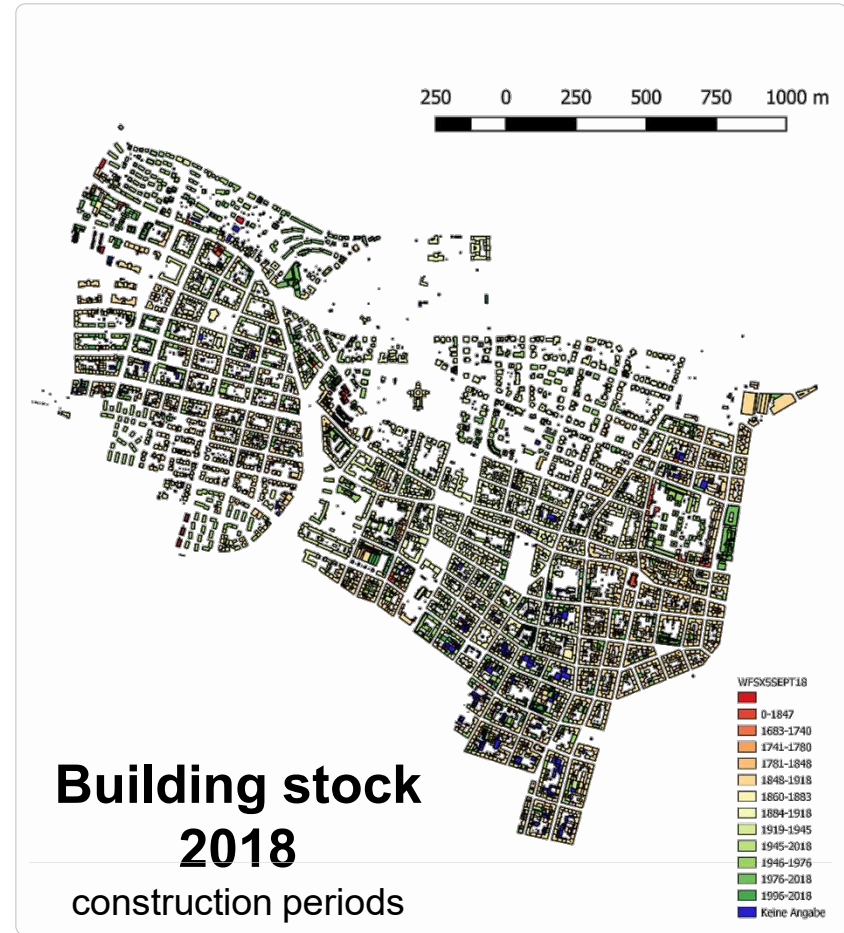
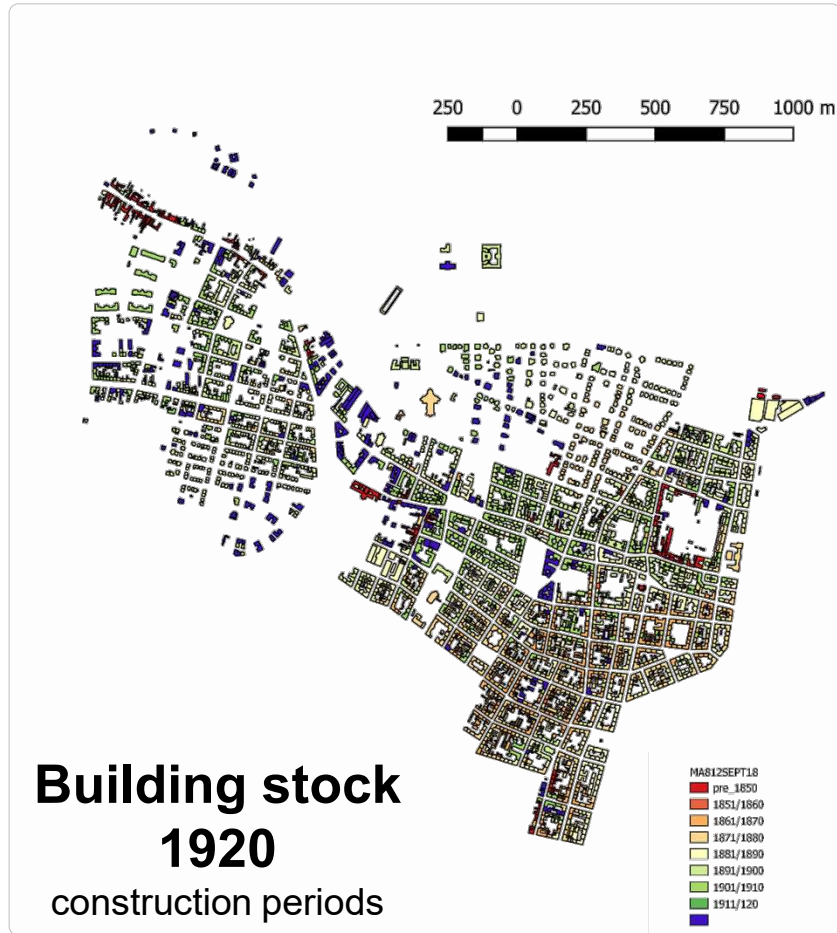
Addresses
2018

