

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 = "North_Macedonia"
```

Exposure files:
Exposure_Com_North_Macedonia.csv
Exposure_Ind_North_Macedonia.csv
Exposure_Res_North_Macedonia.csv

Sanity checks and formats

Exposure at National level

Summary by occupancy type

	OCCUPANTS	BUILDINGS	COST_USD	BUILDINGS_%	COST_USD_%
OCCUPANCY					
Res	2,083.0K	446.2K	\$26.8B	90.36%	57.13%
Ind	727.2K	12.1K	\$7.6B	2.44%	16.13%
Com	833.2K	35.5K	\$12.5B	7.20%	26.74%

Other metrics to consider

	AREA_SQM	COST_BUILDING_USD	AVG_BUILDING_AREA_SQM	AVG_COST_PER_AREA_USD
OCCUPANCY				
Total	49,821.0K	\$30,732.9M	101	\$941
Res	39,736.5K	\$21,435.1M	89	\$674
Ind	4,099.0K	\$3,026.3M	340	\$1,846
Com	5,985.4K	\$6,271.4M	168	\$2,096

Exposure summary at Admin level 1

	COST_USD	BUILDINGS	OCCUPANTS	COST_USD_%	BUILDINGS_%	OCCUPANTS_%
NAME_1						
Bitola	\$2,942.0M	22,629	176,826	6.27%	4.58%	4.85%
Centar	\$2,745.4M	14,289	84,185	5.85%	2.89%	2.31%
Gazi Baba	\$2,362.9M	14,865	134,618	5.04%	3.01%	3.69%
Aerodrom	\$2,292.7M	15,393	133,491	4.89%	3.12%	3.66%
Karposh	\$2,195.0M	14,807	110,609	4.68%	3.00%	3.04%
Kumanovo	\$2,090.9M	20,086	195,547	4.46%	4.07%	5.37%
Prilep	\$1,918.5M	17,938	142,313	4.09%	3.63%	3.91%
Ohrid	\$1,843.8M	17,146	103,348	3.93%	3.47%	2.84%
Veles	\$1,679.9M	13,017	102,160	3.58%	2.64%	2.80%
Kisela Voda	\$1,639.4M	12,493	106,105	3.50%	2.53%	2.91%
Shtip	\$1,569.7M	11,618	88,605	3.35%	2.35%	2.43%
Strumica	\$1,563.6M	11,973	101,359	3.33%	2.42%	2.78%
Tetovo	\$1,526.0M	13,898	160,503	3.25%	2.81%	4.41%
Kavadarci	\$1,451.7M	10,530	71,818	3.10%	2.13%	1.97%
Chair	\$1,286.5M	10,441	120,077	2.74%	2.11%	3.30%
Gostivar	\$1,250.2M	12,209	150,236	2.67%	2.47%	4.12%
Struga	\$1,240.7M	11,437	117,487	2.65%	2.32%	3.22%
Kochani	\$1,098.3M	8,997	70,615	2.34%	1.82%	1.94%
Gjorche Petrov	\$1,023.5M	8,380	77,182	2.18%	1.70%	2.12%
Negotino	\$771.5M	6,842	35,615	1.64%	1.39%	0.98%
Gevgelija	\$726.8M	8,234	42,615	1.55%	1.67%	1.17%
Butel	\$608.5M	9,490	67,023	1.30%	1.92%	1.84%
Kichevo	\$577.0M	8,778	55,870	1.23%	1.78%	1.53%
Ilinden	\$522.7M	4,814	29,464	1.11%	0.97%	0.81%
Radovich	\$482.8M	8,260	52,359	1.03%	1.67%	1.44%
Kriva Palanka	\$362.2M	7,683	38,596	0.77%	1.56%	1.06%
Probishtip	\$345.4M	6,078	30,019	0.74%	1.23%	0.82%
Sveti Nikole	\$343.2M	5,943	34,290	0.73%	1.20%	0.94%
Resen	\$340.3M	6,737	31,190	0.73%	1.36%	0.86%
