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Validation of the JED allocation method in residential and commercial sector

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Index

Validation method

▪ Area & year

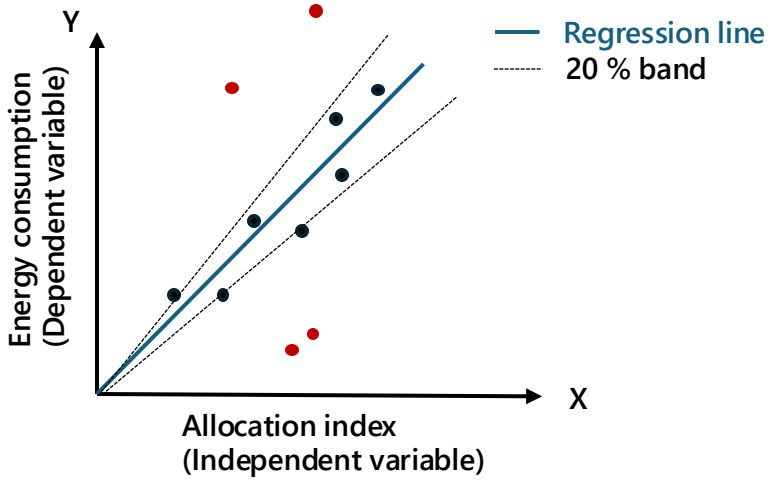
93 municipalities in Denmark in 2020 (same scale as Japan)

※Exclude 5 municipalities due to size difference or unidentified.

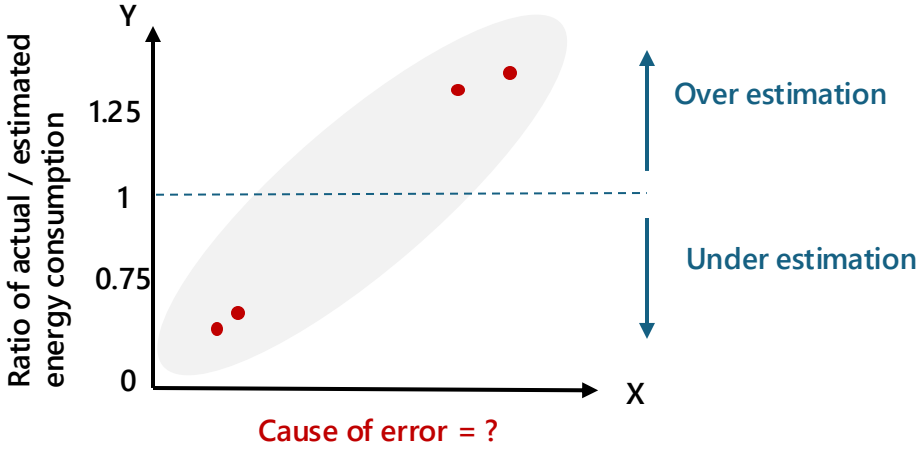
Country	Population / municipality	Area / municipality
Japan	7,240 [people]	220 [km^2]
Denmark	6,060 [people]	438 [km^2]

▪ Method

(1) Indicate Correlation between Energy consumption and Allocation index by regression analysis.



(2) Examine shared characteristics of regions with large error.



Validation method

▪ Energy consumption data

Country	Statistics	Primary data	Energy species	Target sector			
				Ind	Com	Res	Tra
Belgium	WalStat	-	All	✓	✓	✓	✓
UK	GOV.UK	✓	Electricity + Gas		✓	✓	✓
Denmark	ENERGI DATA	✓	Electricity	✓	✓	✓	
Sweden	SCB	-	All	✓	✓	✓	

▪ Allocation index data

- Commercial sector : Number of employees (Statistics Denmark)
- Residential sector : Number of households (Statistics Denmark)