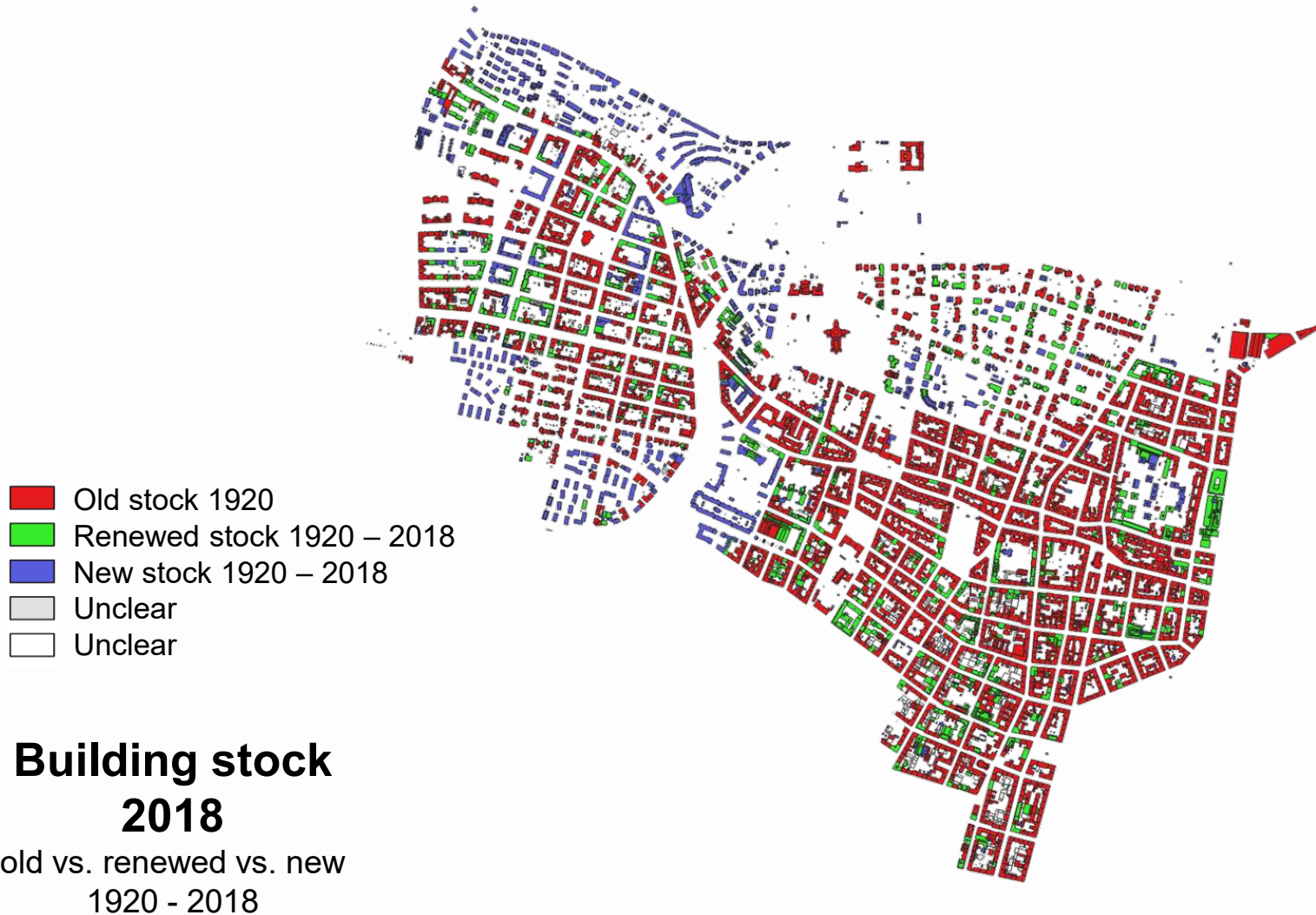


Linking machine readable data

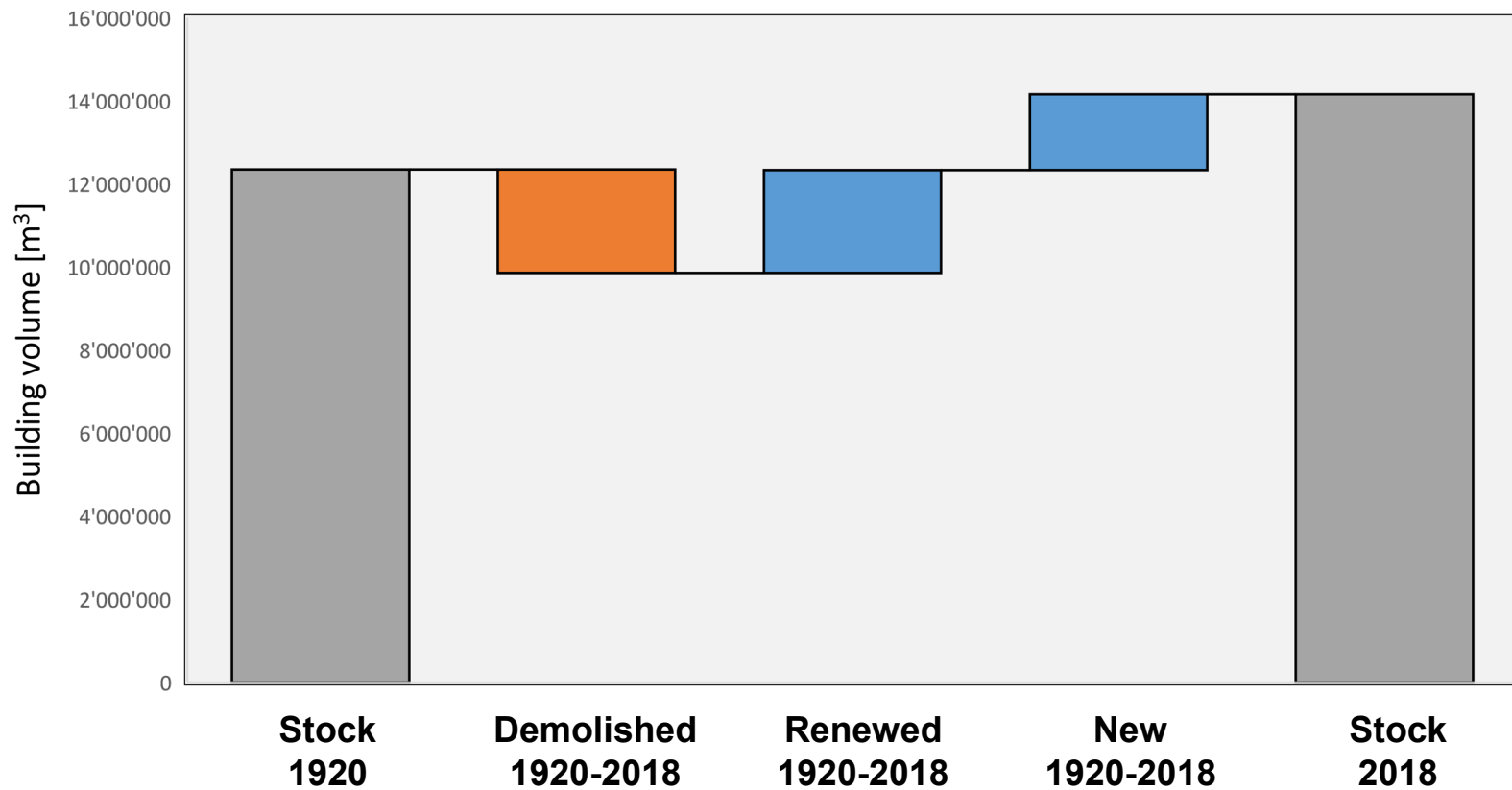