Vinica	\$333.1M	5,559	36,961	0.71%	1.13%	1.01%
Delchevo	\$318.7M	5,897	32,451	0.68%	1.19%	0.89%
Shuto Orizari	\$312.7M	4,476	40,815	0.67%	0.91%	1.12%
Saraj	\$297.3M	6,356	65,640	0.63%	1.29%	1.80%
Chashka	\$280.4M	3,299	14,224	0.60%	0.67%	0.39%
Makedonski Brod	\$269.0M	3,953	13,238	0.57%	0.80%	0.36%
Berovo	\$265.3M	5,491	25,844	0.57%	1.11%	0.71%
Bogovinje	\$255.6M	5,909	41,809	0.54%	1.20%	1.15%
Novatsi	\$246.1M	1,677	6,579	0.52%	0.34%	0.18%
Tearce	\$217.6M	4,448	41,625	0.46%	0.90%	1.14%
Debar	\$215.6M	3,848	36,227	0.46%	0.78%	0.99%
Gradsko	\$209.8M	1,412	6,970	0.45%	0.29%	0.19%
Vrapchishte	\$203.7M	4,701	36,622	0.43%	0.95%	1.01%
Bogdanci	\$202.4M	2,611	16,141	0.43%	0.53%	0.44%
Chucher - Sandevo	\$200.6M	3,247	15,744	0.43%	0.66%	0.43%
Kratovo	\$183.1M	3,999	19,356	0.39%	0.81%	0.53%
Mavrovo i Rostusha	\$182.4M	3,893	15,976	0.39%	0.79%	0.44%
Lipkovo	\$176.8M	4,592	39,014	0.38%	0.93%	1.07%
Zhelino	\$172.7M	4,263	35,167	0.37%	0.86%	0.97%
Demir Hisar	\$153.4M	3,492	17,606	0.33%	0.71%	0.48%
Valandovo	\$150.0M	3,317	17,144	0.32%	0.67%	0.47%
Doleni	\$149.3M	3,745	25,152	0.32%	0.76%	0.69%
Novo Selo	\$145.6M	3,363	16,678	0.31%	0.68%	0.46%
Krushevo	\$143.5M	2,883	17,952	0.31%	0.58%	0.49%
Oslomej	\$142.5M	2,676	19,317	0.30%	0.54%	0.53%
Cheshinovo - Obleshevo	\$139.3M	2,445	13,885	0.30%	0.50%	0.38%
Studenichani	\$138.6M	3,482	31,971	0.30%	0.71%	0.88%
Bosilovo	\$135.1M	3,264	20,561	0.29%	0.66%	0.56%
Brvenica	\$133.9M	3,063	22,861	0.29%	0.62%	0.63%
Debarca	\$132.4M	3,459	7,940	0.28%	0.70%	0.22%
Staro Nagorichane	\$129.5M	2,873	8,972	0.28%	0.58%	0.25%
Arachinovo	\$125.9M	2,030	21,499	0.27%	0.41%	0.59%
Petrovets	\$125.2M	2,908	15,303	0.27%	0.59%	0.42%
Mogila	\$115.8M	1,969	12,439	0.25%	0.40%	0.34%
Makedonska Kamenica	\$112.1M	2,416	15,034	0.24%	0.49%	0.41%
Vasilevo	\$109.5M	2,700	17,478	0.23%	0.55%	0.48%
Jegunovce	\$107.2M	2,448	15,558	0.23%	0.50%	0.43%
Sopishte	\$103.9M	2,697	8,155	0.22%	0.55%	0.22%
Rankovce	\$103.6M	1,825	7,682	0.22%	0.37%	0.21%
Pehchevo	\$101.3M	2,317	7,955	0.22%	0.47%	0.22%
Zajas	\$99.4M	2,539	16,733	0.21%	0.51%	0.46%
Rosoman	\$91.9M	1,395	7,677	0.20%	0.28%	0.21%
Dojran	\$84.2M	1,710	4,940	0.18%	0.35%	0.14%
Krivogashtani	\$75.3M	1,772	8,867	0.16%	0.36%	0.24%
Drugovo	\$72.8M	1,929	4,685	0.16%	0.39%	0.13%
Demir Kapija	\$66.8M	1,450	6,553	0.14%	0.29%	0.18%
