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 = "Somalia"
```

```
Exposure files:
  Exposure_Com_Somalia.csv
  Exposure_Ind_Somalia.csv
  Exposure_Res_Somalia.csv
```

Sanity checks and formats

Somalia
```
  Exposure/Exposure/Exposure_Com_Somalia.csv
  Exposure/Exposure/Exposure_Ind_Somalia.csv
  Exposure/Exposure/Exposure_Res_Somalia.csv
  Occupants / Dwellings = 5.9
  Reference avg household size (2019) = 5.9
  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	15.9M	2,609,121	$30,048.0M	98.84%	93.93%
Ind	0.0M	3,540	$274.7M	0.13%	0.86%
Com	0.0M	27,174	$1,665.9M	1.03%	5.21%

Other metrics to consider

OCCUPANCY	AREA_SQM	COST_BUILDING_USD	AVG_BUILDING_AREA_SQM	AVG_COST_PER_AREA_USD
Total	195,790.3K	$26,555.8M	74	$163
Res	189,657.5K	$25,156.3M	73	$158
Ind	996.6K	$180.6M	282	$276
Com	5,136.2K	$1,218.9M	189	$324

Exposure summary at Admin level 1

NAME_1	COST_USD	BUILDINGS	OCCUPANTS	COST_USD_%	BUILDINGS_%	OCCUPANTS_%
Banadir	$3,849.3M	317.4K	1,907.6K	12.03%	12.02%	12.02%
Lower Shebelle	$3,634.5M	299.8K	1,801.3K	11.36%	11.35%	11.35%
Woqooyi Galbeed	$2,992.3M	246.8K	1,483.3K	9.35%	9.35%	9.35%
Bay	$2,651.7M	218.7K	1,314.5K	8.29%	8.29%	8.29%
Middle Shebelle	$2,200.6M	181.5K	1,091.0K	6.88%	6.88%	6.88%
Togdheer	$1,727.3M	142.6K	856.9K	5.40%	5.40%	5.40%
Bari	$1,651.9M	136.4K	819.5K	5.16%	5.17%	5.17%
Lower Juba	$1,643.2M	135.6K	815.2K	5.14%	5.14%	5.14%
Mudug	$1,495.1M	123.4K	741.7K	4.67%	4.68%	4.68%
Galgaduud	$1,417.3M	117.0K	703.1K	4.43%	4.43%	4.43%
Gedo	$1,402.0M	115.7K	695.6K	4.38%	4.38%	4.38%
Hiiraan	$1,400.0M	115.6K	694.5K	4.38%	4.38%	4.38%
Bakool	$1,319.8M	109.0K	654.8K	4.13%	4.13%	4.13%
Awdal	$1,268.5M	104.7K	629.3K	3.97%	3.97%	3.97%
Sanaag	$1,156.2M	95.5K	573.8K	3.61%	3.62%	3.62%
Middle Juba	$1,019.1M	84.1K	505.7K	3.19%	3.19%	3.19%
Sool	$627.7M	51.9K	311.8K	1.96%	1.97%	1.97%
Nugaal	$532.0M	44.1K	264.7K	1.66%	1.67%	1.67%

Exposure by simplified taxonomy

```
Adding `MACRO_TAXO` column
```

MACRO_TAXO	COST_USD	BUILDINGS	OCCUPANTS	COST_USD_%	BUILDINGS_%	OCCUPANTS_%
MUR	$12,697.4M	667,998	3,961.2K	39.69%	25.30%	24.97%
W	$7,609.8M	579,946	3,499.3K	23.79%	21.97%	22.06%
ADO/E	$6,115.1M	756,856	4,542.1K	19.12%	28.67%	28.63%
RC	$2,790.1M	61,633	476.1K	8.72%	2.33%	3.00%
OT	$2,684.9M	572,534	3,385.5K	8.39%	21.69%	21.34%
S	$91.2M	868	0.0K	0.29%	0.03%	0.00%

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+WWD+LWAL+CDN/H:1/RES	$3,337.0M	355,784	11.61%	13.82%
ADO/E	EWV/LN+CDN/H:1/RES	$2,586.4M	551,522	9.00%	21.42%
W	W+WWD+LWAL+CDN/H:2/RES	$2,355.2M	148,663	8.20%	5.77%
MUR	MUR+CB/LWAL+CDN/H:2/RES	$2,326.4M	110,138	8.10%	4.28%
	MUR+CL/LWAL+CDN/H:2/RES	$2,326.4M	110,138	8.10%	4.28%
OT	ME+MEO/LWAL+CDN/H:1/RES	$1,972.7M	420,649	6.87%	16.33%
ADO/E	MUR+ADO/LWAL+CDN/H:2/RES	$1,857.5M	97,710	6.47%	3.79%
	MUR+STDRE/LWAL+CDN/H:2/RES	$1,629.3M	77,138	5.67%	3.00%
MUR	MUR+CB/LWAL+CDN/H:1/RES	$1,412.6M	112,962	4.92%	4.39%
	MUR+CL/LWAL+CDN/H:1/RES	$1,412.6M	112,962	4.92%	4.39%
ADO/E	MUR+ADO/LWAL+CDN/H:1/RES	$1,127.9M	100,214	3.93%	3.89%
RC	CR/LFINF+CDL/H:3/RES	$1,041.2M	22,709	3.62%	0.88%
MUR	MUR+STDRE/LWAL+CDN/H:1/RES	$989.4M	79,113	3.44%	3.07%
RC	CR/LFINF+CDL/H:2/RES	$847.5M	28,416	2.95%	1.10%
W	W/LWAL+CDL/H:2/RES	$754.5M	29,766	2.63%	1.16%
OT	MATO/RES	$712.3M	151,885	2.48%	5.90%
RC	CR/LFINF+CDL/HBET:4-7/RES	$464.5M	1,040	1.62%	0.04%
W	W/LWAL+CDL/H:3/RES	$463.5M	11,896	1.61%	0.46%
	W/LWAL+CDL/H:1/RES	$458.1M	30,529	1.59%	1.19%
MUR	MUR+STRUB/LWAL+CDN/H:2/RES	$347.7M	20,572	1.21%	0.80%
	MUR+CB/LWAL+CDN/HBET:3-6/RES	$307.6M	1,492	1.07%	0.06%