Spatial vector data model 1920

Temporal-spatial comparison

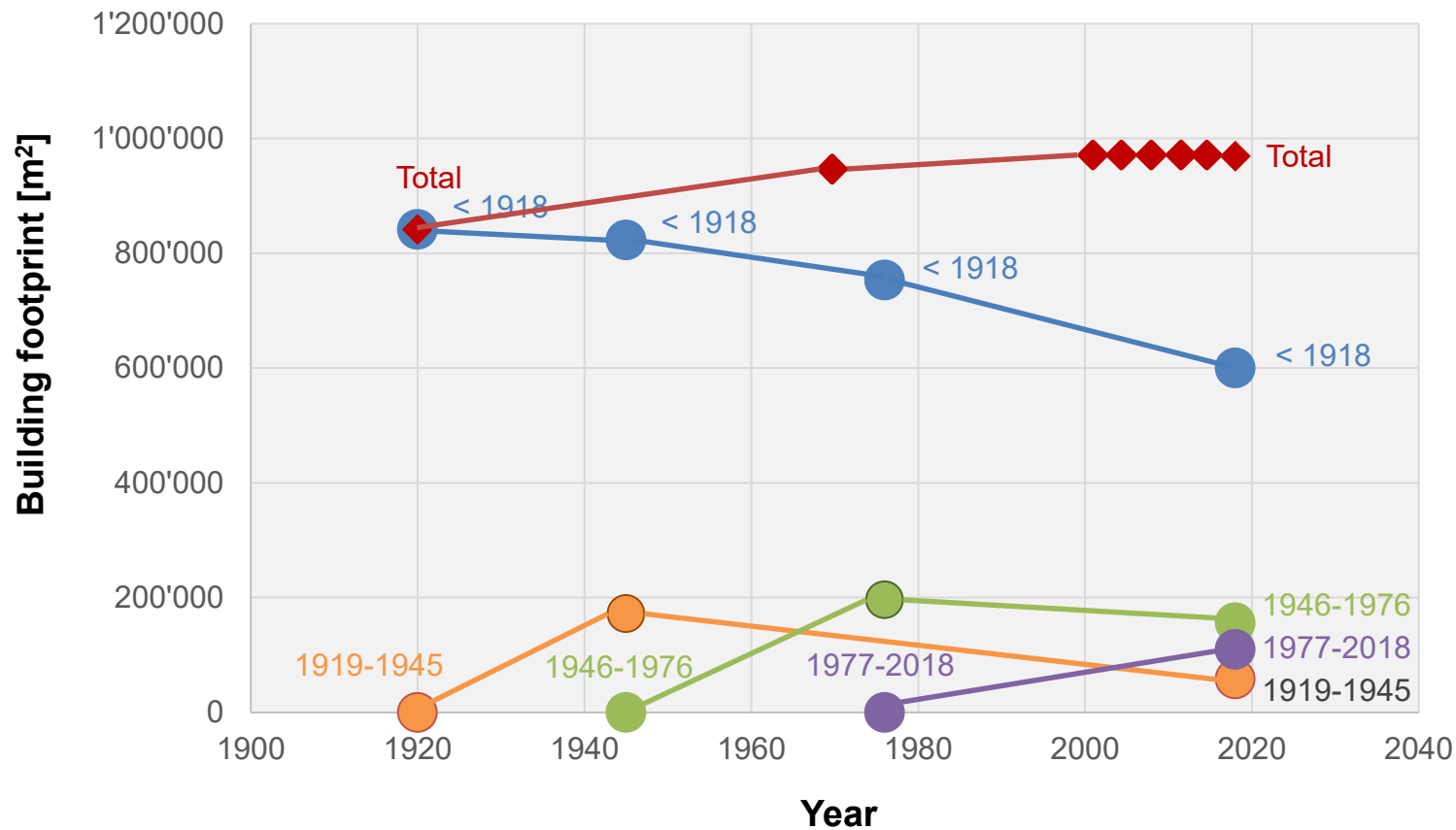




Building stock 1920-2018

