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 = "Laos"
```

```
Exposure files:
  Exposure_Com_Laos.csv
  Exposure_Ind_Laos.csv
  Exposure_Res_Laos.csv
```

Sanity checks and formats

```
  Laos
    Exposure/Exposure/Exposure_Com_Laos.csv
    Exposure/Exposure/Exposure_Ind_Laos.csv
    Exposure/Exposure/Exposure_Res_Laos.csv
    Occupants / Dwellings = 5.5
    Reference avg household size (2019) = 4.7
    Population (exposure / UN_2021) = 0.88
  WARNING: ADM_1 with empty values:
  OCCUPANCY  Com  Ind     Res
ID_1
LA18       NaN  NaN  Xaisomboon
  Exposure models  OK
```

Exposure at National level

Summary by occupancy type

OCCUPANCY	OCCUPANTS	BUILDINGS	COST_USD	BUILDINGS_%	COST_USD_%
Res	6.5M	1,148.6K	$17,270.9M	90.95%	88.26%
Ind	0.0M	25.3K	$995.5M	2.00%	5.09%
Com	0.0M	89.0K	$1,300.9M	7.05%	6.65%

Other metrics to consider

OCCUPANCY	AREA_SQM	COST_BUILDING_USD	AVG_BUILDING_AREA_SQM	AVG_COST_PER_AREA_USD
Total	90,562.2K	$15,134.7M	72	$216
Res	81,769.6K	$13,746.5M	71	$211
Ind	3,412.3K	$537.2M	135	$292
Com	5,380.3K	$850.9M	60	$242

Exposure summary at Admin level 1

NAME_1	COST_USD	BUILDINGS	OCCUPANTS	COST_USD_%	BUILDINGS_%	OCCUPANTS_%
Vientiane Capital	$3,558.0M	177.7K	820.9K	18.18%	14.07%	12.64%
Savannakhet	$2,404.5M	168.1K	969.7K	12.29%	13.31%	14.94%
Champasack	$1,866.2M	130.9K	694.0K	9.54%	10.37%	10.69%
Vientiane	$1,419.7M	89.4K	419.1K	7.26%	7.08%	6.46%
Louangphabang	$1,357.0M	87.6K	431.9K	6.93%	6.94%	6.65%
Xaignabouly	$1,343.5M	80.9K	381.4K	6.87%	6.40%	5.87%
Khammouan	$1,158.4M	80.0K	392.1K	5.92%	6.34%	6.04%
Salavan	$957.3M	70.5K	396.9K	4.89%	5.59%	6.11%
Oudomxai	$836.0M	58.6K	307.6K	4.27%	4.64%	4.74%
Bolikhamxai	$833.5M	53.7K	273.7K	4.26%	4.25%	4.22%
Houaphan	$740.3M	52.5K	289.4K	3.78%	4.16%	4.46%
Xiengkhouang	$687.2M	46.6K	244.7K	3.51%	3.69%	3.77%
Bokeo	$535.5M	35.2K	179.2K	2.74%	2.79%	2.76%
Louangnamtha	$501.7M	34.8K	175.8K	2.56%	2.76%	2.71%
Phongsaly	$485.7M	35.4K	178.0K	2.48%	2.80%	2.74%
Attapeu	$420.5M	28.1K	139.6K	2.15%	2.22%	2.15%
Sekong	$269.5M	19.2K	113.0K	1.38%	1.52%	1.74%
Xaisomboon	$192.7M	13.6K	85.2K	0.98%	1.08%	1.31%

Exposure by simplified taxonomy

Adding `MACRO_TAXO` column

MACRO_TAXO	COST_USD	BUILDINGS	OCCUPANTS	COST_USD_%	BUILDINGS_%	OCCUPANTS_%
W	$9,018.6M	715,628	3,861.8K	46.09%	56.67%	59.48%
MUR	$5,558.9M	446,859	2,079.5K	28.41%	35.38%	32.03%
RC	$4,387.0M	84,657	492.4K	22.42%	6.70%	7.58%
S	$487.9M	5,174	0.0K	2.49%	0.41%	0.00%
OT	$60.6M	6,065	33.5K	0.31%	0.48%	0.52%
ADO/E	$54.2M	4,518	25.1K	0.28%	0.36%	0.39%

Exposure by taxonomy

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

MACRO_TAXO	TAXONOMY	COST_USD	BUILDINGS	COST_USD_%	BUILDINGS_%
W	W+WO/LN/H:1/RES	$5,225.0M	435,417	30.18%	38.47%
MUR	MUR/LWAL+DNO/H:2/RES	$2,940.6M	196,037	16.99%	17.32%
W	W+WBB/LPB+DNO/H:1/RES	$2,018.6M	168,216	11.66%	14.86%
MUR	MUR/LWAL+DNO/H:1/RES	$1,967.5M	196,750	11.37%	17.38%
RC	CR/LFINF+DUL/H:5/RES	$1,200.2M	1,138	6.93%	0.10%
	CR/LFINF+DUL/H:4/RES	$1,194.8M	1,770	6.90%	0.16%
W	W/H:2/RES	$797.2M	38,384	4.61%	3.39%
RC	CR/LFINF+DUL/H:1/RES	$639.8M	38,484	3.70%	3.40%
W	W/H:1/RES	$532.2M	38,436	3.07%	3.40%
S	S/LFM+DUL/HBET:1-2/IND1	$445.1M	3,060	2.57%	0.27%
RC	CR/LFINF+DUL/H:2/RES	$350.8M	14,067	2.03%	1.24%