

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 = "Iran"
```

Exposure files:
Exposure_Com_Iran.csv
Exposure_Ind_Iran.csv
Exposure_Res_Iran.csv

Sanity checks and formats

Exposure at National level

Summary by occupancy type

	OCCUPANTS	BUILDINGS	COST_USD	BUILDINGS_%	COST_USD_%
OCCUPANCY					
Res	75.3M	12,294.6K	\$1,090.1B	88.15%	71.10%
Ind	0.0M	81.8K	\$220.4B	0.59%	14.38%
Com	0.0M	1,571.3K	\$222.7B	11.27%	14.52%

Other metrics to consider

	AREA_SQM	COST_BUILDING_USD	AVG_BUILDING_AREA_SQM	AVG_COST_PER_AREA_USD
OCCUPANCY				
Total	2,698.4M	\$1,096.2B	193	\$568
Res	2,268.8M	\$829.1B	185	\$480
Ind	191.4M	\$121.8B	2,339	\$1,151
Com	238.2M	\$145.3B	152	\$935

Exposure summary at Admin level 1

	COST_USD	BUILDINGS	OCCUPANTS	COST_USD_%	BUILDINGS_%	OCCUPANTS_%
NAME_1						
Tehran	\$334.7B	1,521.1K	16,010.4K	21.83%	10.91%	21.27%
Razavi Khorasan	\$125.5B	1,191.6K	6,169.6K	8.19%	8.54%	8.20%
Fars	\$96.3B	951.1K	4,128.0K	6.28%	6.82%	5.48%
East Azerbaijan	\$78.8B	775.1K	3,748.5K	5.14%	5.56%	4.98%
Isfahan	\$77.2B	887.8K	5,179.0K	5.04%	6.37%	6.88%
Alborz	\$68.2B	339.9K	3,162.8K	4.45%	2.44%	4.20%
Mazandaran	\$66.7B	711.8K	3,338.1K	4.35%	5.10%	4.43%
Khuzestan	\$65.6B	773.0K	3,449.2K	4.28%	5.54%	4.58%
Gilan	\$57.6B	582.3K	2,745.7K	3.76%	4.17%	3.65%
West Azerbaijan	\$46.7B	653.8K	2,424.8K	3.04%	4.69%	3.22%
Kerman	\$43.8B	587.6K	2,391.7K	2.85%	4.21%	3.18%
Markazi	\$39.5B	271.1K	1,576.1K	2.58%	1.94%	2.09%
Qazvin	\$37.5B	223.6K	1,301.4K	2.44%	1.60%	1.73%
Golestan	\$35.9B	393.3K	1,534.2K	2.34%	2.82%	2.04%
Kermanshah	\$33.0B	400.8K	1,734.5K	2.15%	2.87%	2.30%
Hamadan	\$32.7B	337.9K	1,723.0K	2.13%	2.42%	2.29%
Qom	\$28.2B	176.6K	1,243.5K	1.84%	1.27%	1.65%
Sistan and Baluchestan	\$27.9B	414.5K	1,628.1K	1.82%	2.97%	2.16%
Hormozgan	\$27.6B	298.8K	1,281.5K	1.80%	2.14%	1.70%
Lorestan	\$26.6B	352.8K	1,464.2K	1.74%	2.53%	1.95%
Yazd	\$25.6B	257.6K	1,053.4K	1.67%	1.85%	1.40%
Kurdistan	\$24.5B	315.2K	1,335.3K	1.60%	2.26%	1.77%
Zanjan	\$22.1B	209.9K	948.7K	1.44%	1.51%	1.26%
Ardabil	\$21.2B	260.7K	1,137.1K	1.38%	1.87%	1.51%
Semnan	\$17.2B	130.1K	689.6K	1.12%	0.93%	0.92%
Bushehr	\$14.9B	188.0K	833.0K	0.97%	1.35%	1.11%
Chaharmahal and Bakhtiari	\$14.6B	179.6K	731.4K	0.95%	1.29%	0.97%
North Khorasan	\$13.7B	176.3K	762.2K	0.89%	1.26%	1.01%
South Khorasan	\$11.0B	141.9K	605.1K	0.72%	1.02%	0.80%
Ilam	\$9.7B	119.6K	432.5K	0.63%	0.86%	0.57%
Kohgiluyeh and Boyer-Ahmad	\$8.7B	124.4K	513.9K	0.57%	0.89%	0.68%

Exposure by simplified taxonomy

Adding `MACRO_TAXO` column						