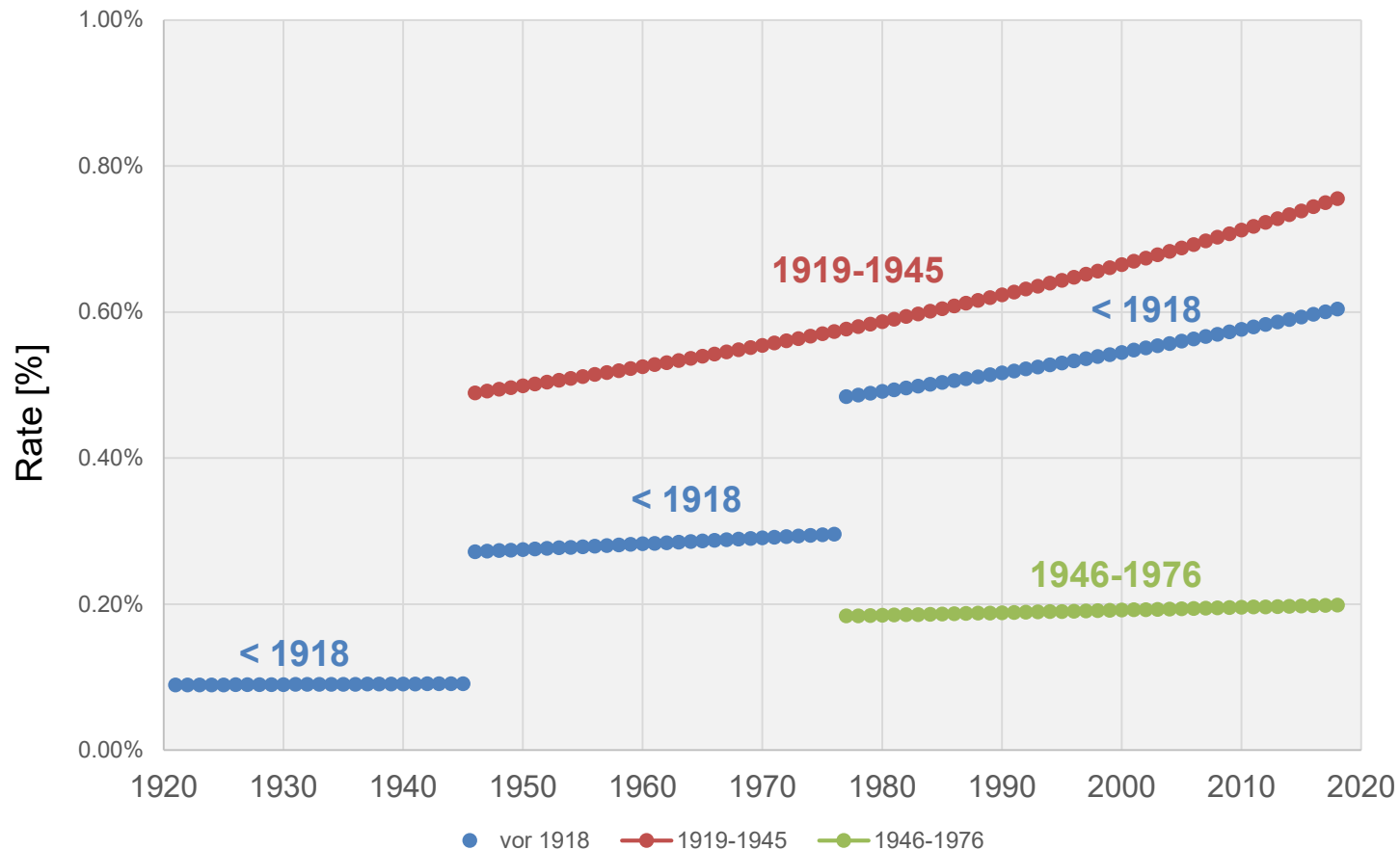


Building stocks per construction period based on building footprint [m²]

