

# 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 = "Greece"
```

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

## Sanity checks and formats

## Exposure at National level

### Summary by occupancy type

	OCCUPANTS	BUILDINGS	COST_USD	BUILDINGS_%	COST_USD_%
OCCUPANCY					
Res	10,716.0K	3,051.2K	\$511.8B	91.02%	73.71%
Ind	3,505.8K	51.2K	\$72.3B	1.53%	10.41%
Com	4,286.2K	249.7K	\$110.3B	7.45%	15.88%

### Other metrics to consider

	AREA_SQM	COST_BUILDING_USD	AVG_BUILDING_AREA_SQM	AVG_COST_PER_AREA_USD
OCCUPANCY				
Total	444.7M	\$493.5B	133	\$1,562
Res	391.3M	\$409.5B	128	\$1,308
Ind	24.9M	\$28.9B	486	\$2,903
Com	28.4M	\$55.1B	114	\$3,880

## Exposure summary at Admin level 1

	COST_USD	BUILDINGS	OCCUPANTS	COST_USD_%	BUILDINGS_%	OCCUPANTS_%
NAME_1						
Attica	\$238,841.7M	733,330	6,422,181	34.40%	21.88%	34.70%
Macedonia and Thrace	\$152,942.3M	694,397	4,368,512	22.03%	20.72%	23.60%
Peloponnese, Western Greece and the Ionian Islands	\$88,807.9M	637,181	2,503,545	12.79%	19.01%	13.53%
Thessaly and Central Greece	\$86,739.6M	521,884	2,202,525	12.49%	15.57%	11.90%
Aegean	\$49,449.4M	289,369	856,053	7.12%	8.63%	4.63%
Crete	\$41,391.7M	244,140	1,072,800	5.96%	7.28%	5.80%
Epirus and Western Macedonia	\$36,129.2M	231,040	1,079,833	5.20%	6.89%	5.83%
Athos	\$64.9M	753	2,512	0.01%	0.02%	0.01%

## Exposure by simplified taxonomy

Adding `MACRO\_TAXO` column

	COST_USD	BUILDINGS	OCCUPANTS	COST_USD_%	BUILDINGS_%	OCCUPANTS_%
MACRO_TAXO						
RC	\$550,165.4M	2,276.1K	13,458.0K	79.23%	67.90%	72.71%
MUR	\$64,754.6M	643.8K	2,180.5K	9.33%	19.21%	11.78%
MCF	\$61,678.9M	398.5K	1,990.3K	8.88%	11.89%	10.75%
S	\$16,068.9M	20.4K	822.7K	2.31%	0.61%	4.45%
W	\$1,698.9M	13.3K	56.4K	0.24%	0.40%	0.30%

## 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+CDL+LFC:6.0/HBET:6-/RES	\$31,766.6M	15,365	5.09%	0.50%
	CR/LFINF+CDH+LFC:10.0/HBET:6-/RES	\$25,800.2M	13,039	4.14%	0.43%
	CR/LFINF+CDL+LFC:6.0/HBET:3-5/RES	\$25,297.1M	74,634	4.05%	2.44%
MCF	MCF/LWAL+CDL/H:1/RES	\$21,802.9M	239,699	3.49%	7.84%
