

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 = "Democratic_Republic_of_the_Congo"
```

Exposure files:
Exposure_Com_Democratic_Republic_of_the_Congo.csv
Exposure_Ind_Democratic_Republic_of_the_Congo.csv
Exposure_Res_Democratic_Republic_of_the_Congo.csv

Sanity checks and formats

Democratic_Republic_of_the_Congo
Exposure/Exposure/Exposure_Com_Democratic_Republic_of_the_Congo.csv
Exposure/Exposure/Exposure_Ind_Democratic_Republic_of_the_Congo.csv
Exposure/Exposure/Exposure_Res_Democratic_Republic_of_the_Congo.csv
Occupants / Dwellings = 5.2
Reference avg household size (2019) = 5.25
Population (exposure / UN_2021) = 0.97
Exposure models OK

Exposure at National level

Summary by occupancy type

	OCCUPANTS	BUILDINGS	COST_USD	BUILDINGS_%	COST_USD_%
OCCUPANCY					
Res	89.5M	16,610.8K	\$207.4B	97.29%	89.97%
Ind	0.0M	127.2K	\$8.1B	0.74%	3.52%
Com	0.0M	335.5K	\$15.0B	1.97%	6.51%

Other metrics to consider

	AREA_SQM	COST_BUILDING_USD	AVG_BUILDING_AREA_SQM	AVG_COST_PER_AREA_USD
OCCUPANCY				
Total	1,431.6M	\$184.2B	84	\$161
Res	1,332.3M	\$167.9B	80	\$156
Ind	36.2M	\$5.3B	285	\$224
Com	63.1M	\$11.0B	188	\$238

Exposure summary at Admin level 1

	COST_USD	BUILDINGS	OCCUPANTS	COST_USD_%	BUILDINGS_%	OCCUPANTS_%
NAME_1						
Haut-Katanga	\$21,566.0M	1,597.3K	8,376.8K	9.36%	9.36%	9.36%
North Kivu	\$18,938.3M	1,402.7K	7,356.2K	8.22%	8.22%	8.22%
Haut-Lomami	\$16,147.7M	1,196.0K	6,272.2K	7.01%	7.00%	7.00%
Kinshasa	\$15,762.7M	1,167.5K	6,122.7K	6.84%	6.84%	6.84%
Central Kasai	\$14,461.2M	1,071.1K	5,617.3K	6.27%	6.27%	6.27%
Kasai	\$12,860.2M	952.5K	4,995.4K	5.58%	5.58%	5.58%
South Kivu	\$12,660.5M	937.7K	4,917.8K	5.49%	5.49%	5.49%
Ituri	\$12,582.5M	931.9K	4,887.5K	5.46%	5.46%	5.46%
Kasai-Oriental	\$11,438.3M	847.2K	4,443.0K	4.96%	4.96%	4.96%
Tanganyika	\$11,016.0M	815.9K	4,279.0K	4.78%	4.78%	4.78%
Kwilu	\$9,085.8M	673.0K	3,529.6K	3.94%	3.94%	3.94%
Lomami	\$8,401.3M	622.3K	3,263.7K	3.64%	3.64%	3.64%
Lualaba	\$8,224.8M	609.2K	3,195.1K	3.57%	3.57%	3.57%
Tshopo	\$7,029.4M	520.7K	2,730.8K	3.05%	3.05%	3.05%
Maniema	\$6,190.1M	458.5K	2,404.8K	2.69%	2.69%	2.69%
Sud-Ubangi	\$6,133.3M	454.3K	2,382.8K	2.66%	2.66%	2.66%
Kongo-Central	\$6,125.7M	453.8K	2,379.8K	2.66%	2.66%	2.66%
Quatre	\$4,949.5M	366.7K	1,923.0K	2.15%	2.15%	2.15%