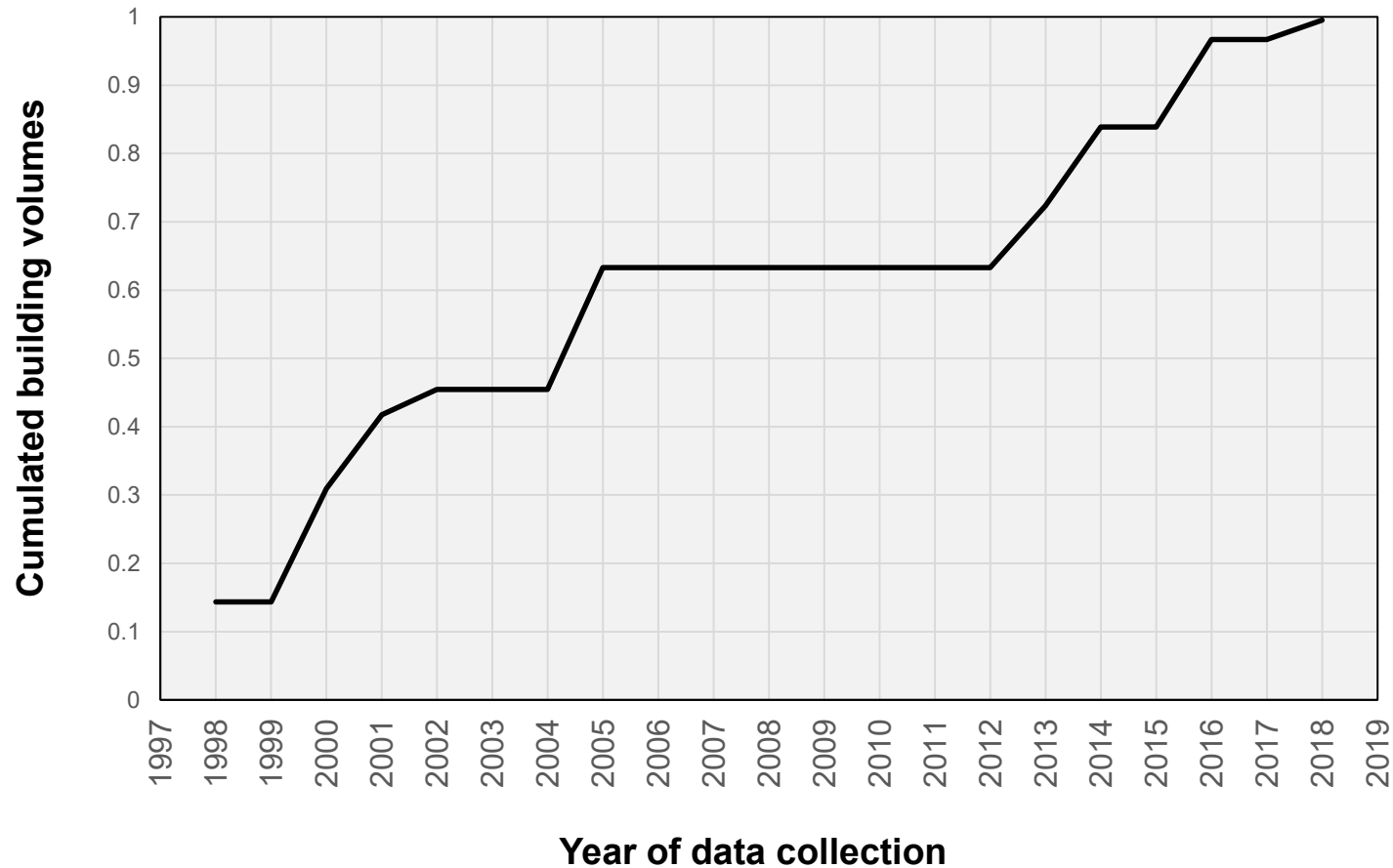


