

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 = "Romania"
```

Exposure files:
Exposure_Com_Romania.csv
Exposure_Ind_Romania.csv
Exposure_Res_Romania.csv

Sanity checks and formats

Exposure at National level

Summary by occupancy type

	OCCUPANTS	BUILDINGS	COST_USD	BUILDINGS_%	COST_USD_%
OCCUPANCY					
Res	19.4M	5,260.3K	\$268.5B	95.52%	69.82%
Ind	5.7M	73.3K	\$79.3B	1.33%	20.62%
Com	7.7M	173.5K	\$36.8B	3.15%	9.56%

Other metrics to consider

	AREA_SQM	COST_BUILDING_USD	AVG_BUILDING_AREA_SQM	AVG_COST_PER_AREA_USD
OCCUPANCY				
Total	499.1M	\$264.9B	91	\$770
Res	438.4M	\$214.8B	83	\$612
Ind	42.8M	\$31.7B	584	\$1,853
Com	17.9M	\$18.4B	103	\$2,051

Exposure summary at Admin level 1

	COST_USD	BUILDINGS	OCCUPANTS	COST_USD_%	BUILDINGS_%	OCCUPANTS_%
NAME_1						
BUCURESTI	\$38,497.1M	166.3K	3,605.0K	10.01%	3.02%	10.97%
CONSTANTA	\$15,457.4M	142.1K	1,159.0K	4.02%	2.58%	3.53%
PRAHOVA	\$14,413.5M	223.9K	1,217.7K	3.75%	4.07%	3.71%
TIMIS	\$14,076.0M	157.2K	1,156.7K	3.66%	2.85%	3.52%
IASI	\$13,140.6M	189.7K	1,252.2K	3.42%	3.44%	3.81%
CLUJ	\$12,814.8M	158.0K	1,137.4K	3.33%	2.87%	3.46%
DOLJ	\$12,266.0M	199.6K	1,085.3K	3.19%	3.62%	3.30%
GALATI	\$12,242.5M	130.2K	892.4K	3.18%	2.36%	2.72%
BIHOR	\$11,852.4M	167.5K	928.1K	3.08%	3.04%	2.83%
NEAMT	\$11,835.9M	156.5K	757.6K	3.08%	2.84%	2.31%
ILFOV	\$11,074.0M	123.9K	642.3K	2.88%	2.25%	1.96%
ARGES	\$10,949.4M	182.8K	943.8K	2.85%	3.32%	2.87%
BACAU	\$10,763.4M	182.7K	982.3K	2.80%	3.32%	2.99%
BRASOV	\$10,320.4M	103.8K	901.2K	2.68%	1.88%	2.74%
MURES	\$9,711.5M	152.5K	867.3K	2.53%	2.77%	2.64%
BRAILA	\$9,317.9M	86.0K	544.3K	2.42%	1.56%	1.66%
SUCEAVA	\$9,275.0M	197.0K	977.1K	2.41%	3.58%	2.97%
DAMBOVITA	\$8,777.6M	168.4K	795.1K	2.28%	3.06%	2.42%
BUZAU	\$8,276.1M	155.8K	703.1K	2.15%	2.83%	2.14%
ARAD	\$8,007.1M	136.8K	714.1K	2.08%	2.48%	2.17%
MARAMURES	\$7,910.6M	140.9K	742.6K	2.06%	2.56%	2.26%
OLT	\$7,498.5M	148.3K	682.5K	1.95%	2.69%	2.08%
SIBIU	\$7,422.5M	99.0K	644.5K	1.93%	1.80%	1.96%
VRANCEA	\$7,336.8M	119.4K	536.2K	1.91%	2.17%	1.63%
SATU MARE	\$7,213.9M	105.7K	548.1K	1.88%	1.92%	1.67%
HUNEDOARA	\$7,007.1M	85.6K	675.5K	1.82%	1.55%	2.06%
VALCEA	\$6,828.7M	137.3K	550.3K	1.78%	2.49%	1.68%
CALARASI	\$6,813.0M	103.9K	510.2K	1.77%	1.89%	1.55%
ALBA	\$6,265.1M	107.7K	536.1K	1.63%	1.96%	1.63%