	COST_USD	BUILDINGS	OCCUPANTS	COST_USD_%	BUILDINGS_%	OCCUPANTS_%
MACRO_TAXO						
MCF	\$604,876.1M	7,161.9K	35,333.0K	39.45%	51.35%	46.94%
S	\$553,542.8M	2,553.5K	21,978.2K	36.10%	18.31%	29.20%
RC	\$220,646.0M	1,139.4K	6,671.8K	14.39%	8.17%	8.86%
MUR	\$95,354.6M	1,948.8K	7,214.6K	6.22%	13.97%	9.58%
ADO/E	\$44,245.8M	876.7K	3,113.2K	2.89%	6.29%	4.14%
OT	\$13,050.0M	235.1K	834.7K	0.85%	1.69%	1.11%
W	\$1,537.0M	32.4K	131.1K	0.10%	0.23%	0.17%

Exposure by taxonomy

Showing only taxonomies that represent 90% of the total `COST_USD`						
		COST_USD	BUILDINGS	COST_USD_%	BUILDINGS_%	
MACRO_TAXO	TAXONOMY					
S	S+SR/LFBR+CDM+DUM/HBET:4,8/RES	\$124.6B	212.9K	9.05%	1.62%	
MCF	MCF+S/LWAL+CDL+DUL/HBET:1,3/RES	\$117.2B	2,349.0K	8.51%	17.86%	
	MCF+S/LWAL+CDM+DUM/HBET:1,3/RES	\$112.7B	1,892.5K	8.19%	14.39%	
RC	CR+CIP/LWAL+CDM+DUM/HBET:4,8/RES	\$74.2B	121.6K	5.39%	0.92%	
MCF	MCF+CBH/LWAL+CDM+DUM/HBET:4,8/RES	\$74.1B	117.3K	5.38%	0.89%	
MUR	MUR+ST/LWAL+DNO/HBET:1,3/RES	\$66.2B	1,350.9K	4.81%	10.27%	
MCF	MCF+CBH/LWAL+CDM+DUM/HBET:1,3/RES	\$65.7B	1,103.5K	4.77%	8.39%	
	MCF+CBH/LWAL+CDL+DUL/HBET:1,3/RES	\$51.7B	1,036.8K	3.76%	7.88%	
	S+SR/LFM+CDL+DUL/HEX:1/IND	\$49.2B	14.7K	3.58%	0.11%	
S	S+SR/LFM+CDL+DUL/HBET:4,8/RES	\$45.9B	80.7K	3.33%	0.61%	
	S+SR/LFBR+CDL+DUL/HEX:1/IND	\$44.4B	14.4K	3.22%	0.11%	
ADO/E	MUR+ADO/LWAL+DNO/HBET:1,3/RES	\$44.2B	876.7K	3.21%	6.67%	
	S+SR/LFBR+CDM+DUM/HBET:1,3/RES	\$43.7B	765.3K	3.17%	5.82%	
S	S+SR/LFM+CDM+DUM/HBET:4,8/RES	\$41.5B	71.0K	3.02%	0.54%	
	S+SR/LFM+CDM+DUM/HEX:1/IND	\$37.1B	11.1K	2.70%	0.08%	
MCF	MCF+S/LWAL+CDL+DUL/HBET:4,8/RES	\$36.9B	60.0K	2.68%	0.46%	
S	S+SR/LFBR+CDM+DUM/HEX:1/IND	\$33.5B	10.8K	2.43%	0.08%	
RC	CR+CIP/LFM+CDM+DUM/HEX:2/COM	\$30.3B	152.7K	2.20%	1.16%	
MCF	MCF+CBH/LWAL+CDL+DUL/HBET:4,8/RES	\$29.8B	48.5K	2.16%	0.37%	
MUR	MUR+CBR/LWAL+DNO/HBET:1,3/RES	\$29.1B	597.9K	2.12%	4.55%	
RC	CR+CIP/LFM+CDL+DUL/HEX:2/COM	\$29.1B	146.7K	2.11%	1.12%	
MCF	MCF+S/LWAL+CDM+DUM/HBET:4,8/RES	\$28.4B	44.9K	2.06%	0.34%	
RC	CR+CIP/LFM+CDM+DUM/HEX:1/COM	\$20.8B	228.9K	1.51%	1.74%	
	CR+CIP/LFM+CDL+DUL/HEX:1/COM	\$19.9B	219.9K	1.45%	1.67%	
	S+SR/LFM+CDL+DUL/HBET:1,3/RES	\$19.8B	426.3K	1.43%	3.24%	
	S+SR/LFM+CDM+DUM/HBET:1,3/RES	\$18.7B	328.0K	1.36%	2.49%	
S	S+SR/LFM+CDM+DUM/HEX:1/COM	\$18.4B	134.2K	1.34%	1.02%	
	S+SR/LFM+CDL+DUL/HEX:1/COM	\$17.7B	128.9K	1.28%	0.98%	
	S+SR/LFBR+CDL+DUL/HBET:4,8/RES	\$15.3B	26.9K	1.11%	0.20%	
OT	UNK/UNK+DNO/HEX:1/RES	\$13.0B	235.1K	0.95%	1.79%	
S	S+SR/LFBR+CDL+DUL/HBET:1,3/RES	\$12.9B	284.2K	0.93%	2.16%	