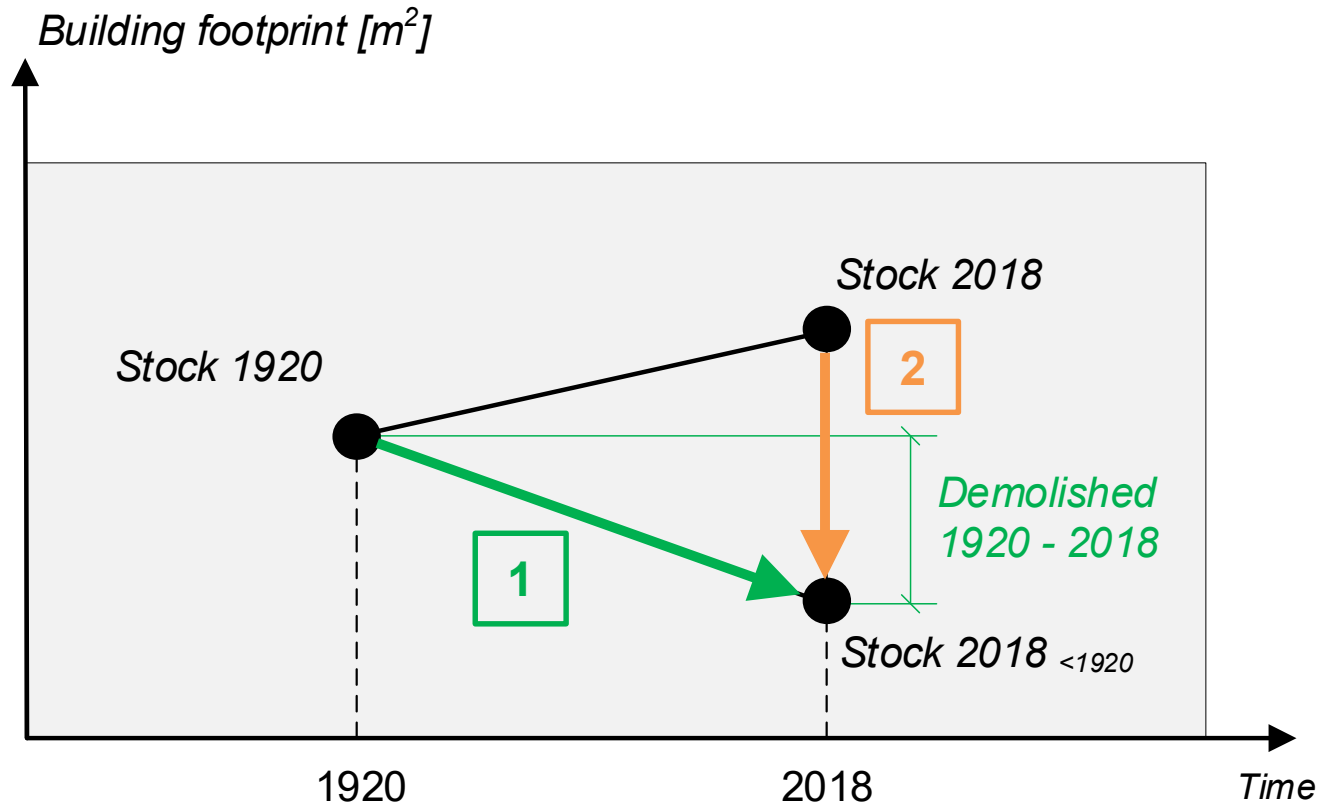
Demolition rates per construction period