GORJ	\$6,061.1M	117.4K	526.8K	1.58%	2.13%	1.60%
TULCEA	\$5,983.6M	71.8K	354.7K	1.56%	1.30%	1.08%
VASLUI	\$5,972.9M	133.0K	635.1K	1.55%	2.42%	1.93%
TELEORMAN	\$5,913.7M	142.9K	611.3K	1.54%	2.60%	1.86%
BOTOSANI	\$5,683.4M	131.8K	666.0K	1.48%	2.39%	2.03%
HARGHITA	\$5,632.1M	92.6K	479.8K	1.46%	1.68%	1.46%
IALOMITA	\$5,593.1M	89.2K	461.1K	1.45%	1.62%	1.40%
GIURGIU	\$5,511.7M	102.9K	439.5K	1.43%	1.87%	1.34%
MEHEDINTI	\$4,759.7M	95.0K	414.8K	1.24%	1.73%	1.26%
BISTRITA-NASAUD	\$4,625.5M	84.6K	431.1K	1.20%	1.54%	1.31%
CARAR-SERIN	\$4,197.3M	81.0K	461.5K	1.09%	1.47%	1.41%
SALAJ	\$3,656.4M	76.9K	345.8K	0.95%	1.40%	1.05%
COVASNA	\$3,575.2M	59.2K	332.1K	0.93%	1.08%	1.01%

Exposure by simplified taxonomy

Adding `MACRO_TAXO` column						
	COST_USD	BUILDINGS	OCCUPANTS	COST_USD_%	BUILDINGS_%	OCCUPANTS_%
MACRO_TAXO						
RC	\$187.8B	1,112.3K	16,661.9K	48.83%	20.20%	50.72%
MCF	\$109.4B	2,101.4K	9,373.3K	28.44%	38.16%	28.54%
MUR	\$27.4B	818.1K	2,162.2K	7.13%	14.86%	6.58%
ADO/E	\$27.2B	898.1K	2,296.4K	7.06%	16.31%	6.99%
W	\$17.6B	562.5K	1,204.4K	4.56%	10.21%	3.67%
S	\$15.3B	14.7K	1,149.6K	3.97%	0.27%	3.50%

Exposure by taxonomy

		COST_USD	BUILDINGS	COST_USD_%	BUILDINGS_%
MACRO_TAXO	TAXONOMY				
MCF	MCF/LWAL+CDN/H:1/RES	\$40,422.9M	1,242,054	11.69%	24.07%
	CR/LFM+CDM/H:1/IND	\$36,027.4M	32,985	10.42%	0.64%
RC	CR+PC/LFM+CDL/H:1/IND	\$28,021.3M	25,655	8.10%	0.50%
ADO/E	MUR+ADO/LWAL+CDN/H:1/RES	\$25,967.9M	888,795	7.51%	17.23%
MCF	MCF/LWAL+CDL/H:1/RES	\$19,993.2M	592,115	5.78%	11.48%
MUR	MUR/LWAL+CDN/H:1/RES	\$19,185.3M	648,322	5.55%	12.57%
	MCF/LWAL+CDN/HBET:3-5/RES	\$9,554.8M	18,917	2.76%	0.37%
	MCF/LWAL+CDN/H:2/RES	\$9,461.2M	98,851	2.74%	1.92%
W	W/LFM+CDL/H:1/RES	\$8,809.2M	300,220	2.55%	5.82%
S	S/LFM+CDM/H:1/IND	\$8,388.0M	8,063	2.43%	0.16%
RC	CR+CIP/LFINF+CDN/H:1/RES	\$7,428.0M	224,332	2.15%	4.35%
	MCF/LWAL+CDL/HBET:3-5/RES	\$6,617.7M	12,347	1.91%	0.24%
MCF	MCF/LWAL+CDL/H:2/RES	\$6,556.2M	64,876	1.90%	1.26%
	MCF/LWAL+CDN/H:1/COM	\$6,490.4M	41,156	1.88%	0.80%
MUR	MUR/LWAL+CDL/H:1/RES	\$5,028.6M	165,853	1.45%	3.21%
W	W/LFM+CDN/H:1/RES	\$4,525.1M	153,962	1.31%	2.98%
RC	CR+PC/LWAL+CDL+LFC:4.0/HBET:6-/RES	\$4,362.3M	2,019	1.26%	0.04%
S	S+SL/LFM+CDM/H:1/IND	\$3,812.7M	3,665	1.10%	0.07%
MCF	MCF/LWAL+CDL/HBET:6-/RES	\$3,486.6M	1,589	1.01%	0.03%
	CR+PC/LDUAL+CDM+LFC:8.0/HBET:6-/RES	\$3,450.8M	1,637	1.00%	0.03%
