

# 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 = "Mexico"
```

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

## Sanity checks and formats

Mexico  
Exposure/Exposure/Exposure\_Com\_Mexico.csv  
Exposure/Exposure/Exposure\_Ind\_Mexico.csv  
Exposure/Exposure/Exposure\_Res\_Mexico.csv  
WARNING: Number\_dwellings < Number\_buildings  
Occupants / Dwellings = 3.6  
Reference avg household size (2019) = 3.72  
Population (exposure / UN\_2021) = 0.97  
Exposure models OK

## Exposure at National level

### Summary by occupancy type

	OCCUPANTS	BUILDINGS	COST_USD	BUILDINGS_%	COST_USD_%
OCCUPANCY					
Res	125.7M	28,759.9K	\$3,628.1B	88.41%	87.05%
Ind	0.0M	499.1K	\$79.9B	1.53%	1.92%
Com	0.0M	3,269.5K	\$459.7B	10.05%	11.03%

### Other metrics to consider

	AREA_SQM	COST_BUILDING_USD	AVG_BUILDING_AREA_SQM	AVG_COST_PER_AREA_USD
OCCUPANCY				
Total	4,252.0M	\$3,149.1B	131	\$980
Res	3,726.0M	\$2,793.3B	130	\$974
Ind	65.2M	\$44.4B	131	\$1,226
Com	460.8M	\$311.4B	141	\$998

## Exposure summary at Admin level 1

	COST_USD	BUILDINGS	OCCUPANTS	COST_USD_%	BUILDINGS_%	OCCUPANTS_%
NAME_1						
Ciudad de México	\$532.3B	1,879.9K	8,941.1K	12.77%	5.78%	7.11%
México	\$527.5B	4,131.8K	16,991.0K	12.66%	12.70%	13.52%
Jalisco	\$281.3B	2,123.6K	8,346.0K	6.75%	6.53%	6.64%
Veracruz de Ignacio de la Llave	\$245.4B	2,296.9K	8,061.6K	5.89%	7.06%	6.41%
Nuevo León	\$199.2B	1,477.7K	5,782.9K	4.78%	4.54%	4.60%
Puebla	\$190.0B	1,673.0K	6,582.6K	4.56%	5.14%	5.24%
Guanajuato	\$176.6B	1,520.9K	6,164.9K	4.24%	4.68%	4.90%
Michoacán de Ocampo	\$141.2B	1,297.8K	4,747.9K	3.39%	3.99%	3.78%
Baja California	\$139.9B	984.9K	3,767.4K	3.36%	3.03%	3.00%
Chiapas	\$133.3B	1,340.2K	5,543.2K	3.20%	4.12%	4.41%
Tamaulipas	\$126.9B	952.0K	3,526.7K	3.04%	2.93%	2.81%
Chihuahua	\$125.2B	1,051.1K	3,739.4K	3.00%	3.23%	2.97%
Oaxaca	\$113.1B	1,195.4K	4,131.5K	2.71%	3.67%	3.29%
Sonora	\$104.2B	816.9K	2,941.9K	2.50%	2.51%	2.34%
Coahuila de Zaragoza	\$103.5B	837.8K	3,145.4K	2.48%	2.58%	2.50%
Sinaloa	\$98.6B	797.0K	3,025.5K	2.37%	2.45%	2.41%
Guerrero	\$95.5B	943.6K	3,539.6K	2.29%	2.90%	2.82%
Hidalgo	\$84.0B	851.8K	3,082.4K	2.02%	2.62%	2.45%
San Luis Potosí	\$83.1B	725.9K	2,821.6K	1.99%	2.23%	2.24%
Yucatán	\$80.3B	659.9K	2,320.1K	1.93%	2.03%	1.85%
Querétaro	\$78.1B	606.8K	2,368.3K	1.87%	1.87%	1.88%
Quintana Roo	\$69.4B	477.0K	1,857.6K	1.67%	1.47%	1.48%
Tabasco	\$67.9B	638.9K	2,402.5K	1.63%	1.96%	1.91%
Morelos	\$67.0B	566.4K	1,971.1K	1.61%	1.74%	1.57%
Durango	\$50.5B	471.5K	1,831.4K	1.21%	1.45%	1.46%
Aguascalientes	\$46.0B	358.5K	1,425.6K	1.10%	1.10%	1.13%
Zacatecas	\$42.6B	441.8K	1,621.1K	1.02%	1.36%	1.29%
Nayarit	\$38.7B	354.7K	1,235.1K	0.93%	1.09%	0.98%
Tlaxcala	\$36.8B	365.1K	1,342.7K	0.88%	1.12%	1.07%
