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 = "Mozambique"
```

```
Exposure files:
  Exposure_Com_Mozambique.csv
  Exposure_Ind_Mozambique.csv
  Exposure_Res_Mozambique.csv
```

Sanity checks and formats

```
Mozambique
  Exposure/Exposure/Exposure_Com_Mozambique.csv
  Exposure/Exposure/Exposure_Ind_Mozambique.csv
  Exposure/Exposure/Exposure_Res_Mozambique.csv
  Occupants / Dwellings = 4.5
  Reference avg household size (2019) = 4.44
  Population (exposure / UN_2021) = 0.97
Exposure models  OK
```

Exposure at National level

Summary by occupancy type

OCCUPANCY	OCCUPANTS	BUILDINGS	COST_USD	BUILDINGS_%	COST_USD_%
Res	31.2M	6,591.1K	$98,424.1M	97.11%	88.99%
Ind	0.0M	54.6K	$4,413.8M	0.80%	3.99%
Com	0.0M	141.7K	$7,762.3M	2.09%	7.02%

Other metrics to consider

OCCUPANCY	AREA_SQM	COST_BUILDING_USD	AVG_BUILDING_AREA_SQM	AVG_COST_PER_AREA_USD
Total	559.4M	$89,359.8M	82	$198
Res	518.7M	$80,877.3M	79	$190
Ind	15.6M	$2,894.3M	285	$283
Com	25.1M	$5,588.2M	177	$309

Exposure summary at Admin level 1

NAME_1	COST_USD	BUILDINGS	OCCUPANTS	COST_USD_%	BUILDINGS_%	OCCUPANTS_%
Nampula	$21.6B	1,326.8K	6,102.2K	19.55%	19.55%	19.55%
Zamb�zia	$20.5B	1,260.1K	5,795.7K	18.57%	18.57%	18.57%
Tete	$12.6B	773.4K	3,556.9K	11.39%	11.39%	11.39%
Maputo	$12.2B	748.2K	3,441.0K	11.02%	11.02%	11.02%
Manica	$8.5B	522.3K	2,402.1K	7.69%	7.69%	7.69%
Sofala	$8.4B	515.5K	2,370.8K	7.59%	7.59%	7.59%
Cabo Delgado	$7.9B	486.8K	2,239.0K	7.17%	7.17%	7.17%
Niassa	$7.8B	481.4K	2,214.2K	7.09%	7.09%	7.09%
Gaza	$5.5B	338.2K	1,555.4K	4.98%	4.98%	4.98%
Inhambane	$5.5B	334.7K	1,539.3K	4.93%	4.93%	4.93%

Exposure by simplified taxonomy

Adding `MACRO_TAXO` column

MACRO_TAXO	COST_USD	BUILDINGS	OCCUPANTS	COST_USD_%	BUILDINGS_%	OCCUPANTS_%
ADO/E	$37,099.8M	2,851.4K	13,289.8K	33.54%	42.01%	42.57%
MUR	$34,831.6M	1,775.6K	8,041.4K	31.49%	26.16%	25.76%
W	$22,161.4M	1,564.7K	7,006.9K	20.04%	23.05%	22.45%
RC	$7,759.7M	168.9K	979.3K	7.02%	2.49%	3.14%
MCF	$6,366.7M	209.3K	979.3K	5.76%	3.08%	3.14%
S	$1,447.1M	13.7K	0.0K	1.31%	0.20%	0.00%
OT	$933.9M	203.8K	920.0K	0.84%	3.00%	2.95%

Exposure by taxonomy

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

MACRO_TAXO	TAXONOMY	COST_USD	BUILDINGS	COST_USD_%	BUILDINGS_%
ADO/E	MUR+ADO/LWAL+CDN/H:2/RES	$17,724.8M	953,999	17.87%	14.92%
	MUR+ADO/LWAL+CDN/H:1/RES	$10,762.9M	978,458	10.85%	15.30%
MUR	MUR+CB/LWAL+CDN/H:2/RES	$10,476.2M	507,473	10.56%	7.94%
W	W+WLI/LWAL+CDL/H:1/RES	$6,951.5M	552,970	7.01%	8.65%
MUR	MUR+CL/LWAL+CDN/H:2/RES	$6,720.8M	325,553	6.77%	5.09%
	MUR+CB/LWAL+CDN/H:1/RES	$6,361.3M	520,483	6.41%	8.14%
W	W+WWD/LWAL+CDN/H:1/RES	$4,730.9M	516,106	4.77%	8.07%
MUR	MUR+CL/LWAL+CDN/H:1/RES	$4,081.0M	333,904	4.11%	5.22%
ADO/E	EWV/LN+CDN/H:1/RES	$3,930.0M	857,475	3.96%	13.41%
W	W+WLI/LWAL+CDN/H:2/RES	$3,816.0M	179,715	3.85%	2.81%
	W+WWD/LWAL+CDN/H:2/RES	$3,339.0M	215,661	3.37%	3.37%
RC	CR/LFINF+CDL/H:3/RES	$2,744.1M	61,244	2.77%	0.96%
MCF	MCF+CB/LWAL+CDL/H:2/RES	$2,359.4M	76,195	2.38%	1.19%
ADO/E	MUR+ADO/LWAL+CDN/HBET:3-6/RES	$2,343.4M	12,880	2.36%	0.20%
RC	CR/LFINF+CDL/H:2/RES	$2,233.6M	76,637	2.25%	1.20%
MCF	MCF+CB/LWAL+CDN/H:1/RES	$1,432.7M	78,148	1.44%	1.22%
W	W+WLI/LWAL+CDL/H:1/COM	$1,411.5M	36,526	1.42%	0.57%
MUR	MUR+CB/LWAL+CDN/HBET:3-6/RES	$1,385.0M	6,850	1.40%	0.11%
RC	CR/LFINF+CDL/HBET:4-7/RES	$1,224.4M	2,806	1.23%	0.04%
ADO/E	MUR+ADO/LWAL+CDN/H:2/COM	$1,098.9M	15,975	1.11%	0.25%
	MUR+ADO/LWAL+CDN/H:1/COM	$1,070.3M	31,962	1.08%	0.50%
MUR	MUR+CL/LWAL+CDN/HBET:3-6/RES	$888.5M	4,392	0.90%	0.07%
	MUR+CL/LWAL+CDN/H:1/IND	$725.1M	13,794	0.73%	0.22%
	MUR+CB/LWAL+CDN/H:1/IND	$710.8M	13,517	0.72%	0.21%
MCF	MCF+CL/LWAL+CDL/H:2/RES	$691.8M	22,339	0.70%	0.35%