

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 = "Singapore"
```

Exposure files:
Exposure_Com_Singapore.csv
Exposure_Ind_Singapore.csv
Exposure_Res_Singapore.csv

Sanity checks and formats

Singapore
Exposure/Exposure/Exposure_Com_Singapore.csv
Exposure/Exposure/Exposure_Ind_Singapore.csv
Exposure/Exposure/Exposure_Res_Singapore.csv
Occupants / Dwellings = 3.9
Reference avg household size (2019) = 3.3
Population (exposure / UN_2021) = 0.93
Exposure models OK

Exposure at National level

Summary by occupancy type

	OCCUPANTS	BUILDINGS	COST_USD	BUILDINGS_%	COST_USD_%
OCCUPANCY					
Res	5.5M	93.2K	\$948.7B	84.48%	73.81%
Ind	0.0M	9.2K	\$147.9B	8.36%	11.51%
Com	0.0M	7.9K	\$188.8B	7.16%	14.69%

Other metrics to consider

	AREA_SQM	COST_BUILDING_USD	AVG_BUILDING_AREA_SQM	AVG_COST_PER_AREA_USD
OCCUPANCY				
Total	494.6M	\$958.8B	4,481	\$2,599
Res	370.7M	\$759.0B	3,976	\$2,559
Ind	57.5M	\$73.9B	6,233	\$2,571
Com	66.3M	\$125.9B	8,393	\$2,847

Exposure summary at Admin level 1

	COST_USD	BUILDINGS	OCCUPANTS	COST_USD_%	BUILDINGS_%	OCCUPANTS_%
NAME_1						
CENTRAL REGION	\$375.5B	42.4K	1,662.7K	29.21%	38.41%	30.43%
WEST REGION	\$296.9B	13.7K	1,096.1K	23.10%	12.45%	20.06%
NORTH-EAST REGION	\$255.1B	26.5K	1,135.8K	19.85%	24.01%	20.79%
EAST REGION	\$188.2B	20.6K	926.0K	14.64%	18.67%	16.95%
NORTH REGION	\$169.7B	7.1K	643.0K	13.20%	6.46%	11.77%

Exposure by simplified taxonomy

Adding `MACRO_TAXO` column

	COST_USD	BUILDINGS	OCCUPANTS	COST_USD_%	BUILDINGS_%	OCCUPANTS_%
MACRO_TAXO						
RC	\$1,076.9B	24,814	5,043.5K	83.77%	22.48%	92.31%
OT	\$190.2B	82,663	420.1K	14.80%	74.89%	7.69%
S	\$18.4B	2,899	0.0K	1.43%	2.63%	0.00%

Exposure by taxonomy

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

		COST_USD	BUILDINGS	COST_USD_%	BUILDINGS_%
MACRO_TAXO	TAXONOMY				
OT	UNK/IND	\$123,375.4M	6,268	10.67%	5.91%
RC	CR+CIP/LWAL+DUL/H:12/RES	\$122,720.6M	1,375	10.62%	1.30%
OT	UNK/H:1-3/RES	\$66,836.1M	76,395	5.78%	72.02%
	CR+PC/LWAL+DUL/H:16/RES	\$63,188.2M	687	5.47%	0.65%
	CR+CIP/LWAL+DUL/H:13/RES	\$60,702.3M	630	5.25%	0.59%
	CR+CIP/LWAL+DUL/H:11/RES	\$38,489.2M	416	3.33%	0.39%
	CR+PC/LWAL+DUL/H:12/RES	\$35,788.1M	415	3.10%	0.39%
	CR+PC/LWAL+DUL/H:15/RES	\$32,812.7M	379	2.84%	0.36%
	CR+PC/LWAL+DUL/H:11-15/RES	\$31,700.6M	1,333	2.74%	1.26%
RC	CR+PC/LWAL+DUL/H:17/RES	\$28,180.6M	328	2.44%	0.31%
	CR+CIP/LFINF+DUL/H:10/RES	\$28,030.7M	405	2.42%	0.38%
	CR+PC/LWAL+DUL/H:7-10/RES	\$26,373.0M	2,103	2.28%	1.98%
	CR+PC/LWAL+DUL/H:13/RES	\$24,428.2M	307	2.11%	0.29%
