

# 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 = "Turkey"
```

Exposure files:

Exposure\_Com\_Turkey.csv  
Exposure\_Ind\_Turkey.csv  
Exposure\_Res\_Turkey.csv

## Sanity checks and formats

## Exposure at National level

### Summary by occupancy type

	OCCUPANTS	BUILDINGS	COST_USD	BUILDINGS_%	COST_USD_%
OCCUPANCY					
Res	83.6M	8,488.0K	\$1,047.3B	90.03%	75.10%
Ind	0.0M	208.1K	\$131.0B	2.21%	9.39%
Com	0.0M	732.2K	\$216.3B	7.77%	15.51%

### Other metrics to consider

	AREA_SQM	COST_BUILDING_USD	AVG_BUILDING_AREA_SQM	AVG_COST_PER_AREA_USD
OCCUPANCY				
Total	3,340.3M	\$985.7B	354	\$417
Res	2,755.4M	\$795.5B	325	\$380
Ind	238.9M	\$59.7B	1,148	\$548
Com	346.0M	\$130.5B	473	\$625

## Exposure summary at Admin level 1

	COST_USD	BUILDINGS	OCCUPANTS	COST_USD_%	BUILDINGS_%	OCCUPANTS_%
NAME_1						
İSTANBUL	\$314,035.0M	1,129.4K	15,636.7K	22.52%	11.98%	18.70%
ANKARA	\$129,154.8M	474.8K	5,717.8K	9.26%	5.04%	6.84%
İZMİR	\$74,806.6M	637.2K	4,379.5K	5.36%	6.76%	5.24%
BURSA	\$58,670.4M	342.9K	3,113.9K	4.21%	3.64%	3.72%
ANTALYA	\$41,324.5M	305.3K	2,567.9K	2.96%	3.24%	3.07%
KONYA	\$39,021.5M	377.7K	2,245.8K	2.80%	4.01%	2.69%
ADANA	\$34,227.0M	287.6K	2,261.6K	2.45%	3.05%	2.70%
MERSİN	\$33,733.8M	246.3K	1,871.6K	2.42%	2.61%	2.24%
KAYSERİ	\$33,059.3M	163.9K	1,422.8K	2.37%	1.74%	1.70%
GAZİANTEP	\$29,420.7M	178.7K	2,122.1K	2.11%	1.90%	2.54%
KOCAELİ	\$27,711.8M	211.2K	2,012.1K	1.99%	2.24%	2.41%
SAMSUN	\$25,308.0M	137.2K	1,351.9K	1.81%	1.46%	1.62%
BALIKESİR	\$25,084.7M	214.5K	1,228.5K	1.80%	2.27%	1.47%
MANİSA	\$24,401.5M	226.7K	1,451.3K	1.75%	2.40%	1.74%
ESKİŞEHİR	\$23,629.7M	144.9K	888.4K	1.69%	1.54%	1.06%
MUĞLA	\$22,189.6M	214.9K	993.1K	1.59%	2.28%	1.19%
HATAY	\$20,491.2M	198.9K	1,653.5K	1.47%	2.11%	1.98%
TEKİRDAĞ	\$19,134.9M	137.6K	1,089.3K	1.37%	1.46%	1.30%
DENİZLİ	\$18,004.7M	176.1K	1,022.6K	1.29%	1.87%	1.22%
AYDIN	\$17,907.2M	206.6K	1,111.2K	1.28%	2.19%	1.33%
KAHRAMANMARAŞ	\$16,295.6M	131.1K	1,156.1K	1.17%	1.39%	1.38%
SAKARYA	\$15,711.8M	130.3K	1,044.2K	1.13%	1.38%	1.25%
DİYARBAKIR	\$15,411.3M	98.6K	1,790.1K	1.11%	1.05%	2.14%
AFYONKARAHİSAR	\$15,125.3M	153.0K	721.8K	1.08%	1.62%	0.86%
ŞANLIURFA	\$14,410.5M	133.7K	2,125.3K	1.03%	1.42%	2.54%
TRABZON	\$12,238.1M	110.8K	802.6K	0.88%	1.18%	0.96%
ŞIRNAK	\$11,783.6M	79.9K	535.7K	0.84%	0.85%	0.64%
