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(
```

```
# Parameters
country = "Afghanistan"
```

```
Exposure files:
  Exposure_Com_Afghanistan.csv
  Exposure_Ind_Afghanistan.csv
  Exposure_Res_Afghanistan.csv
```

Sanity checks and formats

Exposure at National level

Summary by occupancy type

OCCUPANCY	OCCUPANTS	BUILDINGS	COST_USD	BUILDINGS_%	COST_USD_%
Res	39.8M	5,087.0K	$83.4B	93.82%	60.94%
Ind	0.0M	73.6K	$14.2B	1.36%	10.38%
Com	0.0M	261.3K	$39.2B	4.82%	28.68%

Other metrics to consider

OCCUPANCY	AREA_SQM	COST_BUILDING_USD	AVG_BUILDING_AREA_SQM	AVG_COST_PER_AREA_USD
Total	457.2M	$100.4B	84	$299
Res	378.1M	$65.2B	74	$220
Ind	21.0M	$8.2B	285	$677
Com	58.1M	$27.1B	222	$675

Exposure summary at Admin level 1

NAME_1	COST_USD	BUILDINGS	OCCUPANTS	COST_USD_%	BUILDINGS_%	OCCUPANTS_%
Kabul	$22,238.4M	879.2K	6,452.7K	16.25%	16.22%	16.21%
Hirat	$9,573.3M	378.7K	2,779.4K	7.00%	6.98%	6.98%
Nimroz	$7,647.1M	302.6K	2,221.2K	5.59%	5.58%	5.58%
Balkh	$6,977.8M	276.2K	2,027.1K	5.10%	5.09%	5.09%
Ghazni	$6,536.5M	258.8K	1,899.5K	4.78%	4.77%	4.77%
Kandahar	$6,387.3M	252.9K	1,856.1K	4.67%	4.66%	4.66%
Badakhshan	$5,623.2M	222.7K	1,634.2K	4.11%	4.11%	4.11%
Kunduz	$5,104.6M	202.1K	1,483.5K	3.73%	3.73%	3.73%
Uruzgan	$4,790.3M	189.7K	1,392.5K	3.50%	3.50%	3.50%
Hilmand	$4,642.2M	183.9K	1,349.5K	3.39%	3.39%	3.39%
Baghlan	$4,594.0M	182.0K	1,335.5K	3.36%	3.36%	3.36%
Faryab	$4,492.5M	177.9K	1,306.0K	3.28%	3.28%	3.28%
Ghor	$3,455.6M	137.0K	1,005.8K	2.53%	2.53%	2.53%
Samangan	$3,335.0M	132.3K	970.7K	2.44%	2.44%	2.44%
Khost	$2,875.5M	114.1K	837.4K	2.10%	2.10%	2.10%
Takhar	$2,804.1M	111.3K	817.1K	2.05%	2.05%	2.05%
Badghis	$2,794.3M	110.9K	814.3K	2.04%	2.05%	2.05%
Nangarhar	$2,747.4M	109.1K	800.6K	2.01%	2.01%	2.01%
Jawzjan	$2,719.5M	108.0K	792.5K	1.99%	1.99%	1.99%
Panjsher	$2,584.6M	102.6K	753.3K	1.89%	1.89%	1.89%
Farah	$2,541.9M	100.9K	740.8K	1.86%	1.86%	1.86%
Daykundi	$2,366.7M	94.0K	690.1K	1.73%	1.73%	1.73%
Paktya	$2,286.3M	90.8K	666.7K	1.67%	1.68%	1.68%
Kunar	$2,253.1M	89.5K	657.0K	1.65%	1.65%	1.65%
Bamyan	$2,235.9M	88.8K	652.0K	1.63%	1.64%	1.64%
Laghman	$2,226.5M	88.4K	649.2K	1.63%	1.63%	1.63%
Logar	$1,959.6M	77.8K	571.5K	1.43%	1.44%	1.44%
Sar-e-Pul	$1,942.3M	77.2K	566.5K	1.42%	1.42%	1.42%
Kapisa	$1,786.8M	71.1K	522.2K	1.31%	1.31%	1.31%
Wardak	$1,683.6M	67.0K	492.0K	1.23%	1.24%	1.24%
Zabul	$1,350.6M	53.8K	395.0K	0.99%	0.99%	0.99%