Zelenikovo	\$55.0M	1,338	5,878	0.12%	0.27%	0.16%
Centar Zhupa	\$51.6M	1,264	9,399	0.11%	0.26%	0.26%
Zrnovci	\$49.1M	1,080	6,051	0.10%	0.22%	0.17%
Karbinci	\$43.0M	1,165	5,785	0.09%	0.24%	0.16%
Konche	\$40.1M	949	5,098	0.09%	0.19%	0.14%
Plasnica	\$38.9M	979	6,553	0.08%	0.20%	0.18%
Lozovo	\$34.7M	859	4,121	0.07%	0.17%	0.11%
Vevchani	\$31.0M	592	3,508	0.07%	0.12%	0.10%
Vraneshtica	\$27.7M	798	1,892	0.06%	0.16%	0.05%

Exposure by simplified taxonomy

Adding `MACRO_TAXO` column						
	COST_USD	BUILDINGS	OCCUPANTS	COST_USD_%	BUILDINGS_%	OCCUPANTS_%
MACRO_TAXO						
RC	\$26,886.3M	198.7K	2,010.9K	57.32%	40.24%	55.19%
MCF	\$11,907.2M	156.4K	867.4K	25.39%	31.68%	23.81%
MUR	\$4,910.6M	131.1K	457.1K	10.47%	26.54%	12.55%
S	\$3,198.5M	7.6K	308.1K	6.82%	1.54%	8.46%

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+CDN/H:1/RES	\$2,630.3M	75,032	6.24%	15.67%	
MCF	MCF/LWAL+CDL/H:2/RES	\$2,146.5M	55,333	5.09%	11.56%	
	MCF/LWAL+CDL/H:1/RES	\$1,995.4M	49,725	4.73%	10.39%	
RC	CR/LFINF+CDN/HBET:3-5/RES	\$1,829.5M	2,659	4.34%	0.56%	
MUR	MUR/LWAL+CDN/H:2/RES	\$1,741.8M	54,714	4.13%	11.43%	
RC	CR/LFINF+CDN/H:1/IND	\$1,533.6M	2,410	3.64%	0.50%	
S	S/LFINF+CDM/H:2/COM	\$1,445.7M	4,707	3.43%	0.98%	
MCF	MCF/LWAL+CDL/HBET:3-5/RES	\$1,434.2M	2,146	3.40%	0.45%	
S	S/LFBR+CDM/H:1/IND	\$1,168.5M	1,928	2.77%	0.40%	
MCF	MCF/LWAL+CDL/H:1/IND	\$996.8M	1,567	2.36%	0.33%	
RC	CR/LFINF+CDN/HBET:3-5/COM	\$857.1M	964	2.03%	0.20%	
	CR/LFM+CDL/H:2/IND	\$843.5M	1,326	2.00%	0.28%	
	CR/LFM+CDN/H:1/IND	\$843.5M	1,326	2.00%	0.28%	
	CR+PC/LFM+CDL/H:1/IND	\$766.8M	1,205	1.82%	0.25%	
MCF	MCF/LWAL+CDL/H:2/COM	\$764.8M	1,883	1.81%	0.39%	
RC	CR/LFINF+CDL+LFC:15.0/H:2/RES	\$730.0M	18,189	1.73%	3.80%	
MCF	MCF/LWAL+CDL/HBET:3-5/COM	\$714.3M	890	1.69%	0.19%	
RC	CR/LFINF+CDM+LFC:10.0/HBET:3-5/RES	\$693.8M	949	1.65%	0.20%	
MCF	MCF/LWAL+CDN/H:1/RES	\$689.8M	18,755	1.64%	3.92%	
RC	CR/LFINF+CDN/H:2/RES	\$680.9M	14,422	1.61%	3.01%	
	CR/LFINF+CDM+LFC:10.0/HBET:3-5/COM	\$672.0M	717	1.59%	0.15%	
MCF	MCF/LWAL+CDL/H:1/COM	\$663.1M	3,389	1.57%	0.71%	
	MCF/LWAL+CDN/H:2/RES	\$627.0M	17,510	1.49%	3.66%	
RC	CR/LFINF+CDM+LFC:10.0/H:2/RES	\$622.2M	13,341	1.48%	2.79%	
	CR/LFINF+CDL+LFC:15.0/HBET:3-5/RES	\$598.6M	854	1.42%	0.18%	
RC	CR/LDUAL+CDM+LFC:10.0/HBET:3-5/COM	\$581.7M	674	1.38%	0.14%	
	CR/LFINF+CDL+LFC:15.0/H:1/RES	\$571.0M	12,989	1.35%	2.71%	
MCF	CR/LFINF+CDN/H:1/RES	\$534.4M	9,615	1.27%	2.01%	
