

# 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 = "Indonesia"
```

Exposure files:  
Exposure\_Com\_Indonesia.csv  
Exposure\_Ind\_Indonesia.csv  
Exposure\_Res\_Indonesia.csv

## Sanity checks and formats

Indonesia  
Exposure/Exposure/Exposure\_Com\_Indonesia.csv  
Exposure/Exposure/Exposure\_Ind\_Indonesia.csv  
Exposure/Exposure/Exposure\_Res\_Indonesia.csv  
Occupants / Dwellings = 3.9  
Reference avg household size (2019) = 3.93  
Population (exposure / UN\_2021) = 1.01  
Exposure models OK

## Exposure at National level

### Summary by occupancy type

	OCCUPANTS	BUILDINGS	COST_USD	BUILDINGS_%	COST_USD_%
OCCUPANCY					
Res	279.1M	40,297.2K	\$1,837.4B	88.31%	79.68%
Ind	0.0M	832.7K	\$131.4B	1.82%	5.70%
Com	0.0M	4,502.1K	\$337.2B	9.87%	14.62%

### Other metrics to consider

	AREA_SQM	COST_BUILDING_USD	AVG_BUILDING_AREA_SQM	AVG_COST_PER_AREA_USD
OCCUPANCY				
Total	5,169.7M	\$1,713.7B	113	\$446
Res	4,549.8M	\$1,419.2B	113	\$404
Ind	153.3M	\$71.8B	184	\$857
Com	466.6M	\$222.7B	104	\$723

## Exposure summary at Admin level 1

	COST_USD	BUILDINGS	OCCUPANTS	COST_USD_%	BUILDINGS_%	OCCUPANTS_%
NAME_1						
Jawa Barat Province	\$469.6B	8,172.0K	52,358.3K	20.37%	17.91%	18.76%
Jawa Timur Province	\$364.2B	6,854.1K	39,928.9K	15.79%	15.02%	14.30%
Jawa Tengah Province	\$294.4B	5,688.6K	33,567.5K	12.77%	12.47%	12.03%
DKI Jakarta Province	\$135.4B	1,288.2K	10,927.8K	5.87%	2.82%	3.91%
Banten Province	\$117.7B	1,953.8K	13,986.3K	5.10%	4.28%	5.01%
Sumatera Utara Province	\$98.5B	2,304.5K	14,517.3K	4.27%	5.05%	5.20%
Sulawesi Selatan Province	\$67.0B	1,479.3K	9,129.8K	2.91%	3.24%	3.27%
Lampung Province	\$65.6B	1,582.2K	8,713.0K	2.85%	3.47%	3.12%
Riau Province	\$57.8B	1,254.7K	8,249.1K	2.51%	2.75%	2.96%
Sumatera Selatan Province	\$57.1B	1,327.8K	8,067.1K	2.48%	2.91%	2.89%
Bali Province	\$44.7B	914.6K	4,767.9K	1.94%	2.00%	1.71%
Sumatera Barat Province	\$44.3B	884.3K	5,450.2K	1.92%	1.94%	1.95%
DI Yogyakarta Province	\$41.4B	719.3K	3,829.5K	1.80%	1.58%	1.37%
Nusa Tenggara Barat Province	\$39.1B	1,010.6K	4,759.4K	1.69%	2.21%	1.71%
Kalimantan Timur Province	\$37.0B	846.3K	5,076.1K	1.60%	1.85%	1.82%
Kalimantan Selatan Province	\$35.3B	912.6K	4,477.4K	1.53%	2.00%	1.60%
Aceh Province	\$33.5B	808.0K	4,770.7K	1.45%	1.77%	1.71%
Papua Province	\$32.3B	956.5K	6,680.0K	1.40%	2.10%	2.39%
Kalimantan Barat Province	\$32.1B	925.2K	5,229.0K	1.39%	2.03%	1.87%
Nusa Tenggara Timur Province	\$29.4B	941.5K	5,417.4K	1.28%	2.06%	1.94%