	CR/LFINF+CDL+LFC:8.0/HBET:3-5/RES	\$20,823.3M	63,073	3.34%	2.06%
RC	CR/LFINF+CDM/H:2/IND	\$16,768.5M	11,527	2.69%	0.38%
	CR/LFM+CDM/H:2/IND	\$16,768.5M	11,527	2.69%	0.38%
MUR	MUR+CL/LWAL+CDN/H:1/RES	\$16,226.7M	221,426	2.60%	7.24%
RC	CR/LFINF+CDH+LFC:10.0/HBET:3-5/RES	\$14,985.4M	45,468	2.40%	1.49%
	MUR/LWAL+CDN/H:1/IND	\$14,160.0M	10,758	2.27%	0.35%
RC	CR/LFINF+CDL+LFC:8.0/H:1/RES	\$13,968.5M	159,155	2.24%	5.20%
	CR/LFINF+CDL+LFC:8.0/HBET:6-/RES	\$13,263.0M	6,523	2.13%	0.21%
	CR/LFINF+CDH+LFC:15.0/HBET:3-5/RES	\$12,834.8M	39,358	2.06%	1.29%
MUR	MUR+ST/LWAL+CDN/H:1/RES	\$12,775.1M	180,465	2.05%	5.90%
	CR/LDUAL+CDL+LFC:6.0/HBET:6-/RES	\$11,772.4M	5,633	1.89%	0.18%
RC	CR/LFINF+CDL+LFC:8.0/H:2/RES	\$11,520.5M	138,076	1.85%	4.52%
	MCF/LWAL+CDL/H:1/IND	\$10,433.7M	7,172	1.67%	0.23%
RC	CR/LFINF+CDL+LFC:6.0/H:1/RES	\$9,874.0M	111,823	1.58%	3.66%
	CR/LFINF+CDM+LFC:6.0/HBET:6-/RES	\$9,592.1M	4,881	1.54%	0.16%
	CR/LDUAL+CDL+LFC:6.0/HBET:3-5/RES	\$9,297.9M	27,276	1.49%	0.89%
RC	CR/LDUAL+CDH+LFC:10.0/HBET:6-/RES	\$8,834.4M	4,379	1.42%	0.14%
	CR/LFINF+CDM+LFC:8.0/HBET:3-5/RES	\$8,692.1M	26,759	1.39%	0.88%
	MCF/LWAL+CDL/H:2/RES	\$8,336.3M	98,222	1.34%	3.21%
RC	CR/LFINF+CDM+LFC:6.0/HBET:3-5/RES	\$8,143.1M	24,614	1.31%	0.80%
S	S/LFM+CDH/H:1/IND	\$8,091.5M	5,840	1.30%	0.19%
MUR	MUR+ST/LWAL+CDN/H:2/RES	\$8,025.9M	120,308	1.29%	3.93%
RC	CR/LFINF+CDN/H:1/RES	\$7,931.2M	87,581	1.27%	2.86%
MCF	MCF/LWAL+CDL/HBET:3-5/COM	\$7,765.8M	8,695	1.24%	0.28%
	CR/LFINF+CDL+LFC:6.0/H:2/RES	\$7,549.1M	88,862	1.21%	2.91%
	CR/LDUAL+CDL+LFC:8.0/HBET:3-5/RES	\$7,540.3M	22,672	1.21%	0.74%
RC	CR/LFINF+CDH+LFC:15.0/H:2/RES	\$7,071.2M	83,551	1.13%	2.73%
	CR/LFINF+CDN/H:2/COM	\$7,036.1M	10,345	1.13%	0.34%
	CR/LFINF+CDH+LFC:15.0/HBET:6-/RES	\$5,502.2M	2,863	0.88%	0.09%
RC	CR/LFINF+CDH+LFC:10.0/H:2/RES	\$5,252.3M	62,088	0.84%	2.03%
	CR/LFINF+CDM+LFC:8.0/HBET:6-/RES	\$5,196.6M	2,637	0.83%	0.09%
	CR/LFINF+CDN/HBET:3-5/RES	\$5,020.5M	14,693	0.80%	0.48%
RC	CR/LDUAL+CDH+LFC:10.0/HBET:3-5/RES	\$4,944.4M	14,966	0.79%	0.49%
	CR/LFINF+CDM+LFC:8.0/H:2/RES	\$4,902.6M	59,015	0.79%	1.93%