	MCF/LWAL+CDN/HBET:3-5/COM	\$529.6M	699	1.26%	0.15%	
	MCF/LWAL+CDN/H:2/COM	\$526.9M	1,415	1.25%	0.30%	
	CR/LFINF+CDM+LFC:5.0/HBET:3-5/RES	\$517.0M	889	1.23%	0.19%	
RC	CR/LDUAL+CDN/HBET:3-5/COM	\$492.5M	541	1.17%	0.11%	
	CR/LFINF+CDM+LFC:5.0/H:2/RES	\$464.5M	12,519	1.10%	2.61%	
MCF	MCF/LWAL+CDN/H:1/COM	\$450.6M	2,566	1.07%	0.54%	
RC	CR/LFINF+CDM+LFC:10.0/H:1/RES	\$438.0M	7,841	1.04%	1.64%	
	CR/LFINF+CDN/H:1/COM	\$432.6M	2,557	1.03%	0.53%	
MUR	MUR/LWAL+CDN/HBET:3-5/RES	\$399.7M	1,077	0.95%	0.22%	
RC	CR/LFINF+CDM+LFC:5.0/HBET:3-5/COM	\$398.5M	367	0.94%	0.08%	
	CR/LFINF+CDL+LFC:3.75/H:2/RES	\$384.4M	9,964	0.91%	2.08%	
	CR/LFINF+CDL/HBET:3-5/IND	\$383.4M	603	0.91%	0.13%	
MCF	MCF/LWAL+CDN/HBET:3-5/RES	\$368.1M	572	0.87%	0.12%	
RC	CR/LDUAL+CDL+LFC:15.0/HBET:3-5/RES	\$363.0M	481	0.86%	0.10%	
	CR/LFINF+CDL+LFC:0.0/H:2/RES	\$324.4M	9,528	0.77%	1.99%	
	CR/LFINF+CDM+LFC:5.0/H:1/RES	\$321.1M	7,226	0.76%	1.51%	
	CR/LFINF+CDM+LFC:2.5/HBET:3-5/RES	\$316.1M	498	0.75%	0.10%	
	CR/LFINF+CDL+LFC:3.75/HBET:3-5/RES	\$308.3M	457	0.73%	0.10%	
	CR/LFINF+CDL+LFC:7.5/H:2/RES	\$305.7M	8,726	0.72%	1.82%	
	CR/LDUAL+CDM+LFC:10.0/HBET:3-5/RES	\$305.6M	407	0.72%	0.09%	
	CR/LFINF+CDL+LFC:3.75/H:1/RES	\$305.5M	7,215	0.72%	1.51%	
	CR/LFINF+CDN/HBET:6-/RES	\$301.2M	229	0.71%	0.05%	
	CR/LFINF+CDL+LFC:0.0/H:1/RES	\$301.0M	8,132	0.71%	1.70%	
	S	S/LFBR+CDM/HBET:3-5/IND	\$292.1M	482	0.69%	0.10%
	S	S/LFM+CDL/H:1/IND	\$292.1M	482	0.69%	0.10%
S	CR/LDUAL+CDM+LFC:5.0/HBET:3-5/COM	\$291.8M	293	0.69%	0.06%	
	CR/LFINF+CDM+LFC:2.5/H:2/RES	\$284.0M	7,029	0.67%	1.47%	
	CR/LFINF+CDN/H:2/COM	\$253.9M	684	0.60%	0.14%	
	CR/LFINF+CDL+LFC:15.0/H:1/COM	\$252.4M	1,566	0.60%	0.33%	
	CR/LFINF+CDL+LFC:7.5/H:1/RES	\$251.6M	6,476	0.60%	1.35%	
	CR/LFINF+CDL+LFC:7.5/HBET:3-5/RES	\$232.6M	383	0.55%	0.08%	
	CR/LDUAL+CDM+LFC:5.0/HBET:3-5/RES	\$221.7M	371	0.53%	0.08%	
	RC	CR/LFINF+CDM+LFC:10.0/H:2/COM	\$221.5M	592	0.53%	0.12%
	CR/LFINF+CDL+LFC:0.0/HBET:3-5/RES	\$197.2M	302	0.47%	0.06%	
	CR/LFINF+CDM+LFC:2.5/H:1/RES	\$195.8M	4,019	0.46%	0.84%	
	CR/LDUAL+CDL+LFC:3.75/HBET:3-5/RES	\$184.4M	253	0.44%	0.05%	
	RC	CR/LFINF+CDM+LFC:2.5/HBET:3-5/COM	\$174.7M	167	0.41%	0.03%
RC	CR/LDUAL+CDN/H:2/COM	\$173.7M	539	0.41%	0.11%	
	CR/LFINF+CDM+LFC:10.0/H:1/COM	\$169.9M	933	0.40%	0.19%	
	CR/LDUAL+CDM+LFC:10.0/H:2/COM	\$166.3M	516	0.39%	0.11%	