

# 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 = "Benin"
```

Exposure files:  
Exposure\_Com\_Benin.csv  
Exposure\_Ind\_Benin.csv  
Exposure\_Res\_Benin.csv

## Sanity checks and formats

Benin  
Exposure/Exposure/Exposure\_Com\_Benin.csv  
Exposure/Exposure/Exposure\_Ind\_Benin.csv  
Exposure/Exposure/Exposure\_Res\_Benin.csv  
Occupants / Dwellings = 5.1  
Reference avg household size (2019) = 5.2  
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	12.1M	2,267.7K	\$28,116.5M	94.99%	81.85%
Ind	0.0M	33.9K	\$2,234.6M	1.42%	6.50%
Com	0.0M	85.6K	\$4,002.1M	3.58%	11.65%

### Other metrics to consider

	AREA_SQM	COST_BUILDING_USD	AVG_BUILDING_AREA_SQM	AVG_COST_PER_AREA_USD
OCCUPANCY				
Total	207.2M	\$27,893.9M	87	\$166
Res	181.5M	\$23,444.7M	80	\$155
Ind	9.7M	\$1,470.2M	285	\$231
Com	16.0M	\$2,979.0M	187	\$250

## Exposure summary at Admin level 1

	COST_USD	BUILDINGS	OCCUPANTS	COST_USD_%	BUILDINGS_%	OCCUPANTS_%
NAME_1						
Atlantique	\$4,693.3M	326.1K	1,652.6K	13.66%	13.66%	13.66%
Borgou	\$4,483.7M	311.5K	1,578.8K	13.05%	13.05%	13.05%
Ouémé	\$3,697.3M	256.9K	1,302.1K	10.76%	10.76%	10.76%
Alibori	\$3,167.8M	220.1K	1,115.7K	9.22%	9.22%	9.22%
Zou	\$2,811.7M	195.4K	990.2K	8.18%	8.19%	8.18%
Atakora	\$2,747.2M	190.9K	967.6K	8.00%	8.00%	8.00%
Littoral	\$2,462.8M	171.1K	867.4K	7.17%	7.17%	7.17%
Collines	\$2,278.5M	158.3K	802.5K	6.63%	6.63%	6.63%
Plateau	\$2,090.6M	145.3K	736.3K	6.09%	6.09%	6.09%
Kouffo	\$2,090.4M	145.3K	736.2K	6.08%	6.09%	6.09%
Mono	\$1,950.8M	135.6K	687.1K	5.68%	5.68%	5.68%
Donga	\$1,879.3M	130.6K	662.0K	5.47%	5.47%	5.47%

## Exposure by simplified taxonomy

Adding `MACRO\_TAXO` column

	COST_USD	BUILDINGS	OCCUPANTS	COST_USD_%	BUILDINGS_%	OCCUPANTS_%
MACRO_TAXO						
MUR	\$12,461.1M	708.7K	3,380.2K	36.27%	29.69%	27.94%
ADO/E	\$11,378.1M	836.9K	4,324.0K	33.12%	35.06%	35.74%
W	\$6,291.6M	645.8K	3,434.0K	18.31%	27.05%	28.38%
RC	\$1,726.7M	42.6K	257.7K	5.03%	1.78%	2.13%
MCF	\$1,407.8M	52.9K	257.6K	4.10%	2.21%	2.13%
S	\$741.1M	8.5K	0.0K	2.16%	0.35%	0.00%
OT	\$346.9M	91.8K	445.0K	1.01%	3.84%	3.68%

## 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	\$5,341.0M	348,551	17.30%	15.23%
MUR	MUR+CB/LWAL+CDN/H:2/RES	\$3,338.8M	196,102	10.81%	8.57%
W	W+WWD/LWAL+CDN/H:1/RES	\$3,256.4M	430,743	10.55%	18.82%
ADO/E	MUR+ADO/LWAL+CDN/H:1/RES	\$3,243.1M	357,488	10.50%	15.62%
W	W+WWD/LWAL+CDN/H:2/RES	\$2,298.4M	179,988	7.44%	7.86%
	MUR+CB/LWAL+CDN/H:1/RES	\$2,027.4M	201,127	6.57%	8.79%
MUR	MUR+CL/LWAL+CDN/H:2/RES	\$1,457.4M	85,604	4.72%	3.74%
	MUR+CL/LWAL+CDN/H:1/RES	\$885.0M	87,792	2.87%	3.84%
	MUR+ADO/LWAL+CDN/H:2/COM	\$836.6M	14,750	2.71%	0.64%
ADO/E	MUR+ADO/LWAL+CDN/H:1/COM	\$814.8M	29,493	2.64%	1.29%
	MUR+ADO/LWAL+CDN/HBET:3-6/RES	\$706.1M	4,702	2.29%	0.21%
MUR	MUR+STDRE/LWAL+CDN/H:2/RES	\$590.4M	34,675	1.91%	1.51%
RC	CR/LFINF+CDL/H:3/RES	\$553.3M	14,973	1.79%	0.65%
	MUR+CB/LWAL+CDN/H:2/COM	\$512.3M	7,224	1.66%	0.32%
MUR	MUR+CB/LWAL+CDN/H:1/COM	\$498.9M	14,450	1.62%	0.63%
	MUR+CB/LWAL+CDN/H:1/IND	\$495.3M	11,422	1.60%	0.50%
RC	CR/LFINF+CDL/H:2/RES	\$450.4M	18,735	1.46%	0.82%
MUR	MUR+CB/LWAL+CDN/HBET:3-6/RES	\$441.4M	2,652	1.43%	0.12%
MCF	MCF+CB/LWAL+CDL/H:2/RES	\$419.5M	16,426	1.36%	0.72%
	MUR+CB/LWAL+CDN/H:2/IND	\$360.2M	3,810	1.17%	0.17%
MUR	MUR+STDRE/LWAL+CDN/H:1/RES	\$358.5M	35,563	1.16%	1.55%
ADO/E	EWV/LN+CDN/H:1/RES	\$307.3M	81,296	1.00%	3.55%
W	W/LWAL+CDL/H:2/RES	\$279.0M	13,656	0.90%	0.60%
OT	ME+MEO/LWAL+CDN/H:1/RES	\$257.1M	68,027	0.83%	2.97%
MCF	MCF+CB/LWAL+CDL/H:1/RES	\$254.7M	16,845	0.82%	0.74%
RC	CR/LFINF+CDL/HBET:4-7/RES	\$246.9M	688	0.80%	0.03%
S	S+SL/LFM+CDL/H:1/IND	\$218.7M	3,240	0.71%	0.14%
MUR	MUR+CL/LWAL+CDN/H:2/COM	\$217.7M	3,072	0.71%	0.13%
	MUR+CL/LWAL+CDN/H:1/COM	\$212.1M	6,135	0.69%	0.27%

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