

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 Shapely 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 = "Hong_Kong"
```

Exposure files:
Exposure_Com_Hong_Kong.csv
Exposure_Ind_Hong_Kong.csv
Exposure_Res_Hong_Kong.csv

Sanity checks and formats

Hong_Kong
Exposure/Exposure/Exposure_Com_Hong_Kong.csv
Exposure/Exposure/Exposure_Ind_Hong_Kong.csv
Exposure/Exposure/Exposure_Res_Hong_Kong.csv
Occupants / Dwellings = 2.7
Reference avg household size (2019) = 2.82
Population (exposure / UN_2021) = 0.98
Exposure models OK

Exposure at National level

Summary by occupancy type

	OCCUPANTS	BUILDINGS	COST_USD	BUILDINGS_%	COST_USD_%
OCCUPANCY					
Res	7.4M	34,437	\$438.2B	85.08%	83.26%
Ind	0.0M	1,013	\$21.5B	2.50%	4.09%
Com	0.0M	5,025	\$66.6B	12.42%	12.65%

Other metrics to consider

	AREA_SQM	COST_BUILDING_USD	AVG_BUILDING_AREA_SQM	AVG_COST_PER_AREA_USD
OCCUPANCY				
Total	569,620.5K	\$324.1B	14,073	\$924
Res	506,600.6K	\$282.4B	14,711	\$865
Ind	1,776.8K	\$7.8B	1,754	\$12,104
Com	61,243.1K	\$33.9B	12,188	\$1,087

Exposure summary at Admin level 1

	COST_USD	BUILDINGS	OCCUPANTS	COST_USD_%	BUILDINGS_%	OCCUPANTS_%
NAME_1						
Eastern	\$47.8B	1,413	249.6K	9.08%	3.49%	3.36%
Yau Tsim Mong	\$45.2B	3,056	423.1K	8.59%	7.55%	5.69%
Sha Tin	\$39.9B	1,438	258.2K	7.58%	3.55%	3.47%
Central & Western	\$38.0B	3,233	397.1K	7.22%	7.99%	5.34%
Tuen Mun	\$35.8B	1,361	267.3K	6.80%	3.36%	3.59%
Yuen Long	\$33.3B	8,824	1,925.3K	6.34%	21.80%	25.89%
Sai Kung	\$32.1B	2,714	632.4K	6.10%	6.71%	8.50%
Wan Chai	\$30.7B	2,349	317.3K	5.83%	5.80%	4.27%
Kowloon City	\$30.7B	2,769	414.5K	5.83%	6.84%	5.57%
Kwun Tong	\$30.3B	961	120.7K	5.75%	2.37%	1.62%
Tsuen Wan	\$27.5B	1,030	174.6K	5.22%	2.54%	2.35%
North	\$26.2B	1,373	242.8K	4.98%	3.39%	3.26%
Sham Shui Po	\$23.7B	2,173	378.3K	4.51%	5.37%	5.09%
Kwai Tsing	\$21.8B	622	100.4K	4.15%	1.54%	1.35%
Wong Tai Sin	\$19.5B	521	84.3K	3.71%	1.29%	1.13%
Tai Po	\$18.3B	3,628	803.6K	3.48%	8.96%	10.81%
Southern	\$17.1B	2,071	462.2K	3.25%	5.12%	6.22%
Islands	\$8.3B	939	184.4K	1.57%	2.32%	2.48%

Exposure by simplified taxonomy

Adding `MACRO_TAXO` column

	COST_USD	BUILDINGS	OCCUPANTS	COST_USD_%	BUILDINGS_%	OCCUPANTS_%
MACRO_TAXO						
RC	\$475,641.2M	35,787	7,046.6K	90.37%	88.42%	94.76%
MR	\$45,947.0M	4,438	105.1K	8.73%	10.96%	1.41%
S	\$4,712.0M	250	284.5K	0.90%	0.62%	3.83%

Exposure by taxonomy

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

		COST_USD	BUILDINGS	COST_USD_%	BUILDINGS_%
MACRO_TAXO	TAXONOMY				
RC	CR/LFINF+DUL/H:2-3/RES	\$127,502.1M	11,380	27.07%	30.44%
	CR/LDUAL+DUL/H:21-30/RES	\$32,851.0M	2,987	6.97%	7.99%
	CR/LFINF+DUM/H:2-3/RES	\$30,941.9M	1,090	6.57%	2.92%
	CR/LWAL+DUL/H:4-6/RES	\$28,432.7M	2,660	6.04%	7.12%
	CR/LWAL+DUL/H:11-20/RES	\$26,227.2M	2,111	5.57%	5.65%
	CR/LDUAL+DUL/H:11-20/RES	\$23,573.5M	2,064	5.00%	5.52%
MR	MR/LWAL+DUL/H:2-3/RES	\$21,896.6M	2,246	4.65%	6.01%
	CR/LFINF+DUL/H:4-6/RES	\$20,486.6M	1,932	4.35%	5.17%
	CR/LFINF+DUL/H:2-3/COM	\$18,833.4M	1,576	4.00%	4.22%
RC	CR/LWAL+DUL/H:7-10/RES	\$17,073.0M	1,458	3.62%	3.90%
	CR/LDUAL+DUL/H:31-40/RES	\$15,572.7M	1,219	3.31%	3.26%
	CR/LDUAL+DUM/H:21-30/RES	\$9,513.4M	285	2.02%	0.76%
MR	MR/LWAL+DUL/H:4-6/RES	\$9,400.8M	919	2.00%	2.46%
RC	CR/LWAL+DUM/H:4-6/RES	\$8,201.8M	261	1.74%	0.70%
	CR/LDUAL+DUL/H:41-/RES	\$7,640.0M	423	1.62%	1.13%
	CR/LDUAL+DUL/H:21-30/COM	\$7,573.7M	459	1.61%	1.23%
	CR/LWAL+DUM/H:11-20/RES	\$7,499.3M	221	1.59%	0.59%
	CR/LDUAL+DUM/H:11-20/RES	\$7,437.5M	187	1.58%	0.50%
	CR/LFINF+DUL/H:2-3/IND	\$6,956.1M	287	1.48%	0.77%
	CR/LDUAL+DUL/H:7-10/RES	\$6,422.7M	533	1.36%	1.43%
	CR/LFINF+DUL/H:7-10/RES	\$5,806.8M	460	1.23%	1.23%
	CR/LFINF+DUM/H:4-6/RES	\$5,356.7M	199	1.14%	0.53%
	CR/LFINF+DUL/HEX:1/RES	\$5,234.8M	786	1.11%	2.10%
MR	MR/LWAL+DUL/H:2-3/COM	\$4,438.9M	549	0.94%	1.47%
	CR/LWAL+DUL/H:4-6/COM	\$4,374.7M	324	0.93%	0.87%
RC	CR/LWAL+DUM/H:7-10/RES	\$4,104.5M	149	0.87%	0.40%
	CR/LDUAL+DUL/H:11-20/COM	\$4,075.9M	312	0.87%	0.83%
	CR/LWAL+DUL/H:11-20/COM	\$3,626.6M	307	0.77%	0.82%