Results of correlation between Energy consumption vs Allocation index

Commercial sector

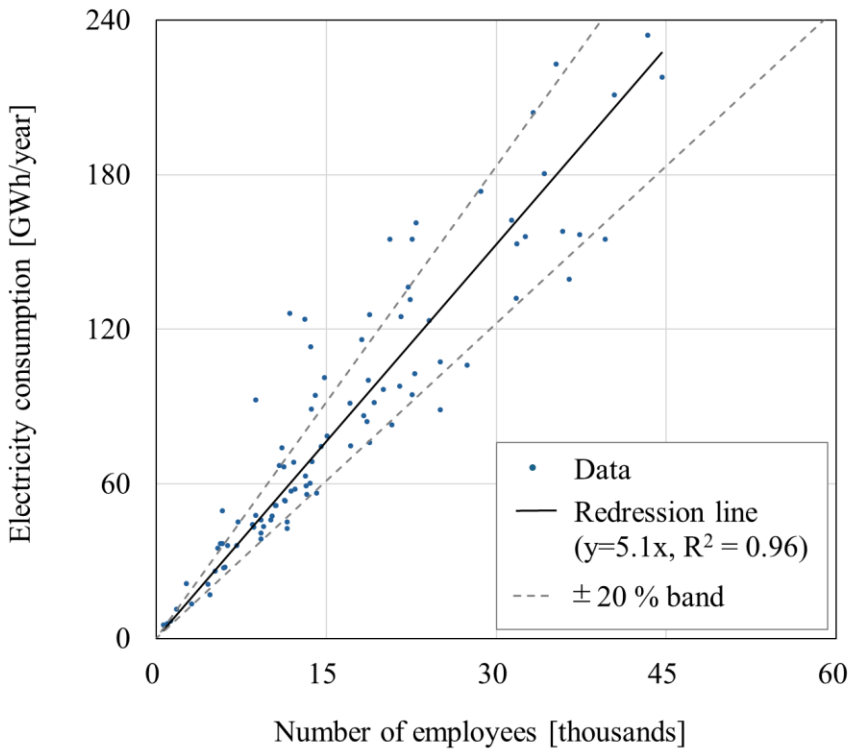


Fig. C-1 Relationship between electricity consumption and number of employees of commercial sector in 2020

Residential sector

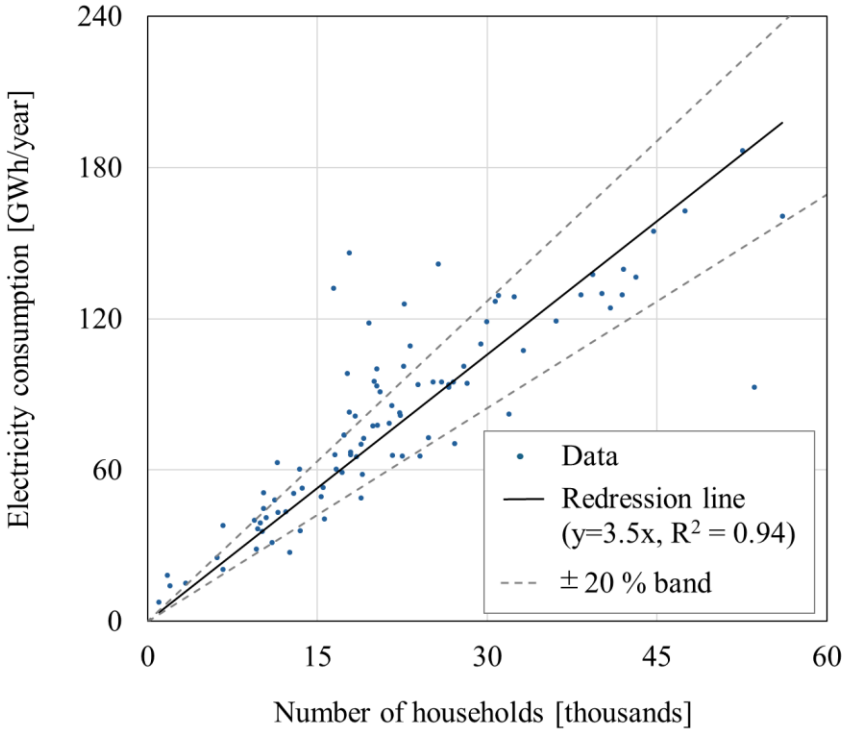


Fig. R-1 Relationship between electricity consumption and number of households of residential sector in 2020