	CR+CIP/LWAL+DUL/H:25/RES	\$22,271.1M	195	1.93%	0.18%
	CR+PC/LWAL+DUL/H:14/RES	\$21,012.2M	255	1.82%	0.24%
	CR+CIP/LFINF+DUL/H:4/RES	\$18,681.0M	788	1.62%	0.74%
S	S/LFM+DUL/H:1-2/IND	\$18,376.3M	2,899	1.59%	2.73%
	CR+CIP/LWAL+DUL/H:14/RES	\$18,229.9M	176	1.58%	0.17%
	CR+PC/LWAL+DUL/H:1-3/COM	\$17,894.9M	2,939	1.55%	2.77%
	CR+PC/LWAL+DUL/H:4/COM	\$17,606.3M	325	1.52%	0.31%
	CR+PC/LWAL+DUL/H:16-20/RES	\$16,734.1M	381	1.45%	0.36%
	CR+CIP/LWAL+DUL/H:16/RES	\$16,552.5M	152	1.43%	0.14%
	CR+PC/LWAL+DUL/H:5/COM	\$16,166.1M	219	1.40%	0.21%
	CR+PC/LWAL+DUL/H:30/RES	\$14,328.5M	91	1.24%	0.09%
	CR+PC/LWAL+DUM/H:16/RES	\$13,677.8M	133	1.18%	0.13%
	CR+PC/LWAL+DUL/H:18/RES	\$13,482.9M	156	1.17%	0.15%
	CR+PC/LWAL+DUL/H:11/RES	\$13,223.6M	172	1.14%	0.16%
	CR+CIP/LFINF+DUL/H:9/RES	\$11,810.5M	146	1.02%	0.14%
	CR+PC/LWAL+DUM/H:17/RES	\$11,441.6M	141	0.99%	0.13%
	CR+PC/LWAL+DUL/H:25/RES	\$10,773.7M	104	0.93%	0.10%
	CR+PC/LWAL+DUL/H:40/RES	\$10,613.9M	43	0.92%	0.04%
	CR+PC/LWAL+DUL/H:6/COM	\$9,766.5M	133	0.84%	0.13%
	CR+PC/LWAL+DUM/H:15/RES	\$9,415.9M	103	0.81%	0.10%
	CR/LFM+DUL/H:5/COM	\$9,413.4M	346	0.81%	0.33%
	CR+PC/LWAL+DUM/H:13/RES	\$9,029.4M	93	0.78%	0.09%
	CR+PC/LWAL+DUL/H:7/COM	\$8,994.1M	76	0.78%	0.07%
	CR+PC/LWAL+DUL/H:10/RES	\$8,242.4M	116	0.71%	0.11%
	CR+PC/LWAL+DUL/H:4-6/COM	\$8,033.3M	294	0.69%	0.28%
RC	CR+PC/LWAL+DUL/H:3/COM	\$7,927.7M	907	0.69%	0.85%
	CR+CIP/LWAL+DUL/H:15/RES	\$7,879.5M	80	0.68%	0.08%
	CR+PC/LWAL+DUL/H:21-25/RES	\$7,837.7M	115	0.68%	0.11%
	CR+PC/LWAL+DUL/H:20/RES	\$7,504.8M	75	0.65%	0.07%
	CR+PC/LWAL+DUL/H:19/RES	\$7,389.3M	72	0.64%	0.07%
	CR+PC/LWAL+DUM/H:18/RES	\$7,245.0M	69	0.63%	0.07%
	CR+PC/LWAL+DUL/H:21/RES	\$7,219.7M	70	0.62%	0.07%
	CR+PC/LWAL+DUL/H:2/COM	\$7,154.1M	1,365	0.62%	1.29%
	CR+PC/LWAL+DUL/H:4-6/RES	\$6,025.3M	1,166	0.52%	1.10%
	CR+PC/LWAL+DUM/H:14/RES	\$5,543.6M	62	0.48%	0.06%
	CR+PC/LWAL+DUM/H:7/COM	\$5,227.3M	26	0.45%	0.02%
	CR+PC/LWAL+DUL/H:9/COM	\$4,907.5M	40	0.42%	0.04%
	CR+CIP/LWAL+DUL/H:20/RES	\$4,812.6M	45	0.42%	0.04%
	CR+PC/LWAL+DUL/H:8/COM	\$4,688.2M	64	0.41%	0.06%
	CR+PC/LWAL+DUL/H:11-15/IND	\$4,511.2M	33	0.39%	0.03%
	CR+CIP/LWAL+DUL/H:22/RES	\$4,397.9M	35	0.38%	0.03%
	CR+PC/LWAL+DUM/H:19/RES	\$4,392.3M	47	0.38%	0.04%
	CR+CIP/LWAL+DUL/H:17/RES	\$4,144.2M	38	0.36%	0.04%
	CR/LFM+DUL/H:6/COM	\$4,123.3M	120	0.36%	0.11%
	CR+PC/LWAL+DUL/H:10/COM	\$3,894.1M	26	0.34%	0.02%
	CR+CIP/LWAL+DUL/H:18/RES	\$3,763.3M	23	0.33%	0.02%
	CR+PC/LWAL+DUL/H:9/RES	\$3,516.5M	53	0.30%	0.05%
	CR+PC/LWAL+DUM/H:22/RES	\$3,513.0M	34	0.30%	0.03%