	CR/LFINF+CDM+LFC:8.0/H:1/RES	\$4,862.9M	55,006	0.78%	1.80%
RC	CR/LFINF+CDH+LFC:15.0/H:1/RES	\$4,758.4M	53,285	0.76%	1.74%
	CR/LFINF+CDN/HBET:6-/RES	\$4,752.6M	2,185	0.76%	0.07%
	CR/LFINF+CDN/H:1/COM	\$4,611.9M	17,381	0.74%	0.57%
RC	CR/LDUAL+CDL+LFC:8.0/H:1/RES	\$4,589.7M	51,013	0.74%	1.67%
	CR/LDUAL+CDL+LFC:8.0/HBET:6-/RES	\$4,536.3M	2,147	0.73%	0.07%
	CR/LFINF+CDN/H:2/RES	\$4,280.9M	49,273	0.69%	1.61%
RC	CR/LDUAL+CDH+LFC:15.0/HBET:3-5/RES	\$4,238.1M	12,890	0.68%	0.42%
	CR/LFINF+CDL+LFC:12.0/HBET:3-5/RES	\$3,962.9M	11,057	0.64%	0.36%
	CR/LDUAL+CDL+LFC:8.0/H:2/RES	\$3,929.0M	45,748	0.63%	1.50%
RC	CR/LFINF+CDL+LFC:8.0/H:2/COM	\$3,824.3M	5,489	0.61%	0.18%
	CR/LFINF+CDH+LFC:15.0/HBET:3-5/COM	\$3,823.6M	2,482	0.61%	0.08%
	CR/LFINF+CDH+LFC:10.0/H:1/RES	\$3,780.1M	42,884	0.61%	1.40%
MCF	MCF/LWAL+CDL/H:2/COM	\$3,740.6M	7,836	0.60%	0.26%
	MCF/LWAL+CDL/H:1/COM	\$3,617.6M	17,244	0.58%	0.56%
	CR/LFINF+CDM+LFC:8.0/HBET:3-5/COM	\$3,430.7M	2,231	0.55%	0.07%
RC	CR/LFINF+CDM+LFC:6.0/H:1/RES	\$3,323.0M	37,072	0.53%	1.21%
	CR/LDUAL+CDM+LFC:6.0/HBET:6-/RES	\$3,273.2M	1,637	0.52%	0.05%
	CR/LDUAL+CDL+LFC:6.0/H:1/RES	\$3,193.6M	35,225	0.51%	1.15%
MUR	CR/LDUAL+CDN/H:2/COM	\$3,174.6M	4,049	0.51%	0.13%
	MUR+CL/LWAL+CDN/H:2/RES	\$3,173.2M	45,525	0.51%	1.49%
	CR/LFINF+CDM+LFC:6.0/H:2/RES	\$2,961.4M	35,470	0.47%	1.16%
RC	CR/LDUAL+CDM+LFC:8.0/HBET:3-5/RES	\$2,927.5M	8,937	0.47%	0.29%
	CR/LDUAL+CDN/H:1/COM	\$2,822.1M	10,830	0.45%	0.35%
	CR/LDUAL+CDM+LFC:6.0/HBET:3-5/RES	\$2,730.2M	8,208	0.44%	0.27%
RC	CR/LDUAL+CDL+LFC:6.0/H:2/RES	\$2,698.2M	30,981	0.43%	1.01%
	S+SL/LFM+CDL/H:1/IND	\$2,697.2M	1,947	0.43%	0.06%
	S/LFINF+CDL/H:1/IND	\$2,697.2M	1,947	0.43%	0.06%
RC	CR/LFINF+CDH+LFC:15.0/H:2/COM	\$2,652.6M	3,759	0.43%	0.12%
	CR/LFINF+CDH+LFC:10.0/HBET:6-/SOS/RES	\$2,614.9M	1,311	0.42%	0.04%
	MCF/LWAL+CDL/HBET:3-5/RES	\$2,569.3M	7,949	0.41%	0.26%
RC	CR/LFINF+CDH+LFC:15.0/H:1/COM	\$2,548.9M	9,435	0.41%	0.31%
	CR/LFINF+CDH+LFC:10.0/HBET:3-5/SOS/RES	\$2,497.6M	7,067	0.40%	0.23%
	CR/LDUAL+CDN/H:1/RES	\$2,477.3M	26,988	0.40%	0.88%
