

COUNTRY EXPOSURE MODEL

Review main statistic of a exposure model and create summaries for a given Country.

/home/risk/venvs/py38w/lib/python3.8/site-packages/geopandas/_compat.py:111: UserWarning: The Shapely GEOS version (3.9.1-CAPI-1.14.2) is incompatible with the GEOS version PyGEOS was compiled with (3.10.1-CAPI-1.16.0). Conversions between both will be slow.
warnings.warn(

```
# Parameters
country = "Germany"
```

Exposure files:
Exposure_Com_Germany.csv
Exposure_Ind_Germany.csv
Exposure_Res_Germany.csv

Sanity checks and formats

Exposure at National level

Summary by occupancy type

	OCCUPANTS	BUILDINGS	COST_USD	BUILDINGS_%	COST_USD_%
OCCUPANCY					
Res	83.1M	18,922.6K	\$8,182.6B	94.92%	67.37%
Ind	21.3M	388.4K	\$1,044.3B	1.95%	8.60%
Com	33.2M	623.8K	\$2,918.9B	3.13%	24.03%

Other metrics to consider

	AREA_SQM	COST_BUILDING_USD	AVG_BUILDING_AREA_SQM	AVG_COST_PER_AREA_USD
OCCUPANCY				
Total	3,485.1M	\$8,423.2B	175	\$3,485
Res	2,860.4M	\$6,546.1B	151	\$2,861
Ind	179.9M	\$417.7B	463	\$5,804
Com	444.8M	\$1,459.4B	713	\$6,563

Exposure summary at Admin level 1

	COST_USD	BUILDINGS	OCCUPANTS	COST_USD_%	BUILDINGS_%	OCCUPANTS_%
NAME_1						
Nordrhein-Westfalen	\$2,848.5B	4,111.4K	31,688.8K	23.45%	20.62%	23.03%
Bayern	\$1,584.3B	3,156.0K	20,406.9K	13.04%	15.83%	14.83%
Baden-Wuerttemberg	\$1,554.5B	2,553.4K	17,733.9K	12.80%	12.81%	12.89%
Niedersachsen	\$1,126.9B	2,310.9K	13,034.3K	9.28%	11.59%	9.47%
Hessen	\$891.4B	1,472.3K	9,989.5K	7.34%	7.39%	7.26%
Sachsen	\$679.5B	887.5K	7,115.8K	5.59%	4.45%	5.17%
Rheinland-Pfalz	\$598.0B	1,235.8K	6,506.5K	4.92%	6.20%	4.73%
Berlin	\$533.3B	355.1K	6,142.2K	4.39%	1.78%	4.46%
Schleswig-Holstein	\$414.7B	839.7K	4,628.2K	3.41%	4.21%	3.36%
Sachsen-Anhalt	\$393.6B	617.4K	4,029.6K	3.24%	3.10%	2.93%
Brandenburg	\$378.4B	681.5K	4,054.2K	3.12%	3.42%	2.95%
Thuringen	\$335.7B	565.4K	3,685.3K	2.76%	2.84%	2.68%
Hamburg	\$298.4B	269.7K	3,184.0K	2.46%	1.35%	2.31%
Mecklenburg-Vorpommern	\$239.4B	406.1K	2,519.0K	1.97%	2.04%	1.83%
Saarland	\$146.2B	319.9K	1,692.2K	1.20%	1.60%	1.23%
Bremen	\$122.9B	152.8K	1,214.2K	1.01%	0.77%	0.88%

Exposure by simplified taxonomy

Adding `MACRO_TAXO` column

	COST_USD	BUILDINGS	OCCUPANTS	COST_USD_%	BUILDINGS_%	OCCUPANTS_%
MACRO_TAXO						
RC	\$6,548.3B	5,008.9K	69.3M	53.91%	25.13%	50.36%
W	\$1,893.5B	6,366.1K	23.8M	15.59%	31.93%	17.31%
MUR	\$1,831.7B	7,610.2K	22.0M	15.08%	38.18%	16.00%
S	\$1,162.3B	543.7K	16.0M	9.57%	2.73%	11.60%
MIX	\$710.1B	406.0K	6.5M	5.85%	2.04%	4.73%

