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(
```

```python
# Parameters
country = "Ghana"
```

```
Exposure files:
  Exposure_Com_Ghana.csv
  Exposure_Ind_Ghana.csv
  Exposure_Res_Ghana.csv
```

Sanity checks and formats

Ghana
Exposure/Exposure/Exposure_Com_Ghana.csv
Exposure/Exposure/Exposure_Ind_Ghana.csv
Exposure/Exposure/Exposure_Res_Ghana.csv
Occupants / Dwellings = 3.7
Reference avg household size (2019) = 3.64
Population (exposure / UN_2021) = 0.98
Exposure models OK

Exposure at National level

Summary by occupancy type

OCCUPANCY	OCCUPANTS	BUILDINGS	COST_USD	BUILDINGS_%	COST_USD_%
Res	31.0M	7,934.5K	$216.3B	96.17%	86.16%
Ind	0.0M	101.8K	$13.5B	1.23%	5.39%
Com	0.0M	214.3K	$21.2B	2.60%	8.46%

Other metrics to consider

OCCUPANCY	AREA_SQM	COST_BUILDING_USD	AVG_BUILDING_AREA_SQM	AVG_COST_PER_AREA_USD
Total	717.6M	$208.2B	87	$350
Res	647.4M	$183.8B	82	$334
Ind	29.0M	$8.8B	285	$466
Com	41.2M	$15.7B	192	$515

Exposure summary at Admin level 1

NAME_1	COST_USD	BUILDINGS	OCCUPANTS	COST_USD_%	BUILDINGS_%	OCCUPANTS_%
Ashanti	$55.0B	1,670.3K	6,355.3K	21.90%	20.24%	20.48%
Greater Accra	$48.9B	1,368.6K	5,256.3K	19.47%	16.59%	16.93%
Eastern	$25.6B	846.8K	3,183.7K	10.19%	10.26%	10.26%
Central	$22.9B	745.6K	2,808.8K	9.11%	9.04%	9.05%
Western	$22.6B	766.3K	2,872.4K	9.02%	9.29%	9.25%
Northern	$21.8B	884.6K	3,244.8K	8.69%	10.72%	10.45%
Brong Ahafo	$21.5B	739.4K	2,765.8K	8.57%	8.96%	8.91%
Volta	$20.0B	704.2K	2,628.4K	7.96%	8.54%	8.47%
Upper East	$7.4B	305.8K	1,118.7K	2.93%	3.71%	3.60%
Upper West	$5.4B	219.0K	803.8K	2.16%	2.65%	2.59%

Exposure by simplified taxonomy

Adding `MACRO_TAXO` column

MACRO_TAXO	COST_USD	BUILDINGS	OCCUPANTS	COST_USD_%	BUILDINGS_%	OCCUPANTS_%
MUR	$119,295.7M	3,815.8K	14,482.3K	47.51%	46.25%	46.66%
ADO/E	$44,727.5M	2,097.6K	7,614.8K	17.81%	25.42%	24.53%
RC	$32,536.6M	436.0K	1,978.0K	12.96%	5.28%	6.37%
W	$29,301.6M	1,352.4K	5,043.5K	11.67%	16.39%	16.25%
MCF	$20,061.3M	406.2K	1,487.7K	7.99%	4.92%	4.79%
S	$4,302.8M	25.5K	0.0K	1.71%	0.31%	0.00%
OT	$856.8M	117.2K	431.9K	0.34%	1.42%	1.39%

Exposure by taxonomy

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

MACRO_TAXO	TAXONOMY	COST_USD	BUILDINGS	COST_USD_%	BUILDINGS_%
MUR	MUR+CB/LWAL+CDN/H:2/RES	$55,622.7M	1,688.9K	24.83%	21.84%
	MUR+CB/LWAL+CDN/H:1/RES	$33,775.2M	1,732.2K	15.08%	22.40%
ADO/E	E+ETO/LWAL+CDN/H:1/RES	$15,810.3M	1,081.1K	7.06%	13.98%
	MUR+ADO/LWAL+CDN/H:2/RES	$12,721.0M	429.2K	5.68%	5.55%
W	W+WWD/LWAL+CDN/H:1/RES	$11,067.2M	756.8K	4.94%	9.79%
MCF	MCF+CB/LWAL+CDL/H:2/RES	$9,261.4M	187.5K	4.13%	2.42%
RC	CR/LFINF+CDL/H:3/RES	$8,424.3M	117.9K	3.76%	1.52%
W	W+WWD/LWAL+CDN/H:2/RES	$7,811.2M	316.2K	3.49%	4.09%
ADO/E	MUR+ADO/LWAL+CDN/H:1/RES	$7,724.5M	440.2K	3.45%	5.69%
MUR	MUR+CB/LWAL+CDN/HBET:3-6/RES	$7,353.8M	22.8K	3.28%	0.29%
RC	CR/LFINF+CDL/H:2/RES	$6,857.0M	147.5K	3.06%	1.91%
MCF	MCF+CB/LWAL+CDL/H:1/RES	$5,623.7M	192.3K	2.51%	2.49%
MUR	MUR+CB/LWAL+CDN/H:2/COM	$4,497.4M	32.8K	2.01%	0.42%
	MUR+CB/LWAL+CDN/H:1/COM	$4,380.2M	65.6K	1.96%	0.85%
W	W/LWAL+CDL/H:2/RES	$4,251.9M	107.6K	1.90%	1.39%
RC	CR/LFINF+CDL/HBET:4-7/RES	$3,758.8M	5.4K	1.68%	0.07%
MUR	MUR+CB/LWAL+CDN/H:1/IND	$3,615.7M	43.1K	1.61%	0.56%
ADO/E	MUR+ADO/LWAL+CDN/H:2/COM	$2,989.6M	27.2K	1.33%	0.35%
	MUR+ADO/LWAL+CDN/H:1/COM	$2,911.7M	54.5K	1.30%	0.70%
RC	CR/LWAL+CDL/H:3/RES	$2,776.4M	38.8K	1.24%	0.50%
MUR	MUR+CB/LWAL+CDN/H:2/IND	$2,629.6M	14.4K	1.17%	0.19%
W	W/LWAL+CDL/H:3/RES	$2,611.9M	43.0K	1.17%	0.56%
MCF	MCF+CB/LWAL+CDL/HBET:3-6/RES	$2,584.9M	5.3K	1.15%	0.07%
W	W/LWAL+CDL/H:1/RES	$2,581.9M	110.3K	1.15%	1.43%
MUR	MUR+MO/LWAL+CDN/H:2/RES	$2,387.1M	72.5K	1.07%	0.94%