

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 = "Nigeria"
```

Exposure files:
Exposure_Com_Nigeria.csv
Exposure_Ind_Nigeria.csv
Exposure_Res_Nigeria.csv

Sanity checks and formats

Nigeria
Exposure/Exposure/Exposure_Com_Nigeria.csv
Exposure/Exposure/Exposure_Ind_Nigeria.csv
Exposure/Exposure/Exposure_Res_Nigeria.csv
Occupants / Dwellings = 4.6
Reference avg household size (2019) = 4.8
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	206.0M	42,489.6K	\$937.4B	97.22%	89.36%
Ind	0.0M	202.3K	\$24.6B	0.46%	2.35%
Com	0.0M	1,011.1K	\$87.0B	2.31%	8.29%

Other metrics to consider

	AREA_SQM	COST_BUILDING_USD	AVG_BUILDING_AREA_SQM	AVG_COST_PER_AREA_USD
OCCUPANCY				
Total	3,575.5M	\$857.5B	82	\$293
Res	3,324.7M	\$777.5B	78	\$282
Ind	57.7M	\$15.9B	285	\$427
Com	193.2M	\$64.1B	191	\$450

Exposure summary at Admin level 1

	COST_USD	BUILDINGS	OCCUPANTS	COST_USD_%	BUILDINGS_%	OCCUPANTS_%
NAME_1						
Lagos	\$78.9B	2,583.1K	12,596.5K	7.52%	5.91%	6.11%
Kano	\$64.4B	3,023.2K	14,033.8K	6.14%	6.92%	6.81%
Oyo	\$46.7B	1,737.8K	8,315.1K	4.46%	3.98%	4.04%
Rivers	\$43.5B	1,616.1K	7,745.2K	4.15%	3.70%	3.76%
Kaduna	\$42.0B	1,885.8K	8,813.6K	4.00%	4.32%	4.28%
Ogun	\$37.7B	1,317.4K	6,359.4K	3.59%	3.01%	3.09%
Katsina	\$36.5B	1,793.2K	8,283.6K	3.48%	4.10%	4.02%
Delta	\$32.8B	1,276.8K	6,073.9K	3.13%	2.92%	2.95%
Akwa Ibom	\$32.6B	1,258.5K	5,993.8K	3.11%	2.88%	2.91%
Imo	\$32.5B	1,202.1K	5,766.7K	3.10%	2.75%	2.80%
Anambra	\$31.6B	1,198.7K	5,729.6K	3.02%	2.74%	2.78%
Bauchi	\$30.7B	1,489.8K	6,880.3K	2.93%	3.41%	3.34%
Niger	\$29.1B	1,280.9K	6,000.8K	2.77%	2.93%	2.91%
Borno	\$28.6B	1,367.2K	6,337.6K	2.72%	3.13%	3.08%
Ondo	\$28.1B	1,064.0K	5,072.5K	2.68%	2.43%	2.46%
Benue	\$27.8B	1,281.2K	5,967.6K	2.65%	2.93%	2.90%
Osun	\$27.6B	1,015.2K	4,867.0K	2.63%	2.32%	2.36%
Federal Capital Territory	\$26.2B	967.6K	4,639.7K	2.50%	2.21%	2.25%
Edo	\$25.3B	944.1K	4,520.0K	2.41%	2.16%	2.19%
Jigawa	\$25.3B	1,292.2K	5,939.0K	2.41%	2.96%	2.88%
Enugu	\$24.6B	960.5K	4,570.3K	2.34%	2.20%	2.22%
Kogi	\$24.5B	956.7K	4,552.2K	2.33%	2.19%	2.21%
Sokoto	\$23.7B	1,173.0K	5,414.2K	2.26%	2.68%	2.63%
Abia	\$23.2B	826.8K	3,989.1K	2.22%	1.89%	1.94%
Plateau	\$21.4B	965.3K	4,507.0K	2.04%	2.21%	2.19%
Adamawa	\$20.9B	1,025.7K	4,741.8K	1.99%	2.35%	2.30%
Ekiti	\$20.3B	731.4K	3,517.2K	1.93%	1.67%	1.71%
Zamfara	\$19.9B	1,022.3K	4,696.0K	1.90%	2.34%	2.28%
Kebbi	\$19.8B	1,005.7K	4,628.2K	1.88%	2.30%	2.25%
Cross River	\$18.9B	779.8K	3,681.8K	1.80%	1.78%	1.79%