Exposure by taxonomy

Showing only taxonomies that represent 90% of the total `COST_USD`

		COST_USD	BUILDINGS	COST_USD_%	BUILDINGS_%
MACRO_TAXO	TAXONOMY				
RC	CR/LFINF+CDM+LFC:0.0/HBET:3-5/RES	\$641.4B	389.6K	5.88%	2.06%
S	S/LFINF+CDN/HBET:3-5/RES	\$638.1B	364.8K	5.85%	1.93%
RC	CR/LFINF+CDN/HBET:3-5/RES	\$613.4B	334.9K	5.62%	1.77%
MUR	MUR+CL/LWAL+CDN/H:2/RES	\$514.8B	2,678.2K	4.72%	14.18%
RC	CR/LFINF+CDL+LFC:0.0/HBET:3-5/RES	\$433.9B	261.5K	3.98%	1.38%
MIX	MIX(MUR+CR)/LWAL+CDM+LFC:0.0/HBET:3-5/RES	\$427.5B	245.2K	3.92%	1.30%
MUR	MUR+CL/LWAL+CDN/H:1/RES	\$373.4B	1,917.4K	3.42%	10.15%
RC	CR/LWAL+CDM+LFC:0.0/HBET:3-5/RES	\$353.3B	216.7K	3.24%	1.15%
W	W/LWAL+CDM/H:2/RES	\$340.7B	1,959.5K	3.12%	10.37%
MUR	MUR+ST/LWAL+CDN/H:1/RES	\$301.7B	1,547.3K	2.76%	8.19%
RC	CR/LFINF+CDM+LFC:0.0/HBET:3-5/COM	\$301.5B	34.2K	2.76%	0.18%
MUR	MUR+ST/LWAL+CDN/H:2/RES	\$254.3B	1,319.4K	2.33%	6.98%
	CR/LFINF+CDM+LFC:0.0/H:2/RES	\$247.3B	1,048.1K	2.27%	5.55%
RC	CR/LFINF+CDH+LFC:0.0/HBET:3-5/COM	\$241.4B	26.8K	2.21%	0.14%
	CR/LFINF+CDL+LFC:0.0/H:2/RES	\$236.3B	1,001.5K	2.16%	5.30%
	CR/LFINF+CDM+LFC:0.0/H:1/COM	\$221.1B	67.2K	2.03%	0.36%
W	W/LWAL+CDL/H:2/RES	\$218.1B	1,213.7K	2.00%	6.42%
	W/LWAL+CDM/H:1/RES	\$213.8B	1,186.0K	1.96%	6.28%
RC	CR+PC/LFM+CDL/H:1/IND	\$193.9B	69.9K	1.78%	0.37%
	W/LWAL+CDM/HBET:3-5/RES	\$193.9B	134.4K	1.78%	0.71%
W	W/LWAL+CDM/H:1/COM	\$193.7B	70.0K	1.78%	0.37%
RC	CR/LWAL+CDL+LFC:0.0/HBET:3-5/RES	\$190.3B	103.4K	1.74%	0.55%
W	W/LWAL+CDL/H:1/RES	\$176.1B	958.4K	1.61%	5.07%
RC	CR/LWAL+CDM+LFC:0.0/HBET:3-5/COM	\$174.7B	19.5K	1.60%	0.10%
	S/LFM+CDL/H:1/IND	\$174.4B	66.0K	1.60%	0.35%
S	S/LFM+CDH/H:1/IND	\$164.1B	62.1K	1.50%	0.33%
	CR/LWAL+CDH+LFC:0.0/HBET:3-5/COM	\$138.7B	15.9K	1.27%	0.08%
RC	CR/LFINF+CDH+LFC:0.0/H:1/COM	\$133.0B	40.4K	1.22%	0.21%
