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 = "Taiwan"
```

```
Exposure files:
  Exposure_Com_Taiwan.csv
  Exposure_Ind_Taiwan.csv
  Exposure_Res_Taiwan.csv
```

Sanity checks and formats

Exposure at National level

Summary by occupancy type

OCCUPANCY	OCCUPANTS	BUILDINGS	COST_USD	BUILDINGS_%	COST_USD_%
Res	23.6M	1,782.2K	$970.4B	90.94%	78.37%
Ind	0.0M	50.2K	$76.7B	2.56%	6.19%
Com	0.0M	127.4K	$191.2B	6.50%	15.44%

Other metrics to consider

OCCUPANCY	AREA_SQM	COST_BUILDING_USD	AVG_BUILDING_AREA_SQM	AVG_COST_PER_AREA_USD
Total	1,108.2M	$879.0B	565	$1,117
Res	962.6M	$727.1B	540	$1,008
Ind	37.1M	$36.1B	740	$2,066
Com	108.5M	$115.8B	851	$1,763

Exposure summary at Admin level 1

NAME_1	COST_USD	BUILDINGS	OCCUPANTS	COST_USD_%	BUILDINGS_%	OCCUPANTS_%
New Taipei City	$203,944.6M	266,543	3,986.7K	16.47%	13.60%	16.91%
Taichung City	$163,631.6M	239,765	2,787.1K	13.21%	12.23%	11.82%
Kaohsiung City	$146,729.2M	242,242	2,776.9K	11.85%	12.36%	11.78%
Taipei City	$143,809.3M	138,286	2,683.3K	11.61%	7.06%	11.38%
Taoyuan County	$119,626.6M	167,663	2,188.0K	9.66%	8.56%	9.28%
Tainan City	$103,182.1M	184,408	1,886.5K	8.33%	9.41%	8.00%
Changhua County	$66,641.0M	127,646	1,282.5K	5.38%	6.51%	5.44%
Pingtung County	$38,848.1M	97,961	829.9K	3.14%	5.00%	3.52%
Yunlin County	$30,676.0M	64,404	690.4K	2.48%	3.29%	2.93%
Hsinchu County	$26,957.1M	45,853	552.2K	2.18%	2.34%	2.34%
Miaoli County	$26,947.3M	57,310	553.8K	2.18%	2.92%	2.35%
Hsinchu City	$26,483.8M	34,456	441.1K	2.14%	1.76%	1.87%
Yilan County	$24,985.6M	47,804	456.6K	2.02%	2.44%	1.94%
Chiayi County	$24,695.4M	50,905	511.2K	1.99%	2.60%	2.17%
Nantou County	$22,716.1M	58,325	501.1K	1.83%	2.98%	2.13%
Keelung City	$19,760.3M	35,440	371.5K	1.60%	1.81%	1.58%
Hualien County	$15,901.5M	36,326	329.2K	1.28%	1.85%	1.40%
Chiayi City	$15,509.0M	21,976	269.4K	1.25%	1.12%	1.14%
Taitung County	$9,461.4M	25,695	219.5K	0.76%	1.31%	0.93%
Penghu County	$4,596.6M	8,461	104.1K	0.37%	0.43%	0.44%
Kinmen County	$2,838.0M	7,411	137.5K	0.23%	0.38%	0.58%
Lienchiang County	$321.4M	913	12.9K	0.03%	0.05%	0.05%

Exposure by simplified taxonomy

Adding `MACRO_TAXO` column

MACRO_TAXO	COST_USD	BUILDINGS	OCCUPANTS	COST_USD_%	BUILDINGS_%	OCCUPANTS_%
RC	$851,799.7M	655.1K	14,685.1K	68.79%	33.43%	62.30%
MUR	$181,169.2M	823.6K	6,264.5K	14.63%	42.03%	26.58%
S	$113,576.6M	223.0K	929.0K	9.17%	11.38%	3.94%
MCF	$90,330.4M	237.9K	1,628.0K	7.29%	12.14%	6.91%
W	$995.3M	13.5K	43.1K	0.08%	0.69%	0.18%
ADO/E	$390.9M	6.8K	21.5K	0.03%	0.34%	0.09%

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/LFINF+DUL/HBET:2-5/RES	$281.9B	370,804	25.34%	22.05%
	CR/LFINF+DUL/HBET:6-12/RES	$157.7B	55,537	14.18%	3.30%
MUR	MUR/HBET:2-5/RES	$128.5B	249,324	11.55%	14.83%
RC	CR/LFINF+DUH/HBET:13-/RES	$99.6B	11,677	8.95%	0.69%
MUR	MUR/H:1/RES	$38.9B	443,324	3.50%	26.37%
RC	CR/LFINF+DUH/HBET:2-5/RES	$37.3B	49,104	3.36%	2.92%
MCF	MCF/LWAL+DUL/HBET:2-5/RES	$36.8B	62,716	3.30%	3.73%
	CR/LFINF+DUM/HBET:2-5/COM4	$34.8B	7,040	3.13%	0.42%
RC	CR/LFINF+DUM/HBET:2-5/RES	$32.1B	42,259	2.89%	2.51%
	CR/LFINF+DUM/HBET:6-12/COM4	$31.3B	1,433	2.81%	0.09%
S	S/LFM+DUL/H:1/RES	$30.0B	145,770	2.69%	8.67%
	S/LFM+DUM/H:1/RES	$25.0B	15,821	2.25%	0.94%
RC	CR/LFINF+DUH/HBET:6-12/RES	$20.9B	7,357	1.88%	0.44%
MCF	MCF/LWAL+DUM/H:1/COM2	$18.8B	28,184	1.69%	1.68%
	CR/LFINF+DUM/H:1/IND1	$18.5B	10,554	1.67%	0.63%
RC	CR/LFINF+DUM/HBET:6-12/RES	$18.0B	6,324	1.61%	0.38%
S	S/LFM+DUL/HBET:2-5/RES	$15.3B	12,831	1.38%	0.76%
	CR/LFINF+DUH/HBET:13-/RES	$13.2B	1,547	1.19%	0.09%
RC	CR/LFINF+DUM/H:1/COM2	$12.2B	16,912	1.10%	1.01%
	CR/LFINF+DUM/H:1/IND2	$11.7B	12,310	1.05%	0.73%
	CR/LFINF+DUM/HBET:13-/RES	$11.3B	1,329	1.02%	0.08%
MCF	MCF/LWAL+DUL/H:1/RES	$11.0B	109,800	0.99%	6.53%
	MCF/LWAL+DUM/HBET:2-5/COM2	$10.0B	4,993	0.90%	0.30%
S	S/LFM+DUM/H:1/COM2	$8.9B	11,265	0.80%	0.67%
RC	CR/LFINF+DUM/HBET:2-5/IND2	$8.8B	3,121	0.79%	0.19%