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 = "Sierra_Leone"
```

```
Exposure files:
   Exposure_Com_Sierra_Leone.csv
   Exposure_Ind_Sierra_Leone.csv
   Exposure_Res_Sierra_Leone.csv
```

Sanity checks and formats

Sierra_Leone
```
   Exposure/Exposure/Exposure_Com_Sierra_Leone.csv
   Exposure/Exposure/Exposure_Ind_Sierra_Leone.csv
   Exposure/Exposure/Exposure_Res_Sierra_Leone.csv
   Occupants / Dwellings = 5.9
   Reference avg household size (2019) = 5.9
   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	7.9M	1,289.0K	$17,855.9M	95.29%	83.68%
Ind	0.0M	9.5K	$698.6M	0.70%	3.27%
Com	0.0M	54.2K	$2,784.6M	4.01%	13.05%

Other metrics to consider

OCCUPANCY	AREA_SQM	COST_BUILDING_USD	AVG_BUILDING_AREA_SQM	AVG_COST_PER_AREA_USD
Total	114,917.1K	$17,611.0M	85	$186
Res	102,099.0K	$15,070.5M	79	$175
Ind	2,697.1K	$460.2M	285	$259
Com	10,121.0K	$2,080.3M	187	$275

Exposure summary at Admin level 1

NAME_1	COST_USD	BUILDINGS	OCCUPANTS	COST_USD_%	BUILDINGS_%	OCCUPANTS_%
Northern	$7,146.1M	452.9K	2,660.3K	33.49%	33.49%	33.49%
Southern	$4,923.1M	312.1K	1,832.9K	23.07%	23.07%	23.07%
Eastern	$4,677.4M	296.5K	1,741.4K	21.92%	21.92%	21.92%
Western Area	$4,592.5M	291.1K	1,709.8K	21.52%	21.52%	21.52%

Exposure by simplified taxonomy

Adding `MACRO_TAXO` column

MACRO_TAXO	COST_USD	BUILDINGS	OCCUPANTS	COST_USD_%	BUILDINGS_%	OCCUPANTS_%
MUR	$8,891.8M	476,792	2,815.8K	41.67%	35.25%	35.44%
ADO/E	$5,974.2M	370,478	2,085.7K	28.00%	27.39%	26.25%
W	$4,372.0M	426,214	2,532.9K	20.49%	31.51%	31.88%
RC	$1,231.0M	27,591	214.0K	5.77%	2.04%	2.69%
MCF	$501.4M	17,192	107.0K	2.35%	1.27%	1.35%
S	$232.5M	2,368	0.0K	1.09%	0.18%	0.00%
OT	$136.1M	31,999	189.1K	0.64%	2.37%	2.38%

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**	$3,103.8M	162,044	16.24%	12.59%
W	**W+WWD/LWAL+CDN/H:1/RES**	$2,551.5M	299,996	13.35%	23.30%
ADO/E	**MUR+ADO/LWAL+CDN/H:2/RES**	$2,251.1M	130,585	11.78%	10.14%
MUR	**MUR+CB/LWAL+CDN/H:1/RES**	$1,884.7M	166,199	9.86%	12.91%
W	**W+WWD/LWAL+CDN/H:2/RES**	$1,800.8M	125,356	9.42%	9.74%
ADO/E	**MUR+ADO/LWAL+CDN/H:1/RES**	$1,366.9M	133,935	7.15%	10.40%
MUR	**MUR+CL/LWAL+CDN/H:2/RES**	$1,124.3M	58,697	5.88%	4.56%
	MUR+CL/LWAL+CDN/H:1/RES	$682.7M	60,202	3.57%	4.68%
ADO/E	**MUR+ADO/LWAL+CDN/H:2/COM**	$681.2M	10,676	3.56%	0.83%
	MUR+ADO/LWAL+CDN/H:1/COM	$663.4M	21,351	3.47%	1.66%
	E+ETO/LWAL+CDN/H:1/RES	$607.5M	71,428	3.18%	5.55%
MUR	**MUR+CB/LWAL+CDN/HBET:3-6/RES**	$410.3M	2,186	2.15%	0.17%
RC	**CR/LFINF+CDL/H:3/RES**	$410.0M	9,864	2.14%	0.77%
MUR	**MUR+CB/LWAL+CDN/H:2/COM**	$386.5M	4,843	2.02%	0.38%
	MUR+CB/LWAL+CDN/H:1/COM	$376.4M	9,691	1.97%	0.75%
RC	**CR/LFINF+CDL/H:2/RES**	$333.7M	12,340	1.75%	0.96%
ADO/E	**MUR+ADO/LWAL+CDN/HBET:3-6/RES**	$297.6M	1,764	1.56%	0.14%
MCF	**MCF+CB/LWAL+CDL/H:2/RES**	$184.1M	6,409	0.96%	0.50%