	CR+PC/LFM+CDM/H:2/IND	\$129.3B	46.6K	1.18%	0.25%
W	W/LWAL+CDL/HBET:3-5/RES	\$119.5B	80.1K	1.10%	0.42%
RC	CR/LFINF+CDL+LFC:4.0/HBET:3-5/RES	\$116.0B	66.7K	1.06%	0.35%
MUR	MUR+CL/LWAL+CDN/H:1/COM	\$112.1B	47.0K	1.03%	0.25%
MIX	MIX(MUR+CR)/LWAL+CDL+LFC:0.0/HBET:3-5/RES	\$110.4B	62.3K	1.01%	0.33%
	CR/LWAL+CDH+LFC:0.0/HBET:3-5/RES	\$102.6B	59.6K	0.94%	0.32%
RC	CR/LFINF+CDM+LFC:0.0/HBET:6-/RES	\$101.1B	12.5K	0.93%	0.07%
	CR/LFINF+CDL+LFC:0.0/HBET:6-/RES	\$98.2B	12.1K	0.90%	0.06%
MUR	MUR+ST/LWAL+CDN/H:1/COM	\$97.2B	42.1K	0.89%	0.22%
	CR/LFINF+CDL+LFC:0.0/HBET:3-5/COM	\$96.2B	10.3K	0.88%	0.05%
	CR/LFINF+CDN/H:1/COM	\$94.6B	28.7K	0.87%	0.15%
RC	CR/LFINF+CDM+LFC:1.0/HBET:3-5/RES	\$89.9B	54.8K	0.82%	0.29%
	CR/LWAL+CDM+LFC:0.0/HBET:6-/RES	\$88.4B	10.9K	0.81%	0.06%
W	W/LWAL+CDM/HBET:3-5/COM	\$88.4B	10.3K	0.81%	0.05%
	CR/LFINF+CDL/H:1/IND	\$86.2B	31.1K	0.79%	0.16%
RC	CR/LFINF+CDM/H:2/IND	\$86.2B	31.1K	0.79%	0.16%
	CR/LWAL+CDL+LFC:0.0/HBET:6-/RES	\$86.0B	10.6K	0.79%	0.06%
	CR/LFINF+CDM+LFC:0.0/H:2/COM	\$84.0B	17.3K	0.77%	0.09%
S	S+S/LFM+CDM/H:2/IND	\$82.1B	31.1K	0.75%	0.16%
W	W/LWAL+CDL/H:1/COM	\$75.9B	29.0K	0.70%	0.15%
	MUR+CL/LWAL+CDN/H:2/COM	\$74.8B	20.2K	0.69%	0.11%
MUR	MUR/LWAL+CDN/H:1/IND	\$68.2B	27.2K	0.63%	0.14%
MIX	MIX(MUR+CR)/LWAL+CDM+LFC:1.0/HBET:3-5/RES	\$67.9B	39.5K	0.62%	0.21%
W	W/LWAL+CDH/H:2/RES	\$64.5B	371.6K	0.59%	1.97%
	CR/LFINF+CDM+LFC:2.0/HBET:3-5/RES	\$61.7B	34.6K	0.57%	0.18%
RC	CR/LFINF+CDL+LFC:4.0/H:2/RES	\$58.7B	248.6K	0.54%	1.32%
	CR/LWAL+CDL+LFC:4.0/HBET:3-5/RES	\$58.5B	31.8K	0.54%	0.17%
MIX	MIX(MUR+CR)/LWAL+CDM+LFC:2.0/HBET:3-5/RES	\$55.7B	31.0K	0.51%	0.16%
	CR/LFINF+CDN/HBET:3-5/COM	\$53.0B	5.9K	0.49%	0.03%
RC	CR/LWAL+CDM+LFC:1.0/HBET:3-5/RES	\$50.8B	31.5K	0.47%	0.17%
S	S/LFINF+CDH/HBET:3-5/COM	\$49.8B	5.9K	0.46%	0.03%