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 Sh
apely GEOS version (3.9.1-CAPI-1.14.2) is incompatible with the GEOS version PyGEOS was compiled
with (3.10.1-CAPI-1.16.0). Conversions between both will be slow.
  warnings.warn(
```

```python
# Parameters
country = "France"
```

```
/tmp/ipykernel_15519/1537960877.py:7: DtypeWarning: Columns (17) have mixed types.Specify dtype
option on import or set low_memory=False.
  dfs = [pd.read_csv(file_path) for file_path in files.File_Path]
/tmp/ipykernel_15519/1537960877.py:7: DtypeWarning: Columns (29) have mixed types.Specify dtype
option on import or set low_memory=False.
  dfs = [pd.read_csv(file_path) for file_path in files.File_Path]
Exposure files:
    Exposure_Com_France.csv
    Exposure_Ind_France.csv
    Exposure_Res_France.csv
```

Sanity checks and formats

Exposure at National level

Summary by occupancy type

OCCUPANCY	OCCUPANTS	BUILDINGS	COST_USD	BUILDINGS_%	COST_USD_%
Res	67.1M	14,449.8K	$5,606.7B	94.15%	66.02%
Ind	17.1M	300.5K	$1,365.3B	1.96%	16.08%
Com	26.8M	596.6K	$1,520.9B	3.89%	17.91%

Other metrics to consider

OCCUPANCY	AREA_SQM	COST_BUILDING_USD	AVG_BUILDING_AREA_SQM	AVG_COST_PER_AREA_USD
Total	2,899.4M	$5,791.9B	189	$2,929
Res	2,420.2M	$4,485.3B	167	$2,317
Ind	241.8M	$546.1B	805	$5,647
Com	237.4M	$760.4B	398	$6,405

Exposure summary at Admin level 1

NAME_1	COST_USD	BUILDINGS	OCCUPANTS	COST_USD_%	BUILDINGS_%	OCCUPANTS_%
Ile-de-France	$1,320.8B	1,345.9K	21,410.4K	15.55%	8.77%	19.29%
Rhone-Alpes	$930.7B	1,330.6K	11,348.9K	10.96%	8.67%	10.23%
Provence-Alpes-Cote d'Azur	$676.0B	946.0K	8,764.3K	7.96%	6.16%	7.90%
Pays de la Loire	$541.3B	1,076.8K	6,456.1K	6.37%	7.02%	5.82%
Nord-Pas-de-Calais	$524.7B	1,018.0K	7,101.8K	6.18%	6.63%	6.40%
Bretagne	$449.3B	1,029.6K	5,702.3K	5.29%	6.71%	5.14%
Aquitaine	$447.2B	966.8K	5,704.2K	5.27%	6.30%	5.14%
Midi-Pyrenees	$389.3B	876.0K	5,084.6K	4.58%	5.71%	4.58%
Languedoc-Roussillon	$364.9B	765.5K	4,636.2K	4.30%	4.99%	4.18%
Centre	$361.5B	795.6K	4,456.0K	4.26%	5.18%	4.02%
Lorraine	$314.7B	566.6K	4,023.8K	3.71%	3.69%	3.63%
Alsace	$263.0B	373.6K	3,225.1K	3.10%	2.43%	2.91%
Picardie	$251.5B	549.4K	3,279.2K	2.96%	3.58%	2.95%
Poitou-Charentes	$247.6B	651.4K	2,947.0K	2.92%	4.24%	2.66%
Haute-Normandie	$245.2B	471.1K	3,158.9K	2.89%	3.07%	2.85%
Bourgogne	$240.3B	538.4K	2,780.7K	2.83%	3.51%	2.51%
Basse-Normandie	$214.5B	501.3K	2,539.0K	2.53%	3.27%	2.29%
Auvergne	$209.1B	476.5K	2,277.6K	2.46%	3.11%	2.05%
Champagne-Ardenne	$190.8B	377.5K	2,306.3K	2.25%	2.46%	2.08%