Kwara	\$18.5B	701.2K	3,347.8K	1.76%	1.60%	1.63%
Yobe	\$15.6B	773.4K	3,563.8K	1.49%	1.77%	1.73%
Gombe	\$14.8B	719.2K	3,326.5K	1.41%	1.65%	1.61%
Taraba	\$14.7B	690.5K	3,205.8K	1.40%	1.58%	1.56%
Ebonyi	\$14.6B	677.3K	3,153.5K	1.39%	1.55%	1.53%
Bayelsa	\$12.9B	531.6K	2,508.0K	1.23%	1.22%	1.22%
Nasarawa	\$12.8B	567.6K	2,660.0K	1.22%	1.30%	1.29%

Exposure by simplified taxonomy

Adding `MACRO_TAXO` column

	COST_USD	BUILDINGS	OCCUPANTS	COST_USD_%	BUILDINGS_%	OCCUPANTS_%
MACRO_TAXO						
MUR	\$327.9B	11,747.6K	55.9M	31.26%	26.88%	27.12%
ADO/E	\$266.9B	13,150.7K	60.9M	25.44%	30.09%	29.59%
W	\$245.7B	13,297.3K	61.9M	23.42%	30.43%	30.06%
RC	\$115.4B	1,719.4K	9.9M	11.00%	3.93%	4.81%
MCF	\$71.0B	1,599.1K	7.4M	6.76%	3.66%	3.61%
OT	\$14.3B	2,138.4K	9.9M	1.37%	4.89%	4.80%
S	\$7.8B	50.6K	0.0M	0.75%	0.12%	0.00%

Exposure by taxonomy

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

		COST_USD	BUILDINGS	COST_USD_%	BUILDINGS_%
MACRO_TAXO	TAXONOMY				
W	W+WWD/LWAL+CDN/H:1/RES	\$100.6B	7,501.4K	10.71%	18.02%
ADO/E	MUR+ADO/LWAL+CDN/H:2/RES	\$90.1B	3,317.6K	9.60%	7.97%
MUR	MUR+CB/LWAL+CDN/H:2/RES	\$78.4B	2,597.1K	8.35%	6.24%
	MUR+CL/LWAL+CDN/H:2/RES	\$78.4B	2,597.1K	8.35%	6.24%
W	W+WWD/LWAL+CDN/H:2/RES	\$71.0B	3,134.5K	7.56%	7.53%
ADO/E	E+ETO/LWAL+CDN/H:1/RES	\$61.2B	4,565.0K	6.52%	10.96%
	MUR+ADO/LWAL+CDN/H:1/RES	\$54.7B	3,402.7K	5.83%	8.17%
MUR	MUR+CB/LWAL+CDN/H:1/RES	\$47.6B	2,663.7K	5.07%	6.40%
	MUR+CL/LWAL+CDN/H:1/RES	\$47.6B	2,663.7K	5.07%	6.40%
MCF	MCF/LWAL+CDL/H:2/RES	\$34.1B	753.8K	3.64%	1.81%
RC	CR/LFINF+CDL/H:3/RES	\$30.7B	468.5K	3.27%	1.13%
	CR/LFINF+CDL/H:2/RES	\$25.0B	586.2K	2.66%	1.41%
W	W/LWAL+CDL/H:2/RES	\$22.6B	623.7K	2.41%	1.50%
MCF	MCF/LWAL+CDL/H:1/RES	\$20.7B	773.1K	2.21%	1.86%
ADO/E	MUR+ADO/LWAL+CDN/H:2/COM	\$19.0B	189.3K	2.03%	0.45%
	MUR+ADO/LWAL+CDN/H:1/COM	\$18.5B	378.5K	1.98%	0.91%
W	W+WBB/LN+CDN/H:1/RES	\$16.5B	1,077.5K	1.76%	2.59%
W	W/LWAL+CDL/H:3/RES	\$13.9B	249.2K	1.48%	0.60%
	W/LWAL+CDL/H:1/RES	\$13.7B	639.7K	1.46%	1.54%
RC	CR/LFINF+CDL/HBET:4-7/RES	\$13.7B	21.5K	1.46%	0.05%
ADO/E	MUR+ADO/LWAL+CDN/HBET:3-6/RES	\$11.9B	44.8K	1.27%	0.11%
OT	ME+MEO/LWAL+CDN/H:1/RES	\$11.4B	1,700.4K	1.21%	4.08%
	MUR+CB/LWAL+CDN/HBET:3-6/RES	\$10.4B	35.0K	1.10%	0.08%
MUR	MUR+CL/LWAL+CDN/HBET:3-6/RES	\$10.4B	35.0K	1.10%	0.08%
RC	CR/LWAL+CDL/H:3/RES	\$10.2B	156.2K	1.09%	0.38%
MCF	MCF/LWAL+CDL/HBET:3-6/RES	\$9.5B	21.5K	1.01%	0.05%
ADO/E	EWV/LN+CDN/H:1/RES	\$8.3B	1,244.9K	0.89%	2.99%
RC	CR/LWAL+CDL/H:2/RES	\$8.3B	195.4K	0.89%	0.47%