based on building footprint [m²]

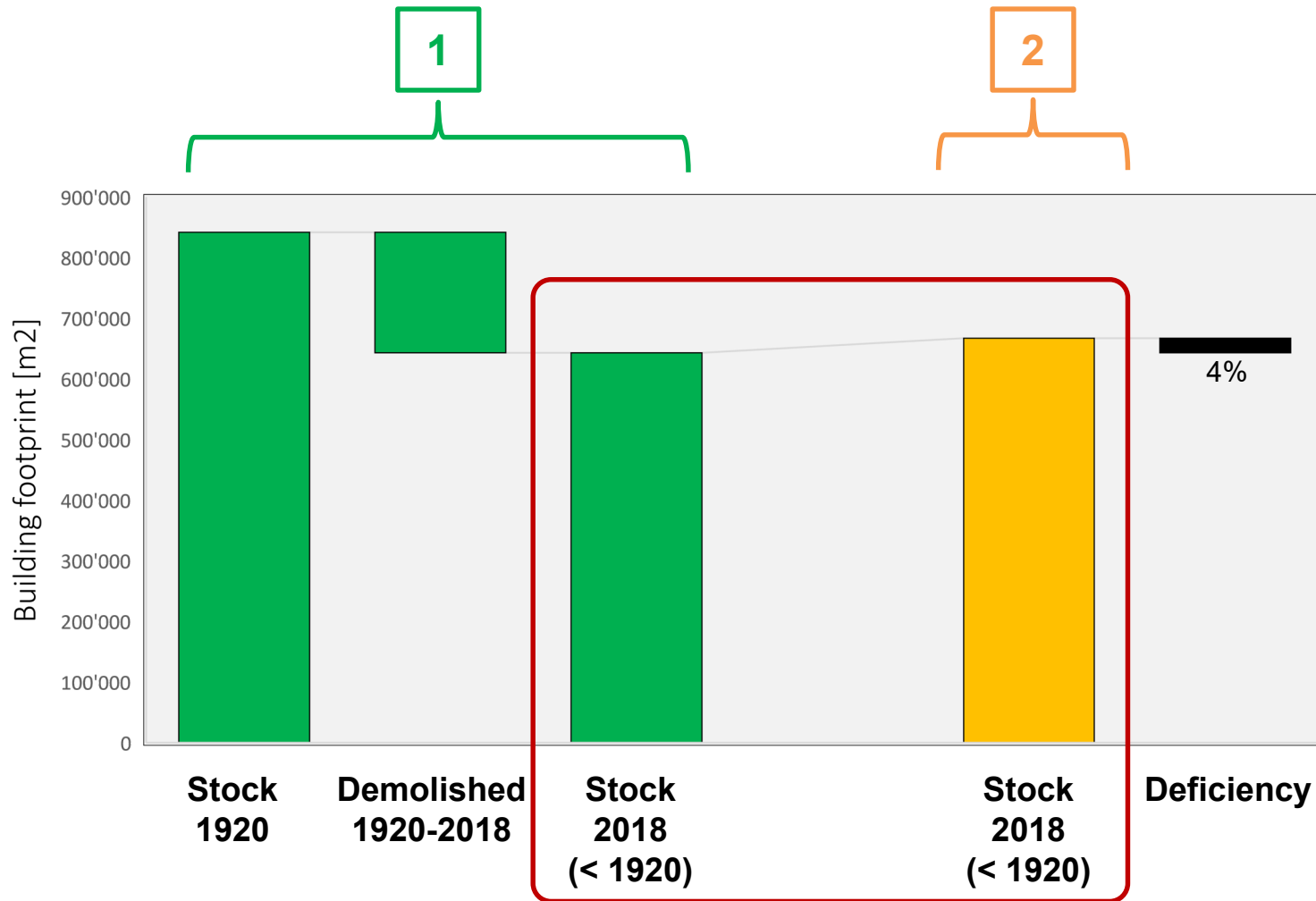


building attribute “construction period” for the building volume 2018

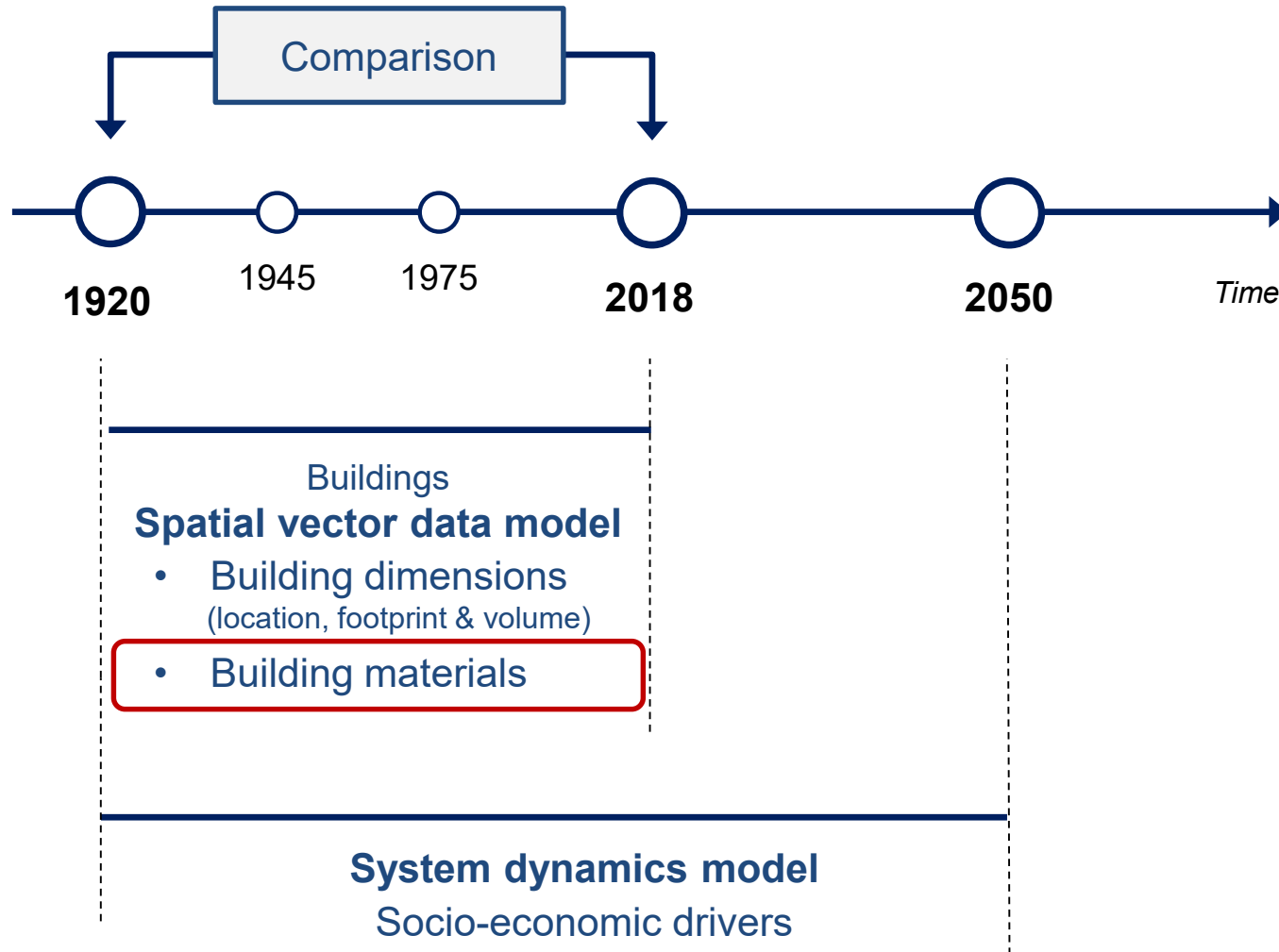




Plausibility - Results



What comes next



N° Buildings

Building period	Commercial	Industry	Residential	Total
-1918	9	3	20	32
1919-1945	3	2	13	18
1946-1976	5	1	31	37
1977-1996	2	1	11	14
1996-	3		13	16
Total	22	7	90	117

Established by Kleemann, F., Lederer, J., Rechberger, H. and Fellner, J. (2017). GIS-based Analysis of Vienna's Material Stock in Buildings. Journal of Industrial Ecology. 21(2): p. 368-380.

Extended by U. Kral & F. Reimer

- Extending the database
- Establishing a community-wide, open access database?
(machine-readable, primary data)

Thank you

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