

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 = "Iraq"
```

Exposure files:
Exposure_Com_Iraq.csv
Exposure_Ind_Iraq.csv
Exposure_Res_Iraq.csv

Sanity checks and formats

Exposure at National level

Summary by occupancy type

	OCCUPANTS	BUILDINGS	COST_USD	BUILDINGS_%	COST_USD_%
OCCUPANCY					
Res	41.0M	6,138.6K	\$394.3B	92.93%	79.07%
Ind	0.0M	58.9K	\$19.1B	0.89%	3.84%
Com	0.0M	407.9K	\$85.2B	6.18%	17.09%

Other metrics to consider

	AREA_SQM	COST_BUILDING_USD	AVG_BUILDING_AREA_SQM	AVG_COST_PER_AREA_USD
OCCUPANCY				
Total	928.4M	\$391.5B	141	\$537
Res	784.3M	\$323.3B	128	\$503
Ind	24.4M	\$10.3B	415	\$783
Com	119.6M	\$57.8B	293	\$712

Exposure summary at Admin level 1

	COST_USD	BUILDINGS	OCCUPANTS	COST_USD_%	BUILDINGS_%	OCCUPANTS_%
NAME_1						
Baghdad	\$108,189.6M	1,437.4K	8,711.7K	21.70%	21.76%	21.27%
Nineveh	\$41,789.9M	546.6K	3,679.8K	8.38%	8.28%	8.99%
Basra	\$33,668.3M	438.7K	3,020.5K	6.75%	6.64%	7.38%
Erbil	\$33,123.5M	452.5K	2,234.9K	6.64%	6.85%	5.46%
Babil	\$30,045.0M	396.8K	2,509.7K	6.03%	6.01%	6.13%
Sulaymaniyah	\$29,414.1M	403.0K	1,941.6K	5.90%	6.10%	4.74%
Dhi Qar	\$24,098.2M	311.0K	2,269.3K	4.83%	4.71%	5.54%
Diyala	\$23,370.6M	311.9K	1,838.5K	4.69%	4.72%	4.49%
Saladin	\$22,309.3M	295.3K	1,839.2K	4.47%	4.47%	4.49%
Al Anbar	\$21,521.0M	280.7K	1,924.5K	4.32%	4.25%	4.70%
Kirkuk	\$20,932.6M	279.0K	1,663.5K	4.20%	4.22%	4.06%
Najaf	\$19,528.6M	260.3K	1,549.9K	3.92%	3.94%	3.78%
Dohuk	\$17,011.3M	222.9K	1,487.6K	3.41%	3.37%	3.63%
Wasit	\$16,986.6M	222.4K	1,488.7K	3.41%	3.37%	3.64%
Al-Qadisiyah	\$16,951.9M	222.1K	1,484.2K	3.40%	3.36%	3.62%
Karbala	\$13,325.6M	178.0K	1,045.7K	2.67%	2.70%	2.55%
Maysan	\$12,690.3M	163.8K	1,199.4K	2.55%	2.48%	2.93%
Muthanna	\$9,433.0M	122.5K	867.7K	1.89%	1.85%	2.12%
Halabja	\$4,218.1M	60.5K	193.7K	0.85%	0.92%	0.47%

Exposure by simplified taxonomy

Adding `MACRO_TAXO` column

	COST_USD	BUILDINGS	OCCUPANTS	COST_USD_%	BUILDINGS_%	OCCUPANTS_%
MACRO_TAXO						
RC	\$184,411.0M	1,782,530	11,461,461	36.99%	26.99%	27.99%
MUR	\$166,699.2M	2,742,080	16,485,525	33.43%	41.51%	40.26%
MCF	\$82,107.0M	759,487	5,718,915	16.47%	11.50%	13.97%
S	\$27,944.8M	344,661	1,929,839	5.60%	5.22%	4.71%
ADO/E	\$23,135.3M	497,705	2,609,747	4.64%	7.53%	6.37%
OT	\$12,296.3M	464,986	2,744,139	2.47%	7.04%	6.70%
W	\$1,229.6M	11,006	644	0.25%	0.17%	0.00%
MR	\$784.5M	2,938	0	0.16%	0.04%	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				
RC	CR+PC/LWAL+CDM/H:2/RES	\$40,610.1M	525,018	9.07%	8.28%
	CR+PC/LWAL+CDL/H:2/RES	\$34,593.8M	447,237	7.73%	7.05%
	MUR+CB/LWAL+CDN/H:3/RES	\$22,403.8M	283,573	5.00%	4.47%
MUR	MUR+CB/LWAL+CDN/H:2/RES	\$21,934.5M	425,360	4.90%	6.71%
