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 = "Eswatini"
```

```
Exposure files:
  Exposure_Com_Eswatini.csv
  Exposure_Ind_Eswatini.csv
  Exposure_Res_Eswatini.csv
```

Sanity checks and formats

Eswatini
  Exposure/Exposure/Exposure_Com_Eswatini.csv
  Exposure/Exposure/Exposure_Ind_Eswatini.csv
  Exposure/Exposure/Exposure_Res_Eswatini.csv
  Occupants / Dwellings = 4.1
  Reference avg household size (2019) = 4.37
  Population (exposure / UN_2021) = 0.99
  Exposure models OK

Exposure at National level

Summary by occupancy type

OCCUPANCY	OCCUPANTS	BUILDINGS	COST_USD	BUILDINGS_%	COST_USD_%
Res	1,158.3K	271,886	$6,105.9M	96.67%	87.52%
Ind	0.0K	2,630	$295.4M	0.94%	4.23%
Com	0.0K	6,744	$575.3M	2.40%	8.25%

Other metrics to consider

OCCUPANCY	AREA_SQM	COST_BUILDING_USD	AVG_BUILDING_AREA_SQM	AVG_COST_PER_AREA_USD
Total	24,136.0K	$5,578.3M	86	$289
Res	22,139.7K	$4,997.4M	81	$276
Ind	748.8K	$180.0M	285	$394
Com	1,247.6K	$401.0M	185	$461

Exposure summary at Admin level 1

NAME_1	COST_USD	BUILDINGS	OCCUPANTS	COST_USD_%	BUILDINGS_%	OCCUPANTS_%
Manzini	$2,319.4M	93.4K	384.8K	33.25%	33.22%	33.22%
Hhohho	$2,013.5M	81.1K	334.2K	28.86%	28.85%	28.85%
Lubombo	$1,404.5M	56.7K	233.3K	20.13%	20.14%	20.14%
Shiselweni	$1,239.2M	50.0K	206.0K	17.76%	17.78%	17.78%

Exposure by simplified taxonomy

Adding `MACRO_TAXO` column

MACRO_TAXO	COST_USD	BUILDINGS	OCCUPANTS	COST_USD_%	BUILDINGS_%	OCCUPANTS_%
MUR	$4,736.0M	175,070	719.7K	67.88%	62.24%	62.13%
W	$1,064.7M	66,676	273.4K	15.26%	23.71%	23.60%
ADO/E	$464.1M	21,284	87.6K	6.65%	7.57%	7.56%
RC	$362.9M	5,642	29.0K	5.20%	2.01%	2.50%
MCF	$202.2M	4,674	19.3K	2.90%	1.66%	1.67%
S	$100.0M	661	0.0K	1.43%	0.24%	0.00%
OT	$46.7M	7,253	29.3K	0.67%	2.58%	2.53%

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**	$1,676.3M	58,231	26.83%	22.37%
	MUR+CB/LWAL+CDN/H:1/RES	$1,017.9M	59,723	16.29%	22.94%
W	**W+WWD/LWAL+CDN/H:1/RES**	$589.6M	45,786	9.44%	17.59%
MUR	**MUR+CL/LWAL+CDN/H:2/RES**	$569.8M	19,792	9.12%	7.60%
W	**W+WWD/LWAL+CDN/H:2/RES**	$416.1M	19,132	6.66%	7.35%
MUR	**MUR+CL/LWAL+CDN/H:1/RES**	$346.0M	20,303	5.54%	7.80%
ADO/E	**MUR+ADO/LWAL+CDN/H:2/RES**	$234.3M	8,978	3.75%	3.45%
MUR	**MUR+CB/LWAL+CDN/HBET:3-6/RES**	$221.6M	786	3.55%	0.30%
	MUR+CB/LWAL+CDN/H:2/COM	$164.6M	1,356	2.63%	0.52%
	MUR+CB/LWAL+CDN/H:1/COM	$160.3M	2,716	2.57%	1.04%
ADO/E	**MUR+ADO/LWAL+CDN/H:1/RES**	$142.3M	9,209	2.28%	3.54%
MCF	**MCF/LWAL+CDL/H:2/RES**	$95.1M	2,187	1.52%	0.84%
MUR	**MUR+STRUB/LWAL+CDN/H:2/RES**	$88.2M	3,827	1.41%	1.47%
RC	**CR/LFINF+CDL/H:3/RES**	$85.2M	1,359	1.36%	0.52%
MUR	**MUR+CL/LWAL+CDN/HBET:3-6/RES**	$75.3M	268	1.21%	0.10%
	MUR+CB/LWAL+CDN/H:1/IND	$73.7M	990	1.18%	0.38%
RC	**CR/LFINF+CDL/H:2/RES**	$69.4M	1,702	1.11%	0.65%
MCF	**MCF/LWAL+CDL/H:1/RES**	$57.8M	2,243	0.92%	0.86%
	MUR+CL/LWAL+CDN/H:2/COM	$55.8M	461	0.89%	0.18%
MUR	**MUR+CL/LWAL+CDN/H:1/COM**	$54.4M	919	0.87%	0.35%
	MUR+CB/LWAL+CDN/H:2/IND	$53.6M	329	0.86%	0.13%