

# 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 S
hapely GEOS version (3.9.1-CAPI-1.14.2) is incompatible with the GEOS version PyGEOS was compil
ed with (3.10.1-CAPI-1.16.0). Conversions between both will be slow.
  warnings.warn(
```

```
# Parameters
country = "Costa_Rica"
```

Exposure files:  
Exposure\_Com\_Costa\_Rica.csv  
Exposure\_Ind\_Costa\_Rica.csv  
Exposure\_Res\_Costa\_Rica.csv

## Sanity checks and formats

Costa\_Rica  
Exposure/Exposure/Exposure\_Com\_Costa\_Rica.csv  
Exposure/Exposure/Exposure\_Ind\_Costa\_Rica.csv  
Exposure/Exposure/Exposure\_Res\_Costa\_Rica.csv  
Occupants / Dwellings = 3.5  
Reference avg household size (2019) = 3.33  
WARNING - Check population:  
Exposure population = 4302.0k  
UN 2021 population = 5139.0k  
Population (exposure / UN\_2021) = 0.84  
Exposure models OK

## Exposure at National level

### Summary by occupancy type

	OCCUPANTS	BUILDINGS	COST_USD	BUILDINGS_%	COST_USD_%
OCCUPANCY					
Res	4,301.7K	1,186.0K	\$117.4B	96.00%	73.36%
Ind	0.0K	19.8K	\$20.7B	1.61%	12.90%
Com	0.0K	29.5K	\$22.0B	2.39%	13.73%

### Other metrics to consider

	AREA_SQM	COST_BUILDING_USD	AVG_BUILDING_AREA_SQM	AVG_COST_PER_AREA_USD
OCCUPANCY				
Total	170.3M	\$105.4B	138	\$940
Res	125.1M	\$81.9B	105	\$939
Ind	20.3M	\$9.9B	1,025	\$1,015
Com	24.9M	\$13.7B	842	\$885

## Exposure summary at Admin level 1

	COST_USD	BUILDINGS	OCCUPANTS	COST_USD_%	BUILDINGS_%	OCCUPANTS_%
NAME_1						
San José	\$57.0B	397.2K	1,406.6K	35.64%	32.15%	32.70%
Alajuela	\$33.3B	248.7K	848.1K	20.79%	20.13%	19.72%
Heredia	\$22.1B	129.4K	433.7K	13.82%	10.47%	10.08%
Cartago	\$17.4B	133.5K	488.6K	10.90%	10.81%	11.36%
Puntarenas	\$11.2B	122.7K	411.7K	6.98%	9.94%	9.57%
Guanacaste	\$9.8B	98.0K	326.2K	6.11%	7.93%	7.58%
Limón	\$9.2B	105.9K	386.9K	5.77%	8.57%	8.99%

## Exposure by simplified taxonomy

Adding `MACRO\_TAX0` column

	COST_USD	BUILDINGS	OCCUPANTS	COST_USD_%	BUILDINGS_%	OCCUPANTS_%
MACRO_TAXO						
MCF	\$108,891.9M	584.3K	2,066.0K	68.03%	47.30%	48.03%
RC	\$21,450.9M	174.9K	580.3K	13.40%	14.16%	13.49%
W	\$11,463.7M	284.9K	1,020.6K	7.16%	23.06%	23.72%
S	\$10,644.6M	15.1K	0.0K	6.65%	1.22%	0.00%
MR	\$6,595.9M	140.8K	506.0K	4.12%	11.40%	11.76%
OT	\$1,012.7M	35.4K	128.8K	0.63%	2.86%	2.99%

## Exposure by taxonomy

Showing only taxonomies that represent 90% of the total `COST\_USD`

		COST_USD	BUILDINGS	COST_USD_%	BUILDINGS_%
MACRO_TAXO	TAXONOMY				
	MCF/LWAL+CDM+DUM/HEX:2/RES	\$50,864.3M	137,496	35.41%	11.32%
MCF	MCF/LWAL+CDM+DUM/HEX:1/RES	\$35,231.3M	334,558	24.53%	27.55%
	MCF/LWAL+CDL+DUL/HEX:1/RES	\$6,612.0M	92,528	4.60%	7.62%
MR	MR/LWAL+CDH+DUH/HEX:1/RES	\$6,595.9M	140,817	4.59%	11.60%
	W+WBB/LPB+CDL+DUL/HEX:1/RES	\$5,603.2M	194,570	3.90%	16.02%
W	W+WLI/LWAL+CDL+DUL/HEX:1/RES	\$5,217.9M	89,585	3.63%	7.38%
RC	CR+PC/LWAL+CDM+DUM/HEX:1/RES	\$4,455.5M	108,506	3.10%	8.94%
	MCF/LWAL+CDH+DUH/HEX:2/COM	\$3,633.2M	4,454	2.53%	0.37%
MCF	MCF/LWAL+CDM+DUM/HEX:2/COM	\$3,531.0M	4,334	2.46%	0.36%
	MCF/LWAL+CDL+DUL/HEX:2/COM	\$2,623.8M	3,213	1.83%	0.26%
	CR+PCPS/LFM+CDH+DUH/HEX:1/IND	\$2,056.8M	2,059	1.43%	0.17%
	CR+PCPS/LFM+CDM+DUM/HEX:1/IND	\$1,997.6M	2,000	1.39%	0.16%
RC	CR+PC/LWAL+CDL+DUL/HEX:1/RES	\$1,833.1M	52,623	1.28%	4.33%
	CR/LFM+CDH+DUH/HEX:1/IND	\$1,597.3M	1,549	1.11%	0.13%
	CR/LFM+CDM+DUM/HEX:1/IND	\$1,552.5M	1,502	1.08%	0.12%
	CR+PCPS/LFM+CDL+DUL/HEX:1/IND	\$1,489.8M	1,491	1.04%	0.12%
	S+SR/LFM+CDH+DUH/HEX:1/IND	\$1,328.3M	1,576	0.92%	0.13%
S	S+SR/LFM+CDM+DUM/HEX:1/IND	\$1,292.4M	1,534	0.90%	0.13%
RC	CR/LFM+CDL+DUL/HEX:1/IND	\$1,156.2M	1,130	0.80%	0.09%
	MCF/LWAL+CDH+DUH/HEX:3/COM	\$1,088.3M	679	0.76%	0.06%
MCF	MCF/LWAL+CDM+DUM/HEX:3/COM	\$1,056.5M	659	0.74%	0.05%
OT	UNK/UNK+DNO/HEX:1/RES	\$1,012.7M	35,363	0.70%	2.91%
	S+SR/LFM+CDL+DUL/HEX:1/IND	\$959.4M	1,140	0.67%	0.09%
S	S+SR/LFBR+CDH+DUH/HEX:1/IND	\$861.6M	809	0.60%	0.07%

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