Results of cause of error between Energy consumption vs Allocation index

・Residential sector

Only error rates above ±20% case

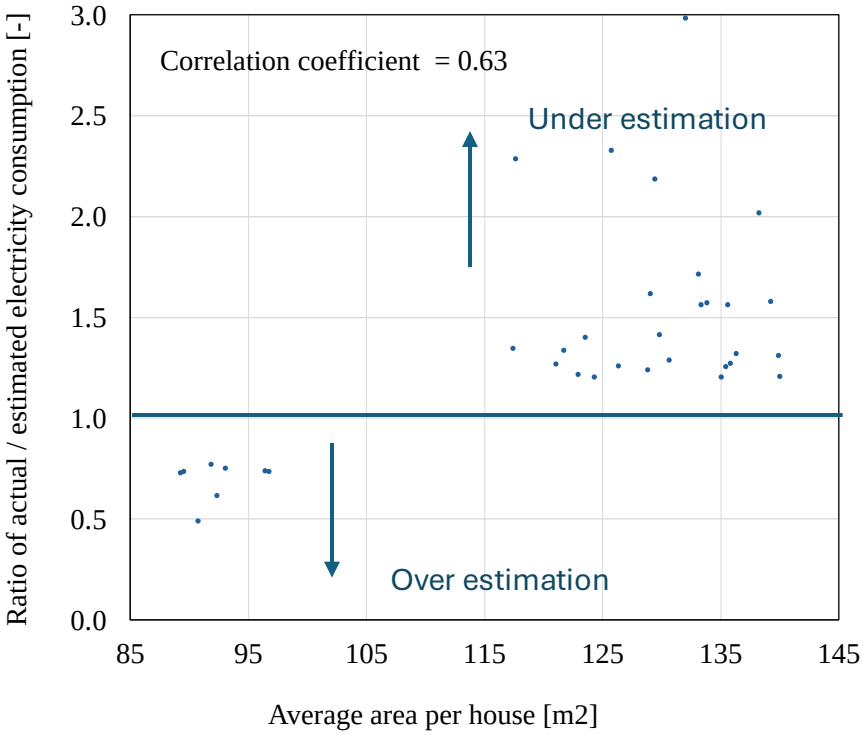


Fig. R-2 Relationship between ratio of estimated / actual electricity consumption and average area per house of residential sector in 2020

All data case

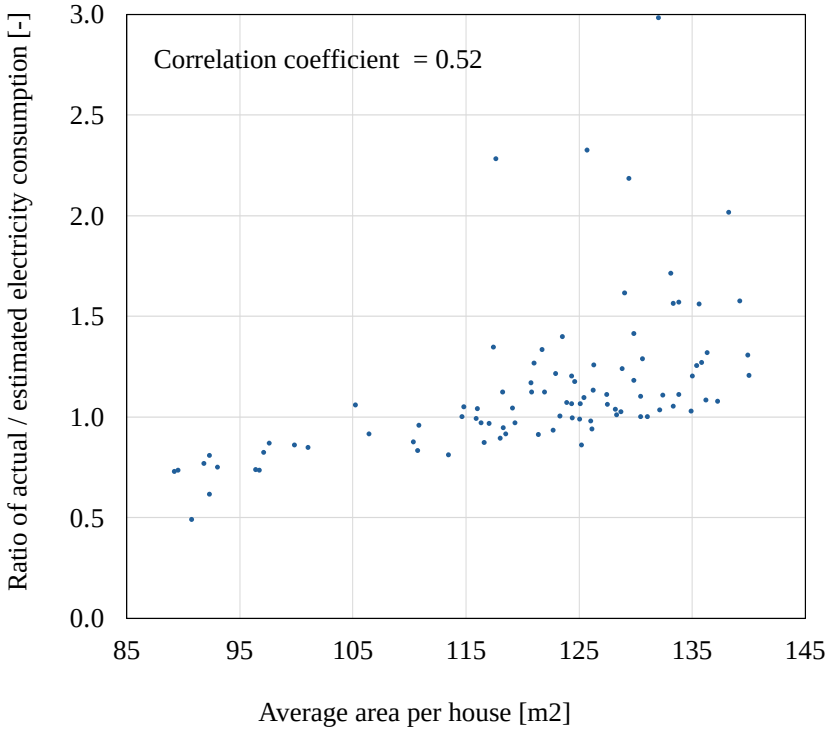


Fig. R-2 Relationship between ratio of estimated / actual electricity consumption and average area per house of residential sector in 2020

