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 = "Equatorial_Guinea"
```

```
Exposure files:
  Exposure_Com_Equatorial_Guinea.csv
  Exposure_Ind_Equatorial_Guinea.csv
  Exposure_Res_Equatorial_Guinea.csv
```

Sanity checks and formats

Equatorial_Guinea
```
  Exposure/Exposure/Exposure_Com_Equatorial_Guinea.csv
  Exposure/Exposure/Exposure_Ind_Equatorial_Guinea.csv
  Exposure/Exposure/Exposure_Res_Equatorial_Guinea.csv
  Occupants / Dwellings = 6.3
  Reference avg household size (2019) = 6.4
  Population (exposure / UN_2021) = 0.96
  Exposure models  OK
```

Exposure at National level

Summary by occupancy type

OCCUPANCY	OCCUPANTS	BUILDINGS	COST_USD	BUILDINGS_%	COST_USD_%
Res	1,396.0K	209.3K	$3,961.6M	91.91%	73.89%
Ind	0.0K	6.3K	$591.8M	2.77%	11.04%
Com	0.0K	12.1K	$808.0M	5.33%	15.07%

Other metrics to consider

OCCUPANCY	AREA_SQM	COST_BUILDING_USD	AVG_BUILDING_AREA_SQM	AVG_COST_PER_AREA_USD
Total	21,297.5K	$4,061.5M	94	$252
Res	17,225.2K	$3,146.7M	82	$230
Ind	1,792.2K	$356.1M	285	$330
Com	2,280.0K	$558.7M	188	$354

Exposure summary at Admin level 1

NAME_1	COST_USD	BUILDINGS	OCCUPANTS	COST_USD_%	BUILDINGS_%	OCCUPANTS_%
Litoral Province	$1,616.2M	68,476	419.8K	30.14%	30.07%	30.07%
Bioko Norte	$1,352.4M	57,332	351.4K	25.23%	25.17%	25.17%
Wele-Nzas Province	$846.8M	35,963	220.5K	15.80%	15.79%	15.79%
Ki�-Ntem Province	$788.9M	33,514	205.5K	14.71%	14.72%	14.72%
Centro Sur Province	$593.8M	25,243	154.8K	11.08%	11.08%	11.09%
Bioko Sur	$145.1M	6,309	38.6K	2.71%	2.77%	2.76%
Annob�n	$18.1M	901	5.4K	0.34%	0.40%	0.39%

Exposure by simplified taxonomy

Adding `MACRO_TAXO` column

MACRO_TAXO	COST_USD	BUILDINGS	OCCUPANTS	COST_USD_%	BUILDINGS_%	OCCUPANTS_%
MUR	$2,439.1M	97,886	588.5K	45.49%	42.98%	42.16%
ADO/E	$1,403.4M	72,769	443.0K	26.18%	31.95%	31.73%
W	$584.6M	36,461	232.0K	10.90%	16.01%	16.62%
RC	$510.3M	8,793	68.3K	9.52%	3.86%	4.89%
MCF	$204.1M	5,254	32.6K	3.81%	2.31%	2.33%
S	$193.7M	1,569	0.0K	3.61%	0.69%	0.00%
OT	$26.1M	5,006	31.7K	0.49%	2.20%	2.27%

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	$651.3M	27,963	13.59%	13.18%
ADO/E	MUR+ADO/LWAL+CDN/H:2/RES	$539.2M	25,531	11.25%	12.03%
MUR	MUR+CB/LWAL+CDN/H:1/RES	$395.5M	28,676	8.25%	13.51%
	MUR+CL/LWAL+CDN/H:2/RES	$334.5M	14,358	6.98%	6.77%
ADO/E	MUR+ADO/LWAL+CDN/H:1/RES	$327.4M	26,184	6.83%	12.34%
W	W+WWD/LWAL+CDN/H:1/RES	$210.7M	20,225	4.40%	9.53%
MUR	MUR+CL/LWAL+CDN/H:1/RES	$203.1M	14,729	4.24%	6.94%
ADO/E	E+ETO/LWAL+CDN/H:1/RES	$150.5M	14,448	3.14%	6.81%
W	W+WWD/LWAL+CDN/H:2/RES	$148.7M	8,451	3.10%	3.98%
ADO/E	MUR+ADO/LWAL+CDN/H:2/COM	$147.2M	1,872	3.07%	0.88%
	MUR+ADO/LWAL+CDN/H:1/COM	$143.4M	3,748	2.99%	1.77%
RC	CR/LFINF+CDL/H:3/RES	$112.7M	2,221	2.35%	1.05%
MUR	MUR+CB/LWAL+CDN/H:2/COM	$112.1M	1,139	2.34%	0.54%
	MUR+CL/LWAL+CDN/H:1/IND	$111.9M	1,853	2.33%	0.87%
	MUR+CB/LWAL+CDN/H:1/COM	$109.3M	2,288	2.28%	1.08%
RC	CR/LFINF+CDL/H:2/RES	$91.7M	2,779	1.91%	1.31%
W	W/LWAL+CDL/H:2/RES	$86.4M	3,037	1.80%	1.43%
MUR	MUR+CB/LWAL+CDN/HBET:3-6/RES	$86.0M	376	1.79%	0.18%
	MUR+CL/LWAL+CDN/H:2/IND	$81.0M	613	1.69%	0.29%
S	S/LFM+CDL/H:1/IND	$71.8M	753	1.50%	0.35%
ADO/E	MUR+ADO/LWAL+CDN/HBET:3-6/RES	$71.0M	340	1.48%	0.16%
	MUR+CB/LWAL+CDN/H:1/IND	$69.0M	1,143	1.44%	0.54%
MUR	MUR+CL/LWAL+CDN/H:2/COM	$57.5M	585	1.20%	0.28%
	MUR+CL/LWAL+CDN/H:1/COM	$56.1M	1,176	1.17%	0.55%
W	W/LWAL+CDL/H:3/RES	$52.9M	1,215	1.10%	0.57%
	W/LWAL+CDL/H:1/RES	$52.5M	3,119	1.09%	1.47%
S	S/LFM+CDL/H:2/IND	$51.9M	250	1.08%	0.12%
RC	CR/LFINF+CDL/HBET:4-7/RES	$50.1M	102	1.04%	0.05%
MUR	MUR+CB/LWAL+CDN/H:2/IND	$49.8M	379	1.04%	0.18%
MCF	MCF+CB/LWAL+CDL/H:2/RES	$44.5M	1,264	0.93%	0.60%
MUR	MUR+CL/LWAL+CDN/HBET:3-6/RES	$44.0M	194	0.92%	0.09%
S	S+SL/LFM+CDL/H:1/IND	$40.5M	423	0.84%	0.20%
RC	CR/LWAL+CDL/H:3/RES	$39.7M	785	0.83%	0.37%