Jambi Province	\$28.4B	648.1K	3,979.5K	1.23%	1.42%	1.43%
Kepulauan Riau Province	\$24.1B	389.0K	2,531.1K	1.05%	0.85%	0.91%
Sulawesi Utara Province	\$22.1B	461.0K	2,723.1K	0.96%	1.01%	0.98%
Sulawesi Tenggara Province	\$21.0B	464.6K	2,931.0K	0.91%	1.02%	1.05%
Sulawesi Tengah Province	\$20.9B	512.8K	3,199.7K	0.91%	1.12%	1.15%
Kalimantan Tengah Province	\$18.9B	543.9K	2,766.9K	0.82%	1.19%	0.99%
Bengkulu Province	\$14.4B	323.3K	1,865.5K	0.62%	0.71%	0.67%
Kep. Bangka Belitung Province	\$13.4B	274.8K	1,614.5K	0.58%	0.60%	0.58%
Gorontalo Province	\$11.3B	246.2K	1,256.9K	0.49%	0.54%	0.45%
Maluku Province	\$11.1B	263.8K	1,845.0K	0.48%	0.58%	0.66%
Sulawesi Barat Province	\$8.4B	273.0K	1,655.3K	0.37%	0.60%	0.59%
Maluku Utara Province	\$8.2B	208.9K	1,473.2K	0.35%	0.46%	0.53%
Papua Barat Province	\$7.3B	199.0K	1,390.1K	0.32%	0.44%	0.50%

## Exposure by simplified taxonomy

Adding `MACRO_TAXO` column						
	COST_USD	BUILDINGS	OCCUPANTS	COST_USD_%	BUILDINGS_%	OCCUPANTS_%
MACRO_TAXO						
MCF	\$939.0B	17,967.5K	125.4M	40.72%	39.37%	44.92%
RC	\$882.8B	4,912.3K	56.2M	38.28%	10.77%	20.12%
W	\$235.5B	11,841.4K	60.8M	10.21%	25.95%	21.79%
MUR	\$208.4B	10,707.0K	36.8M	9.04%	23.46%	13.17%
S	\$40.3B	203.7K	0.0M	1.75%	0.45%	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					
MCF	MCF/LWAL+DUL/H:1-3/RES	\$635.6B	13,242,024	30.70%	31.73%	
	MCF/LWAL+DUM/H:1-3/RES	\$233.9B	3,132,011	11.30%	7.50%	
RC	CR/LFINF+DUL/H:4-7/RES	\$230.3B	491,220	11.12%	1.18%	
MUR	MUR/LWAL+DNO/H:1-2/RES	\$160.0B	9,601,770	7.73%	23.01%	
RC	CR/LFINF+DUM/H:4-7/RES	\$153.5B	327,545	7.42%	0.78%	
W	W/LFM+DUL/H:1-3/RES	\$122.3B	3,973,928	5.91%	9.52%	
RC	CR/LFINF+DUL/H:1-3/RES	\$84.5B	1,878,734	4.08%	4.50%	
W	W+WBB/LPB+DNO/H:1/RES	\$57.7B	4,325,943	2.79%	10.37%	
	CR/LWAL+DUL/H:8+/RES	\$55.4B	29,517	2.67%	0.07%	
RC	CR/LFM+DUL/HBET:1-2/IND1	\$50.6B	80,345	2.44%	0.19%	
	CR/LWAL+DUM/H:8+/RES	\$48.2B	25,667	2.33%	0.06%	
W	W+WO/LN/H:1/RES	\$40.6B	3,047,626	1.96%	7.30%	
RC	CR/LDUAL+DUM/HBET:13-/COM12	\$31.5B	13,663	1.52%	0.03%	
MUR	MUR/LWAL+DNO/H:1/IND2	\$27.1B	390,949	1.31%	0.94%	
RC	CR/LDUAL+DUL/HBET:6-12/COM3	\$26.7B	4,963	1.29%	0.01%	
S	S/LFM+DUL/HBET:1-2/IND1	\$22.9B	31,079	1.11%	0.07%	
	CR/LDUAL+DUM/HBET:13-/COM3	\$22.4B	2,770	1.08%	0.01%	
	CR/LDUAL+DUM/HBET:6-12/COM3	\$18.0B	3,346	0.87%	0.01%	
RC	CR/LFINF+DUL/H:2/COM1	\$16.8B	182,166	0.81%	0.44%	
	CR/LFINF+DUL/H:1/COM1	\$16.8B	727,189	0.81%	1.74%	
	CR/LFINF+DUM/H:1-3/RES	\$15.5B	221,175	0.75%	0.53%	