Results of cause of error between Energy consumption vs Allocation index

・Commercial sector

Only error rates above ±20% case

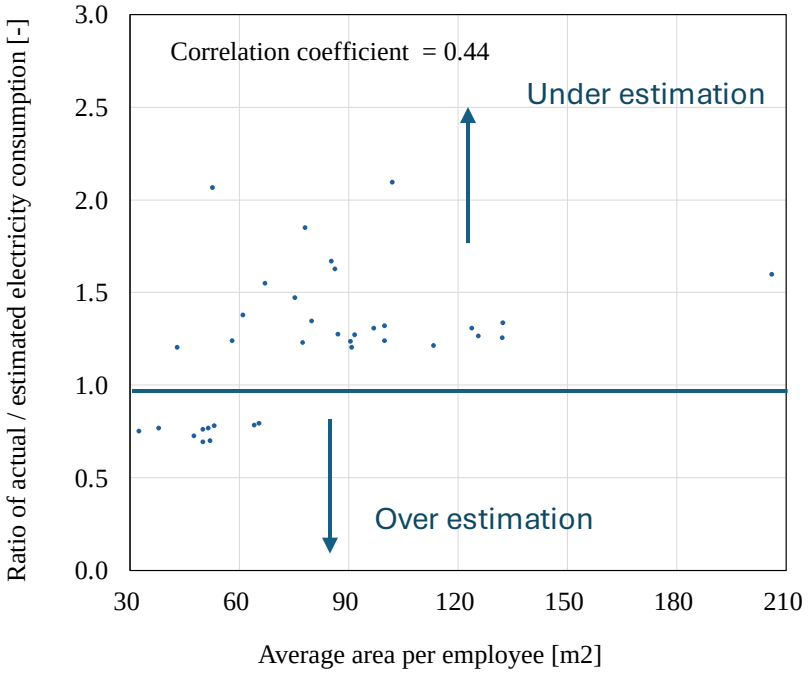


Fig. C-2 Relationship between ratio of estimated / actual electricity consumption and average area per employee of commercial sector in 2020

All data case

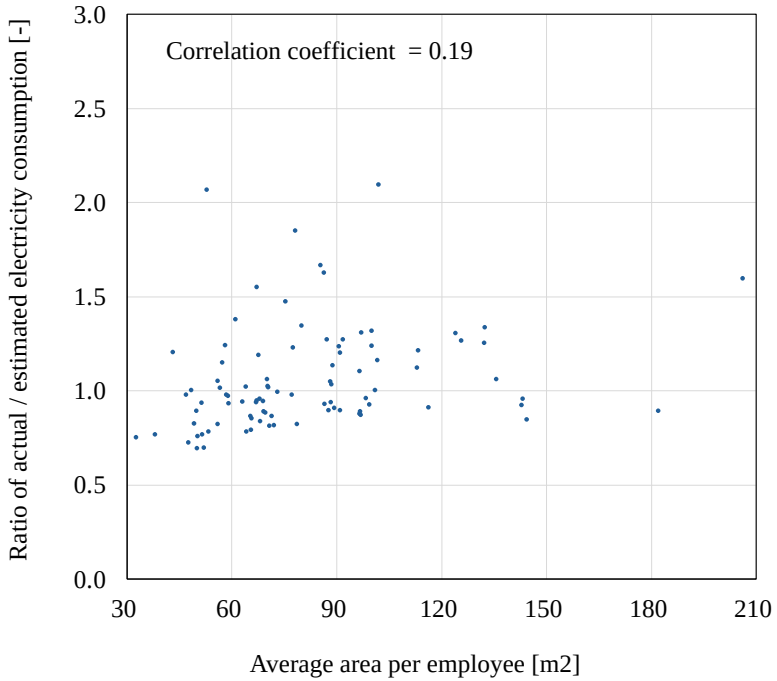


Fig. C-2 Relationship between ratio of estimated / actual electricity consumption and average area per employee of commercial sector in 2020

Conclusion

・その他の検証した按分の誤差要因(業務部門)

建築系
- 業種
- 職場数
- 建築年数
- 地域熱暖房の有無

労働時間系
- 労働時間
- フルタイムの割合

需要規模系
- 夜間人口
- 平均収入
- 人口規模
- 人口密度

誤差要因を説明する単回帰分析では, 今回分析した以下が最もフィット.

- 従業員数あたりの面積
- 世帯数あたりの面積

問題がなければ, 次回執筆を進める.