RC	CR+CIP/LFINF+CDN/HBET:3-5/RES	\$3,256.7M	6,049	0.94%	0.12%
	CR+PC/LWAL+CDM+LFC:8.0/HBET:6-/RES	\$2,747.4M	1,303	0.79%	0.03%
MCF	MCF/LWAL+CDL/H:1/COM	\$2,653.2M	16,824	0.77%	0.33%
MUR	MUR/LWAL+CDL/HBET:6-/RES	\$2,314.6M	1,210	0.67%	0.02%
MCF	MCF/LWAL+CDN/HBET:6-/RES	\$2,313.0M	1,111	0.67%	0.02%
S	S/LFBR+CDH/H:1/IND	\$2,287.6M	2,199	0.66%	0.04%
	CR+CIP/LFINF+CDL+LFC:0.0/H:1/RES	\$2,232.5M	68,563	0.65%	1.33%
RC	CR+CIP/LFINF+CDL+LFC:4.0/HBET:3-5/RES	\$2,144.4M	3,965	0.62%	0.08%
	CR+CIP/LFINF+CDL+LFC:0.0/HBET:3-5/RES	\$2,118.5M	4,310	0.61%	0.08%
W	W/LFM+CDM/H:1/RES	\$1,983.7M	67,350	0.57%	1.31%
	CR+CIP/LFINF+CDN/H:2/RES	\$1,969.6M	19,366	0.57%	0.38%
RC	CR+PC/LWAL+CDL+LFC:0.0/HBET:3-5/RES	\$1,925.2M	3,918	0.56%	0.08%
	CR+PC/LFM+CDL+LFC:4.0/HBET:6-/RES	\$1,918.9M	885	0.56%	0.02%
	CR+PC/LWAL+CDL+LFC:4.0/HBET:3-5/RES	\$1,835.4M	3,395	0.53%	0.07%
MCF	MCF/LWAL+CDN/H:2/COM	\$1,828.7M	11,596	0.53%	0.22%
	CR+PC/LWAL+CDL+LFC:0.0/HBET:6-/RES	\$1,813.3M	907	0.52%	0.02%
	CR+PC/LWAL+CDL+LFC:0.0/H:1/RES	\$1,808.9M	55,626	0.52%	1.08%
	CR+PC/LDUAL+CDM+LFC:6.5/HBET:3-5/RES	\$1,776.2M	3,492	0.51%	0.07%
	CR+PC/LWAL+CDM+LFC:6.5/HBET:3-5/RES	\$1,730.5M	3,391	0.50%	0.07%
	CR+PC/LDUAL+CDM+LFC:5.0/HBET:3-5/RES	\$1,533.3M	2,963	0.44%	0.06%
RC	CR+PC/LWAL+CDM+LFC:5.0/HBET:3-5/RES	\$1,448.3M	2,788	0.42%	0.05%
	CR+CIP/LFINF+CDH+LFC:16.0/HBET:3-5/RES	\$1,441.0M	2,601	0.42%	0.05%
	CR+CIP/LFINF+CDM+LFC:6.5/HBET:3-5/RES	\$1,425.0M	2,711	0.41%	0.05%
	CR+CIP/LFINF+CDL+LFC:4.0/H:1/RES	\$1,407.4M	41,158	0.41%	0.80%
	CR+PC/LWAL+CDM+LFC:4.0/H:2/COM	\$1,187.8M	5,035	0.34%	0.10%
	CR+PC/LDUAL+CDM+LFC:6.5/HBET:6-/RES	\$1,186.1M	587	0.34%	0.01%
ADO/E	MUR+ADO/LWAL+CDN/H:1/COM	\$1,184.3M	9,277	0.34%	0.18%
	CR+PC/LWAL+CDM+LFC:2.0/H:2/COM	\$1,155.6M	4,815	0.33%	0.09%
	CR+PC/LWAL+CDM+LFC:6.5/H:2/COM	\$1,150.9M	5,013	0.33%	0.10%
	CR+PC/LWAL+CDL+LFC:4.0/H:1/RES	\$1,142.2M	33,431	0.33%	0.65%
	CR+CIP/LFINF+CDH+LFC:16.0/H:2/RES	\$1,107.7M	10,656	0.32%	0.21%
	CR+CIP/LFINF+CDM+LFC:4.0/H:1/RES	\$1,071.1M	31,078	0.31%	0.60%
	CR+CIP/LFINF+CDN/HBET:6-/RES	\$1,063.1M	455	0.31%	0.01%
	CR+PC/LDUAL+CDM+LFC:5.0/HBET:6-/RES	\$1,023.2M	457	0.30%	0.01%
	CR+PC/LWAL+CDM+LFC:6.5/HBET:6-/RES	\$1,006.2M	498	0.29%	0.01%
	CR+CIP/LFINF+CDH+LFC:11.0/H:1/RES	\$965.7M	28,130	0.28%	0.55%