	MUR+CL/LWAL+CDN/H:3/RES	\$18,067.7M	228,690	4.04%	3.61%
	MUR+CL/LWAL+CDN/H:2/RES	\$17,689.2M	343,037	3.95%	5.41%
MCF	MCF/LWAL+CDM/H:2/RES	\$15,111.2M	183,152	3.38%	2.89%
MUR	MUR+CB/LWAL+CDN/H:1/RES	\$14,462.3M	364,596	3.23%	5.75%
MCF	MCF/LWAL+CDL/H:2/RES	\$12,872.5M	156,017	2.88%	2.46%
OT	MATO/RES	\$12,296.3M	464,986	2.75%	7.33%
S	S+SO/LWAL+CDM/H:1/RES	\$12,007.6M	176,581	2.68%	2.78%
MUR	MUR+CL/LWAL+CDN/H:1/RES	\$11,663.2M	294,031	2.61%	4.64%
MCF	MCF/LWAL+CDM/H:1/RES	\$11,624.0M	183,152	2.60%	2.89%
S	S+SO/LWAL+CDL/H:1/RES	\$10,228.7M	150,422	2.28%	2.37%
MCF	MCF/LWAL+CDL/H:1/RES	\$9,901.9M	156,017	2.21%	2.46%
	MCF/LWAL+CDM/HBET:3-6/RES	\$9,714.3M	13,083	2.17%	0.21%
	MCF/LWAL+CDL/HBET:3-6/RES	\$8,275.2M	11,143	1.85%	0.18%
MUR	MUR+STDRE/LWAL+CDN/H:2/RES	\$8,143.6M	157,927	1.82%	2.49%
	MUR+CB/LWAL+CDN/HBET:3-6/COM	\$8,019.8M	13,875	1.79%	0.22%
RC	CR+PC/LWAL+CDM/H:1/RES	\$7,809.6M	131,253	1.74%	2.07%
	CR/LFINF+CDM/H:3/RES	\$7,234.9M	61,050	1.62%	0.96%
MUR	MUR+CB/LWAL+CDN/H:2/COM	\$6,882.9M	46,247	1.54%	0.73%
ADO/E	MUR+ADO/LWAL+CDN/H:2/RES	\$6,714.3M	116,257	1.50%	1.83%
	EU/LWAL+CDN/H:1/RES	\$6,654.6M	209,702	1.49%	3.31%
RC	CR+PC/LWAL+CDL/H:1/RES	\$6,652.7M	111,808	1.49%	1.76%
MUR	MUR+STDRE/LWAL+CDN/H:1/RES	\$6,264.3M	157,927	1.40%	2.49%
RC	CR/LFINF+CDL/H:3/RES	\$6,163.1M	52,002	1.38%	0.82%
	CR/LFINF+CDM/H:2/RES	\$6,071.5M	78,491	1.36%	1.24%
	CR/LFINF+CDM/HBET:4-7/COM	\$5,746.9M	4,872	1.28%	0.08%
MUR	MUR+CL/LWAL+CDN/HBET:3-6/COM	\$5,346.2M	9,250	1.19%	0.15%
RC	CR/LFINF+CDL/H:2/RES	\$5,172.0M	66,863	1.16%	1.05%
ADO/E	MUR+ADO/LWAL+CDN/H:1/RES	\$5,164.8M	116,257	1.15%	1.83%
RC	CR/LFINF+CDL/HBET:4-7/COM	\$4,895.5M	4,147	1.09%	0.07%
	CR+PC/LWAL+CDM/HBET:4-7/COM	\$4,862.7M	4,122	1.09%	0.06%
MUR	MUR+CB/LWAL+CDN/H:1/COM	\$4,776.1M	69,368	1.07%	1.09%
	MUR+CL/LWAL+CDN/H:2/COM	\$4,588.6M	30,828	1.02%	0.49%
	MUR+STRUB/LWAL+CDN/H:2/RES	\$4,191.2M	101,600	0.94%	1.60%
MUR	MUR+STDRE/LWAL+CDN/H:3/RES	\$4,158.9M	52,643	0.93%	0.83%
	CR+PC/LWAL+CDL/HBET:4-7/COM	\$4,141.8M	3,513	0.93%	0.06%
RC	CR/LFINF+CDM/HBET:4-7/RES	\$3,794.7M	5,449	0.85%	0.09%
MCF	CR/LDUAL+CDM/H:3/RES	\$3,617.5M	30,525	0.81%	0.48%
	MCF/LWAL+CDM/HBET:3-6/COM	\$3,335.2M	4,329	0.74%	0.07%
RC	CR/LFINF+CDL/HBET:4-7/RES	\$3,232.5M	4,646	0.72%	0.07%
MUR	MUR+STRUB/LWAL+CDN/H:1/RES	\$3,224.0M	101,600	0.72%	1.60%
	MUR+CL/LWAL+CDN/H:1/COM	\$3,184.0M	46,247	0.71%	0.73%
RC	CR/LDUAL+CDL/H:3/RES	\$3,081.5M	26,001	0.69%	0.41%
	CR/LDUAL+CDM/H:2/RES	\$3,035.7M	39,247	0.68%	0.62%
MCF	MCF/LWAL+CDL/HBET:3-6/COM	\$2,840.7M	3,686	0.63%	0.06%
ADO/E	MUR+ADO/LWAL+CDN/H:1/COM	\$2,674.6M	41,614	0.60%	0.66%
RC	CR/LDUAL+CDL/H:2/RES	\$2,586.0M	33,432	0.58%	0.53%