

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 = "Brazil"
```

Exposure files:
Exposure_Com_Brazil.csv
Exposure_Ind_Brazil.csv
Exposure_Res_Brazil.csv

Sanity checks and formats

Exposure at National level

Summary by occupancy type

	OCCUPANTS	BUILDINGS	COST_USD	BUILDINGS_%	COST_USD_%
OCCUPANCY					
Res	213.3M	58,167.5K	\$4,449.4B	95.19%	83.96%
Ind	0.0M	738.7K	\$173.3B	1.21%	3.27%
Com	0.0M	2,200.6K	\$676.8B	3.60%	12.77%

Other metrics to consider

	AREA_SQM	COST_BUILDING_USD	AVG_BUILDING_AREA_SQM	AVG_COST_PER_AREA_USD
OCCUPANCY				
Total	6,480.7M	\$3,987.0B	106	\$818
Res	5,661.1M	\$3,437.0B	97	\$786
Ind	185.0M	\$95.4B	251	\$936
Com	634.5M	\$454.7B	288	\$1,067

Exposure summary at Admin level 1

	COST_USD	BUILDINGS	OCCUPANTS	COST_USD_%	BUILDINGS_%	OCCUPANTS_%
NAME_1						
São Paulo	\$1,263.5B	13,492.5K	46,649.1K	23.84%	22.08%	21.87%
Minas Gerais	\$565.3B	6,296.8K	21,411.9K	10.67%	10.30%	10.04%
Rio de Janeiro	\$475.0B	5,354.4K	17,463.3K	8.96%	8.76%	8.19%
Bahia	\$353.2B	4,262.7K	14,985.3K	6.66%	6.98%	7.03%
Rio Grande do Sul	\$349.0B	4,051.7K	11,463.6K	6.59%	6.63%	5.38%
Paraná	\$324.6B	3,729.7K	11,597.5K	6.13%	6.10%	5.44%
Pernambuco	\$219.3B	2,616.2K	9,674.8K	4.14%	4.28%	4.54%
Santa Catarina	\$205.8B	2,311.8K	7,315.1K	3.88%	3.78%	3.43%
Ceará	\$204.5B	2,463.2K	9,240.6K	3.86%	4.03%	4.33%
Goiás	\$176.9B	1,969.7K	7,206.6K	3.34%	3.22%	3.38%
Pará	\$149.7B	2,109.6K	8,760.8K	2.82%	3.45%	4.11%
Maranhão	\$133.2B	1,820.5K	7,153.3K	2.51%	2.98%	3.35%
Espírito Santo	\$103.8B	1,157.4K	4,108.5K	1.96%	1.89%	1.93%
Paraíba	\$93.5B	1,115.0K	4,059.9K	1.76%	1.82%	1.90%
Mato Grosso	\$85.8B	1,014.8K	3,567.2K	1.62%	1.66%	1.67%
Rio Grande do Norte	\$79.4B	931.0K	3,560.9K	1.50%	1.52%	1.67%
Distrito Federal	\$75.2B	806.7K	3,094.3K	1.42%	1.32%	1.45%
Piauí	\$72.3B	909.8K	3,280.7K	1.36%	1.49%	1.54%
Alagoas	\$71.3B	872.1K	3,365.4K	1.35%	1.43%	1.58%
Mato Grosso do Sul	\$69.6B	814.2K	2,833.4K	1.31%	1.33%	1.33%
Amazonas	\$65.4B	897.2K	4,270.0K	1.23%	1.47%	2.00%
Sergipe	\$50.9B	613.2K	2,338.5K	0.96%	1.00%	1.10%
Rondônia	\$39.3B	539.3K	1,815.3K	0.74%	0.88%	0.85%
Tocantins	\$35.2B	425.6K	1,607.4K	0.66%	0.70%	0.75%
Acre	\$15.3B	226.7K	906.9K	0.29%	0.37%	0.43%
Amapá	\$12.9B	177.4K	877.6K	0.24%	0.29%	0.41%
Roraima	\$9.8B	127.5K	652.7K	0.19%	0.21%	0.31%

Exposure by simplified taxonomy

Adding `MACRO_TAXO` column						
	COST_USD	BUILDINGS	OCCUPANTS	COST_USD_%	BUILDINGS_%	OCCUPANTS_%
MACRO_TAXO						
MCF	\$1,843.8B	14,810.6K	48,995.6K	34.79%	24.24%	22.97%
MUR	\$1,736.5B	35,800.3K	109,702.0K	32.77%	58.59%	51.44%
RC	\$1,263.9B	3,365.2K	33,422.1K	23.85%	5.51%	15.67%
W	\$298.3B	5,329.3K	16,613.4K	5.63%	8.72%	7.79%
S	\$89.5B	399.9K	0.0K	1.69%	0.65%	0.00%
ADO/E	\$45.7B	1,011.3K	3,269.0K	0.86%	1.66%	1.53%
OT	\$21.9B	390.1K	1,258.5K	0.41%	0.64%	0.59%

Exposure by taxonomy

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

		COST_USD	BUILDINGS	COST_USD_%	BUILDINGS_%
MACRO_TAXO	TAXONOMY				
MUR	MUR/LWAL+DNO/H:1/RES	\$1,147.1B	23,306.4K	24.13%	39.72%
MCF	MCF/LWAL+DUL/H:1/RES	\$947.5B	10,152.0K	19.93%	17.30%
RC	CR/LFINF+DUL/H:3/RES	\$624.7B	2,379.7K	13.14%	4.06%
MCF	MCF/LWAL+DUL/H:2/RES	\$427.8B	2,292.0K	9.00%	3.91%
MUR	MUR/LWAL+DNO/H:2/RES	\$379.2B	10,271.6K	7.98%	17.50%
RC	CR/LFINF+DUL/HBET:4-6/RES	\$173.5B	141.6K	3.65%	0.24%
MUR	MUR/LWAL+DNO/H:3/RES	\$138.2B	1,871.8K	2.91%	3.19%
MCF	MCF/LWAL+DUL/H:3/RES	\$137.6B	983.1K	2.90%	1.68%
W	W+WO/LN+DNO/H:1/RES	\$119.5B	1,972.4K	2.51%	3.36%
RC	CR/LFINF+DUL/HBET:7-/RES	\$108.0B	38.6K	2.27%	0.07%
W	W+WLI/LWAL+DNO/H:1/RES	\$105.1B	1,734.3K	2.21%	2.96%
MCF	MCF/LWAL+DNO/H:1/COM1	\$100.9B	547.8K	2.12%	0.93%
	MCF/LWAL+DNO/H:2/COM1	\$67.0B	181.7K	1.41%	0.31%
MUR	MUR/LWAL+DNO/H:1/COM1	\$50.3B	272.9K	1.06%	0.47%
MCF	MCF/LWAL+DNO/H:2/COM6	\$46.2B	150.3K	0.97%	0.26%
RC	CR/LFINF+DUL/HBET:4-6/COM6	\$45.3B	54.8K	0.95%	0.09%
W	W+WLI/LWAL+DNO/H:2/RES	\$40.2B	885.3K	0.85%	1.51%
	W+WO/LN+DNO/H:2/RES	\$33.5B	737.2K	0.70%	1.26%
ADO/E	MUR+ADO/LWAL+DNO/H:1/RES	\$33.4B	678.0K	0.70%	1.16%
RC	CR/LFINF+DUL/HBET:4-6/COM1	\$28.8B	29.1K	0.61%	0.05%

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