RC	CR/LDUAL+CDH+LFC:15.0/H:2/RES	\$2,474.0M	28,467	0.40%	0.93%
	CR/LFINF+CDM+LFC:8.0/H:2/COM	\$2,436.3M	3,503	0.39%	0.11%
	CR/LFINF+CDL+LFC:8.0/H:1/COM	\$2,402.4M	8,956	0.39%	0.29%
RC	CR/LFINF+CDM+LFC:8.0/H:1/COM	\$2,402.4M	8,956	0.39%	0.29%
	CR/LFINF+CDH+LFC:10.0/HBET:3-5/COM	\$2,250.4M	1,725	0.36%	0.06%
RC	CR/LFINF+CDL+LFC:12.0/H:1/RES	\$2,174.7M	22,398	0.35%	0.73%
	CR/LDUAL+CDH+LFC:15.0/HBET:3-5/COM	\$2,088.5M	1,268	0.33%	0.04%
	CR/LFINF+CDL+LFC:12.0/H:2/RES	\$1,985.5M	21,599	0.32%	0.71%
MUR	CR/LDUAL+CDM+LFC:8.0/HBET:3-5/COM	\$1,915.1M	1,182	0.31%	0.04%
	MUR+CB/LWAL+CDN/H:1/RES	\$1,896.9M	27,148	0.30%	0.89%
	CR/LFINF+CDH+LFC:10.0/H:1/COM	\$1,883.6M	7,404	0.30%	0.24%
RC	CR/LFINF+CDL+LFC:6.0/H:2/COM	\$1,867.2M	3,170	0.30%	0.10%
	CR/LDUAL+CDH+LFC:10.0/H:2/RES	\$1,846.5M	21,311	0.30%	0.70%
	CR/LDUAL+CDN/HBET:6-/RES	\$1,836.1M	844	0.29%	0.03%
MCF	MCF/LWAL+CDN/H:1/COM	\$1,776.6M	8,568	0.28%	0.28%
RC	CR/LFINF+CDM+LFC:12.0/HBET:3-5/RES	\$1,774.9M	5,124	0.28%	0.17%
	CR/LDUAL+CDL+LFC:8.0/H:2/COM	\$1,744.4M	2,178	0.28%	0.07%
	CR/LFINF+CDM+LFC:6.0/HBET:3-5/COM	\$1,710.0M	1,341	0.27%	0.04%
RC	CR/LDUAL+CDM+LFC:8.0/H:2/RES	\$1,701.5M	19,947	0.27%	0.65%
	CR/LDUAL+CDH+LFC:10.0/HBET:6-/SOS/RES	\$1,661.9M	832	0.27%	0.03%
	MCF/LWAL+CDN/H:2/COM	\$1,636.1M	3,075	0.26%	0.10%
RC	CR/LDUAL+CDN/HBET:3-5/RES	\$1,634.3M	4,542	0.26%	0.15%
	CR/LFINF+CDH+LFC:15.0/HBET:3-5/SOS/RES	\$1,629.6M	4,571	0.26%	0.15%
	CR/LDUAL+CDM+LFC:8.0/H:1/RES	\$1,620.4M	17,957	0.26%	0.59%
RC	CR/LDUAL+CDM+LFC:8.0/HBET:6-/RES	\$1,620.1M	785	0.26%	0.03%
	CR/LDUAL+CDH+LFC:10.0/HBET:3-5/SOS/RES	\$1,606.6M	4,544	0.26%	0.15%
	CR/LDUAL+CDH+LFC:15.0/H:1/COM	\$1,603.6M	5,735	0.26%	0.19%
MUR	MUR+ST/LWAL+CDN/HBET:3-5/RES	\$1,592.7M	6,386	0.26%	0.21%
	CR/LDUAL+CDH+LFC:15.0/H:1/RES	\$1,565.5M	17,186	0.25%	0.56%
	CR/LFINF+CDL+LFC:6.0/H:1/COM	\$1,554.2M	6,170	0.25%	0.20%
RC	CR/LFINF+CDM+LFC:6.0/H:1/COM	\$1,554.2M	6,170	0.25%	0.20%
	CR/LFINF+CDH+LFC:15.0/HBET:6-/SOS/RES	\$1,546.4M	766	0.25%	0.03%
RC	CR/LFINF+CDH+LFC:10.0/H:2/COM	\$1,519.1M	2,503	0.24%	0.08%