Campeche	\$31.7B	258.4K	927.9K	0.76%	0.79%	0.74%
Baja California Sur	\$29.8B	216.4K	797.8K	0.71%	0.67%	0.63%
Colima	\$28.2B	214.8K	730.9K	0.68%	0.66%	0.58%

## Exposure by simplified taxonomy

Adding `MACRO\_TAXO` column

	COST_USD	BUILDINGS	OCCUPANTS	COST_USD_%	BUILDINGS_%	OCCUPANTS_%
MACRO_TAXO						
MCF	\$1,402.4B	9,379.6K	31,002.1K	33.65%	28.84%	24.66%
RC	\$1,139.7B	4,631.2K	15,703.6K	27.35%	14.24%	12.49%
MUR	\$754.9B	13,248.8K	56,071.1K	18.11%	40.73%	44.60%
MR	\$667.9B	2,503.0K	11,920.2K	16.03%	7.69%	9.48%
W	\$115.6B	1,039.6K	4,596.1K	2.77%	3.20%	3.66%
ADO/E	\$56.6B	1,405.8K	5,252.0K	1.36%	4.32%	4.18%
OT	\$30.4B	320.4K	1,169.2K	0.73%	0.99%	0.93%

## Exposure by taxonomy

Showing only taxonomies that represent 90% of the total `COST\_USD`

		COST_USD	BUILDINGS	COST_USD_%	BUILDINGS_%
MACRO_TAXO	TAXONOMY				
MUR	MUR/LWAL+DNO/H2/RES	\$365.0B	5,033,541	9.73%	16.33%
MCF	MCF/LWAL+DUL/H2/RES	\$337.1B	1,971,690	8.99%	6.40%
	MCF/LWAL+DUL/H1/RES	\$291.9B	3,072,835	7.78%	9.97%
MR	MR/LWAL+DUM/H2/RES	\$250.7B	888,477	6.69%	2.88%
MUR	MUR/LWAL+DNO/H1/RES	\$243.3B	6,039,720	6.49%	19.60%
RC	CR/LFINF+DUM/H2/RES	\$184.9B	655,417	4.93%	2.13%
MR	MR/LWAL+DUM/H1/RES	\$151.1B	964,217	4.03%	3.13%
	MR/LWAL+DUM/H3/RES	\$135.1B	428,737	3.60%	1.39%
MCF	MCF/LWAL+DUM/H1/RES	\$134.5B	858,408	3.59%	2.79%
	MCF/LWAL+DUM/H2/RES	\$132.8B	470,692	3.54%	1.53%
RC	CR/LFINF+DUM/H3/RES	\$126.8B	402,426	3.38%	1.31%
	CR/LFINF+DUM/H1/RES	\$123.4B	787,126	3.29%	2.55%
RC	CR/LFINF+DUL/H2/RES	\$119.3B	423,026	3.18%	1.37%
	MCF/LWAL+DUL/H3/RES	\$90.9B	476,205	2.42%	1.55%
MUR	MUR/LWAL+DNO/H3/RES	\$84.5B	1,043,599	2.25%	3.39%
RC	CR/LFINF+DUL/H1/RES	\$79.6B	507,658	2.12%	1.65%
MCF	MCF/LWAL+DUM/H3/RES	\$73.6B	233,705	1.96%	0.76%
	MCF/LWAL+DUM/H:2/COM	\$71.2B	334,883	1.90%	1.09%
W	W+WS/LPB+DNO/HBET1-2/RES	\$59.1B	518,570	1.58%	1.68%
ADO/E	MUR+ADO/LWAL+DNO/H1/RES	\$56.6B	1,405,783	1.51%	4.56%
MCF	MCF/LWAL+DUM/H:1/COM	\$53.2B	601,675	1.42%	1.95%
RC	CR/LFM+DUH/H:2/COM	\$44.8B	137,270	1.19%	0.45%
	CR/LFM+DUM/H:1/COM	\$43.9B	496,710	1.17%	1.61%
MCF	MCF/LWAL+DUH/H:2/COM	\$42.5B	190,654	1.13%	0.62%
W	W+WLI/LWAL+DNO/HBET1-2/RES	\$41.7B	365,870	1.11%	1.19%
RC	CR/LFINF+DUH/H2/RES	\$39.8B	76,999	1.06%	0.25%
MR	MR/LWAL+DUH/H2/RES	\$39.3B	76,075	1.05%	0.25%
RC	CR/LFM+DUH/H:1/COM	\$37.9B	359,355	1.01%	1.17%
MUR	MUR+ST/LWAL+DNO/H2/RES	\$37.3B	514,739	1.00%	1.67%
RC	CR/LFM+DUM/H:2/COM	\$37.0B	160,214	0.99%	0.52%
	CR/LFINF+DUH/H3/RES	\$36.7B	63,644	0.98%	0.21%
RC	CR/LDUAL+DUH/HBET5-10/RES	\$33.2B	3,618	0.89%	0.01%
	MR/LWAL+DUH/H3/RES	\$31.0B	53,833	0.83%	0.17%
OT	UNK/H1/RES	\$30.4B	320,425	0.81%	1.04%
MCF	MCF/LWAL+DUL/H:1/COM	\$30.2B	387,684	0.80%	1.26%
RC	CR/LFM+DUM/H:1/IND	\$29.6B	169,314	0.79%	0.55%
MCF	MCF/LWAL+DUH/H:1/COM	\$29.6B	320,465	0.79%	1.04%