Nuristan	$822.3M	32.9K	241.6K	0.60%	0.61%	0.61%
Paktika	$733.4M	29.4K	215.5K	0.54%	0.54%	0.54%
Parwan	$704.6M	28.2K	207.1K	0.52%	0.52%	0.52%

Exposure by simplified taxonomy

Adding `MACRO_TAXO` column

MACRO_TAXO	COST_USD	BUILDINGS	OCCUPANTS	COST_USD_%	BUILDINGS_%	OCCUPANTS_%
ADO/E	$67,479.1M	3,869.0K	29,901.2K	49.32%	71.36%	75.14%
MUR	$45,315.6M	1,284.6K	8,325.2K	33.12%	23.69%	20.92%
RC	$12,953.2M	42.9K	102.4K	9.47%	0.79%	0.26%
MCF	$7,064.1M	39.5K	102.4K	5.16%	0.73%	0.26%
S	$2,553.3M	11.0K	0.0K	1.87%	0.20%	0.00%
OT	$1,451.4M	175.0K	1,364.9K	1.06%	3.23%	3.43%

Exposure by taxonomy

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

MACRO_TAXO	TAXONOMY	COST_USD	BUILDINGS	COST_USD_%	BUILDINGS_%
ADO/E	MUR+ADO/LWAL+CDN/H:2/RES	$28,841.9M	1,236,084	23.55%	23.80%
	EU+ETR/LWAL+CDN/H:1/RES	$19,058.6M	1,361,325	15.56%	26.21%
	MUR+ADO/LWAL+CDN/H:1/RES	$17,305.2M	1,236,084	14.13%	23.80%
MUR	MUR+CL/LWAL+CDN/HBET:3-6/COM	$5,607.5M	9,726	4.58%	0.19%
	MUR+STRUB/LWAL+CDN/H:2/RES	$5,023.7M	301,423	4.10%	5.80%
	MUR+CB/LWAL+CDN/HBET:3-6/COM	$4,849.1M	8,399	3.96%	0.16%
	MUR+CL/LWAL+CDN/H:2/COM	$4,220.2M	32,446	3.45%	0.62%
	MUR+CB/LWAL+CDN/H:2/COM	$3,646.6M	28,006	2.98%	0.54%
	MUR+STRUB/LWAL+CDN/H:2/RES	$3,014.2M	301,423	2.46%	5.80%
	MUR+CL/LWAL+CDN/H:2/RES	$2,696.7M	129,442	2.20%	2.49%
RC	CR/LFINF+CDL/HBET:4-7/COM	$2,666.8M	2,400	2.18%	0.05%
MUR	MUR+CL/LWAL+CDN/H:1/COM	$2,380.6M	48,659	1.94%	0.94%
	MUR+CB/LWAL+CDN/H:1/COM	$2,058.4M	42,008	1.68%	0.81%
MCF	MCF/LWAL+CDL/HBET:3-6/COM	$1,848.4M	2,400	1.51%	0.05%
MUR	MUR+CL/LWAL+CDN/H:1/RES	$1,618.0M	129,442	1.32%	2.49%
	MUR+CB/LWAL+CDN/H:1/IND	$1,564.5M	13,812	1.28%	0.27%
	MUR+CL/LWAL+CDN/H:1/IND	$1,564.5M	13,812	1.28%	0.27%
RC	CR/LFINF+CDM/HBET:4-7/COM	$1,483.8M	1,346	1.21%	0.03%
OT	MATO/RES	$1,436.1M	172,332	1.17%	3.32%
MUR	MUR+CB/LWAL+CDN/H:2/RES	$1,217.3M	58,430	0.99%	1.12%
ADO/E	MUR+ADO/LWAL+CDN/H:1/COM	$1,202.8M	26,602	0.98%	0.51%
MUR	MUR+CB/LWAL+CDN/H:2/IND	$1,137.2M	4,599	0.93%	0.09%
	MUR+CL/LWAL+CDN/H:2/IND	$1,137.2M	4,599	0.93%	0.09%
ADO/E	MUR+ADO/LWAL+CDN/H:2/COM	$1,070.7M	8,866	0.87%	0.17%
MCF	MCF/LWAL+CDL/H:2/COM	$1,050.0M	6,028	0.86%	0.12%
RC	CR+PC/LWAL+CDL/H:1/IND	$1,040.8M	5,300	0.85%	0.10%
MCF	MCF/LWAL+CDM/HBET:3-6/COM	$1,027.6M	1,346	0.84%	0.03%
S	S/LFM+CDL/H:1/IND	$946.1M	5,300	0.77%	0.10%
RC	CR/LFINF+CDL/H:3/COM	$901.4M	2,494	0.74%	0.05%
	CR/LFINF+CDL/HBET:8-/COM	$867.0M	288	0.71%	0.01%