Franche-Comte	$158.8B	309.6K	1,977.3K	1.87%	2.02%	1.78%
Limousin	$105.7B	281.4K	1,251.0K	1.24%	1.83%	1.13%
Corse	$46.0B	98.9K	549.6K	0.54%	0.64%	0.50%

Exposure by simplified taxonomy

Adding `MACRO_TAXO` column

MACRO_TAXO	COST_USD	BUILDINGS	OCCUPANTS	COST_USD_%	BUILDINGS_%	OCCUPANTS_%
RC	$5,369.7B	3,409.5K	68,438.3K	63.23%	22.22%	61.67%
MUR	$2,113.8B	9,955.0K	28,977.0K	24.89%	64.87%	26.11%
S	$509.3B	119.5K	6,576.5K	6.00%	0.78%	5.93%
MCF	$250.6B	751.6K	3,457.0K	2.95%	4.90%	3.11%
W	$249.4B	1,111.2K	3,531.5K	2.94%	7.24%	3.18%

Exposure by taxonomy

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

MACRO_TAXO	TAXONOMY	COST_USD	BUILDINGS	COST_USD_%	BUILDINGS_%
RC	CR+PC/LWAL+CDN/HBET:3-5/RES	$1,097.0B	308.7K	14.46%	2.20%
MUR	MUR+CL/LWAL+CDN/H:1/RES	$746.2B	4,405.2K	9.83%	31.36%
RC	CR/LFINF+CDN/HBET:3-5/RES	$739.5B	207.7K	9.75%	1.48%
MUR	MUR+CL/LWAL+CDN/H:2/RES	$636.5B	2,599.9K	8.39%	18.51%
RC	CR+PC/LFM+CDL/H:2/IND	$390.1B	84.1K	5.14%	0.60%
S	S/LFM+CDL/H:1/IND	$371.5B	84.1K	4.90%	0.60%
MUR	MUR+ST/LWAL+CDN/H:1/RES	$322.7B	2,166.4K	4.25%	15.42%
RC	CR/LFM+CDL/H:1/RES	$264.7B	57.1K	3.49%	0.41%
	CR/LFLS+CDN/HBET:3-5/COM	$230.8B	53.9K	3.04%	0.38%
	CR+PC/LWAL+CDN/HBET:3-5/COM	$224.2B	52.0K	2.95%	0.37%
RC	CR/LFLS+CDN/HBET:6-/RES	$218.5B	38.9K	2.88%	0.28%
	CR/LDUAL+CDL+LFC:0.0/HBET:6-/RES	$191.5B	54.9K	2.52%	0.39%
	CR/LFINF+CDL+LFC:0.0/H:1/COM	$166.0B	73.9K	2.19%	0.53%
MUR	MUR+ST/LWAL+CDN/H:2/RES	$163.7B	649.6K	2.16%	4.62%
	CR/LFINF+CDL+LFC:0.0/H:2/RES	$157.7B	580.8K	2.08%	4.13%
RC	CR/LDUAL+CDL+LFC:0.0/HBET:6-/RES	$139.7B	25.4K	1.84%	0.18%
	CR/LFINF+CDN/HBET:3-5/COM	$129.5B	75.5K	1.71%	0.54%
	CR/LDUAL+CDN/HBET:6-/RES	$122.8B	22.6K	1.62%	0.16%
W	W/LWAL+CDN/H:1/RES	$120.8B	723.9K	1.59%	5.15%
MUR	MUR+CL/LWAL+CDN/H:1/COM	$103.7B	68.3K	1.37%	0.49%
	CR/LFINF+CDN/H:1/COM	$95.9B	48.3K	1.26%	0.34%
RC	CR+PC/LWAL+CDN/HBET:6-/RES	$95.3B	17.7K	1.26%	0.13%
	CR+PC/LWAL+CDN/HBET:6-/RES	$92.1B	16.9K	1.21%	0.12%
	CR/LDUAL+CDM+LFC:0.0/HBET:3-5/RES	$91.1B	26.4K	1.20%	0.19%
	CR/LFINF+CDL+LFC:0.0/H:1/RES	$89.7B	457.5K	1.18%	3.26%
W	W/LWAL+CDN/H:2/RES	$85.8B	360.4K	1.13%	2.57%
	CR/LFINF+CDL/H:2/IND	$83.6B	18.0K	1.10%	0.13%
RC	CR/LFINF+CDM+LFC:0.0/HBET:6-/RES	$73.1B	272.7K	0.96%	1.94%
	CR/LDUAL+CDM+LFC:0.0/HBET:6-/RES	$70.8B	13.1K	0.93%	0.09%
MUR	MUR+ST/LWAL+CDN/H:1/COM	$69.8B	46.2K	0.92%	0.33%
MCF	MCF/LWAL+CDL/H:1/IND	$69.7B	15.0K	0.92%	0.11%
	MCF/LWAL+CDN/H:2/RES	$67.8B	411.6K	0.89%	2.93%
RC	CR/LDUAL+CDM+LFC:0.0/HBET:3-5/COM	$66.4B	12.4K	0.87%	0.09%