	CR+PC/LFM+CDM+LFC:6.5/HBET:3-5/RES	\$899.7M	1,766	0.26%	0.03%
	CR+PC/LFM+CDL+LFC:0.0/H:1/RES	\$885.3M	27,082	0.26%	0.52%
	CR+CIP/LFINF+CDH+LFC:16.0/HBET:6-/RES	\$861.1M	387	0.25%	0.01%
	CR+CIP/LFINF+CDH+LFC:16.0/H:1/RES	\$847.3M	24,577	0.25%	0.48%
	CR+PC/LDUAL+CDM+LFC:8.0/HBET:3-5/RES	\$843.5M	1,611	0.24%	0.03%
	CR+PC/LWAL+CDM+LFC:5.0/HBET:6-/RES	\$838.3M	375	0.24%	0.01%
	CR+CIP/LFINF+CDM+LFC:2.0/H:1/RES	\$817.3M	25,634	0.24%	0.50%
	CR+CIP/LFINF+CDM+LFC:5.0/HBET:3-5/RES	\$812.0M	1,551	0.23%	0.03%
MUR	MUR/LWAL+CDL/HBET:3-5/RES	\$805.3M	1,653	0.23%	0.03%
	CR+PC/LFM+CDL+LFC:4.0/HBET:3-5/RES	\$800.9M	1,487	0.23%	0.03%
	CR+PC/LWAL+CDM+LFC:8.0/HBET:3-5/RES	\$789.7M	1,503	0.23%	0.03%
RC	CR/LFINF+CDH+LFC:16.0/HBET:3-5/COM	\$767.3M	2,516	0.22%	0.05%
	CR/LFINF+CDL+LFC:4.0/HBET:3-5/COM	\$765.2M	2,570	0.22%	0.05%
	CR+PC/LFM+CDM+LFC:5.0/HBET:3-5/RES	\$764.7M	1,459	0.22%	0.03%
	CR+CIP/LFINF+CDH+LFC:11.0/HBET:3-5/RES	\$764.0M	1,459	0.22%	0.03%
S	S/LFBR+CDM/H:1/IND	\$762.5M	733	0.22%	0.01%
	CR+CIP/LFINF+CDH+LFC:5.0/HBET:3-5/RES	\$745.0M	1,495	0.22%	0.03%
	CR+PC/LDUAL+CDM+LFC:3.0/HBET:3-5/RES	\$715.7M	1,450	0.21%	0.03%
	CR/LFINF+CDL+LFC:0.0/HBET:3-5/COM	\$710.6M	2,223	0.21%	0.04%
	CR+PC/LFM+CDL+LFC:0.0/HBET:3-5/RES	\$695.6M	1,414	0.20%	0.03%
	CR/LFINF+CDM+LFC:4.0/HBET:3-5/COM	\$694.6M	2,116	0.20%	0.04%
RC	CR/LFINF+CDM+LFC:4.0/H:2/COM	\$689.5M	2,708	0.20%	0.05%
	CR+PC/LFM+CDM+LFC:8.0/HBET:6-/RES	\$685.3M	325	0.20%	0.01%
	CR/LFINF+CDM+LFC:2.0/HBET:3-5/COM	\$675.3M	1,979	0.20%	0.04%
	CR/LFINF+CDM+LFC:6.5/HBET:3-5/COM	\$673.9M	2,179	0.19%	0.04%
	CR/LFINF+CDM+LFC:2.0/H:2/COM	\$670.6M	2,578	0.19%	0.05%
	CR+PC/LWAL+CDL+LFC:8.5/HBET:6-/RES	\$669.8M	328	0.19%	0.01%
	CR/LFINF+CDM+LFC:6.5/H:2/COM	\$668.3M	2,714	0.19%	0.05%
W	W/LFM+CDH/H:1/RES	\$648.1M	21,824	0.19%	0.42%
	CR+PC/LWAL+CDM+LFC:3.0/HBET:3-5/RES	\$647.7M	1,313	0.19%	0.03%
	CR+CIP/LFINF+CDM+LFC:6.5/H:1/RES	\$641.0M	18,960	0.19%	0.37%
	CR+CIP/LFINF+CDL+LFC:4.0/HBET:6-/RES	\$639.4M	295	0.18%	0.01%
	CR+PC/LWAL+CDM+LFC:4.0/HBET:3-5/COM	\$631.4M	1,923	0.18%	0.04%
RC	CR/LFINF+CDL+LFC:4.0/H:2/COM	\$630.0M	2,518	0.18%	0.05%
	CR+PC/LWAL+CDM+LFC:2.0/HBET:3-5/COM	\$613.9M	1,799	0.18%	0.03%
	CR+PC/LWAL+CDM+LFC:6.5/HBET:3-5/COM	\$612.7M	1,981	0.18%	0.04%
	CR+CIP/LFINF+CDM+LFC:2.0/H:2/RES	\$602.7M	6,468	0.17%	0.13%