Kwango	\$4,698.3M	348.1K	1,825.4K	2.04%	2.04%	2.04%
Mongala	\$4,645.7M	344.2K	1,805.0K	2.02%	2.02%	2.02%
Upper Uele	\$4,254.5M	315.2K	1,653.0K	1.85%	1.85%	1.85%
Tshuapa	\$3,404.0M	252.2K	1,322.7K	1.48%	1.48%	1.48%
Mai-Ndombe	\$3,352.8M	248.5K	1,303.1K	1.45%	1.46%	1.46%
Nord-Ubangi	\$3,113.0M	230.7K	1,209.9K	1.35%	1.35%	1.35%
Lower Uele	\$3,030.5M	224.6K	1,177.8K	1.31%	1.32%	1.32%
Sankuru	\$427.2M	31.8K	166.9K	0.19%	0.19%	0.19%

Exposure by simplified taxonomy

Adding `MACRO_TAXO` column

	COST_USD	BUILDINGS	OCCUPANTS	COST_USD_%	BUILDINGS_%	OCCUPANTS_%
MACRO_TAXO						
ADO/E	\$82,362.6M	6,849.0K	35,479.9K	35.73%	40.12%	39.62%
W	\$68,500.5M	5,359.0K	27,825.2K	29.72%	31.39%	31.08%
MUR	\$61,923.6M	3,971.6K	21,141.1K	26.87%	23.26%	23.61%
RC	\$9,466.3M	255.7K	1,878.2K	4.11%	1.50%	2.10%
MCF	\$3,915.5M	158.6K	939.1K	1.70%	0.93%	1.05%
S	\$2,691.0M	31.8K	0.0K	1.17%	0.19%	0.00%
OT	\$1,639.8M	447.8K	2,277.9K	0.71%	2.62%	2.54%

Exposure by taxonomy

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

		COST_USD	BUILDINGS	COST_USD_%	BUILDINGS_%
MACRO_TAXO	TAXONOMY				
ADO/E	MUR+ADO/LWAL+CDN/H:2/RES	\$35,742.0M	2,407.8K	17.30%	15.13%
	MUR+ADO/LWAL+CDN/H:1/RES	\$21,703.2M	2,469.5K	10.51%	15.51%
W	W/LWAL+CDL/H:2/RES	\$16,924.2M	855.1K	8.19%	5.37%
	W+WWD/LWAL+CDN/H:1/RES	\$16,761.0M	2,288.6K	8.11%	14.38%
MUR	MUR+CL/LWAL+CDN/H:2/RES	\$16,029.5M	971.9K	7.76%	6.11%
	MUR+CB/LWAL+CDN/H:2/RES	\$13,387.3M	811.7K	6.48%	5.10%
ADO/E	E+ETO/LWAL+CDN/H:1/RES	\$11,972.2M	1,634.7K	5.80%	10.27%
	W+WWD/LWAL+CDN/H:2/RES	\$11,829.8M	956.3K	5.73%	6.01%
W	W/LWAL+CDL/H:3/RES	\$10,396.4M	341.7K	5.03%	2.15%
	W/LWAL+CDL/H:1/RES	\$10,276.7M	877.0K	4.97%	5.51%
MUR	MUR+CL/LWAL+CDN/H:1/RES	\$9,733.4M	996.8K	4.71%	6.26%
	MUR+CB/LWAL+CDN/H:1/RES	\$8,129.0M	832.5K	3.93%	5.23%
ADO/E	MUR+ADO/LWAL+CDN/HBET:3-6/RES	\$4,725.4M	32.5K	2.29%	0.20%
	MUR+ADO/LWAL+CDN/H:2/COM	\$3,689.6M	67.1K	1.79%	0.42%
	MUR+ADO/LWAL+CDN/H:1/COM	\$3,593.4M	134.3K	1.74%	0.84%
RC	CR/LFINF+CDL/H:3/RES	\$2,473.5M	69.1K	1.20%	0.43%
MUR	MUR+CL/LWAL+CDN/HBET:3-6/RES	\$2,119.2M	13.1K	1.03%	0.08%
RC	CR/LFINF+CDL/H:2/RES	\$2,013.3M	86.5K	0.97%	0.54%
MUR	MUR+CL/LWAL+CDN/H:1/IND	\$1,921.0M	45.7K	0.93%	0.29%
	MUR+CB/LWAL+CDN/HBET:3-6/RES	\$1,769.9M	11.0K	0.86%	0.07%
	MUR+CL/LWAL+CDN/H:2/IND	\$1,397.1M	15.3K	0.68%	0.10%