MALATYA	\$11,422.7M	95.5K	798.2K	0.82%	1.01%	0.95%
KÜTAHYA	\$10,865.1M	105.7K	558.2K	0.78%	1.12%	0.67%
ZONGULDAK	\$10,297.8M	66.2K	580.6K	0.74%	0.70%	0.69%
ÇORUM	\$10,270.8M	76.4K	519.8K	0.74%	0.81%	0.62%
ELAZIĞ	\$9,793.6M	64.0K	585.6K	0.70%	0.68%	0.70%
ÇANAKKALE	\$9,072.4M	81.9K	537.3K	0.65%	0.87%	0.64%
UŞAK	\$8,562.7M	62.5K	363.8K	0.61%	0.66%	0.44%
ISPARTA	\$8,425.6M	84.3K	427.4K	0.60%	0.89%	0.51%
TOKAT	\$8,062.8M	96.2K	586.8K	0.58%	1.02%	0.70%
NİĞDE	\$8,044.6M	65.4K	357.7K	0.58%	0.69%	0.43%
AKSARAY	\$8,018.8M	67.9K	418.0K	0.58%	0.72%	0.50%
YOZGAT	\$7,936.3M	80.9K	414.9K	0.57%	0.86%	0.50%
MARDİN	\$7,929.0M	70.9K	850.5K	0.57%	0.75%	1.02%
VAN	\$7,524.1M	71.6K	1,156.6K	0.54%	0.76%	1.38%
ORDU	\$7,414.6M	112.5K	745.6K	0.53%	1.19%	0.89%
NEVŞEHİR	\$7,289.5M	62.5K	300.2K	0.52%	0.66%	0.36%
ADIYAMAN	\$7,241.7M	58.9K	635.2K	0.52%	0.62%	0.76%
EDİRNE	\$7,075.0M	65.4K	402.3K	0.51%	0.69%	0.48%
ERZURUM	\$6,925.6M	75.8K	749.3K	0.50%	0.80%	0.90%
KIRKLARELİ	\$6,363.2M	55.3K	357.6K	0.46%	0.59%	0.43%
OSMANIYE	\$6,182.6M	76.0K	548.4K	0.44%	0.81%	0.66%
YALOVA	\$6,117.4M	35.8K	274.6K	0.44%	0.38%	0.33%
GİRESUN	\$5,628.2M	53.8K	438.2K	0.40%	0.57%	0.52%
AMASYA	\$5,557.2M	50.8K	334.6K	0.40%	0.54%	0.40%
KİRŞEHİR	\$5,350.7M	41.7K	243.0K	0.38%	0.44%	0.29%
KIRIKKALE	\$5,183.1M	52.7K	274.4K	0.37%	0.56%	0.33%
BOLU	\$5,025.9M	30.9K	310.1K	0.36%	0.33%	0.37%
KARABÜK	\$4,804.2M	29.2K	241.5K	0.34%	0.31%	0.29%
BURDUR	\$4,687.4M	53.8K	258.0K	0.34%	0.57%	0.31%
KASTAMONU	\$4,665.5M	43.1K	366.7K	0.33%	0.46%	0.44%
KARAMAN	\$4,554.5M	39.8K	251.9K	0.33%	0.42%	0.30%
RİZE	\$4,253.6M	31.6K	340.7K	0.31%	0.34%	0.41%
BATMAN	\$4,182.2M	37.0K	625.9K	0.30%	0.39%	0.75%
DÜZCE	\$3,776.8M	30.9K	397.1K	0.27%	0.33%	0.47%
ERZİNCAN	\$3,740.3M	42.2K	225.4K	0.27%	0.45%	0.27%
SİNOP	\$3,486.1M	20.2K	213.6K	0.25%	0.21%	0.26%
BİLECİK	\$3,334.5M	30.0K	215.7K	0.24%	0.32%	0.26%
ÇANKIRI	\$3,041.3M	27.3K	186.7K	0.22%	0.29%	0.22%
BİTLİS	\$2,924.8M	31.9K	348.4K	0.21%	0.34%	0.42%
BARTIN	\$2,761.9M	16.3K	196.4K	0.20%	0.17%	0.23%
SİVAS	\$2,566.7M	28.4K	636.6K	0.18%	0.30%	0.76%
SİİRT	\$2,344.7M	22.6K	330.3K	0.17%	0.24%	0.39%
KARS	\$2,316.0M	26.9K	281.7K	0.17%	0.29%	0.34%
MUŞ	\$2,215.2M	31.2K	408.4K	0.16%	0.33%	0.49%
BİNGÖL	\$2,199.3M	20.8K	281.1K	0.16%	0.22%	0.34%
AĞRI	\$2,122.9M	39.3K	536.5K	0.15%	0.42%	0.64%
ARTVİN	\$1,955.7M	14.7K	166.9K	0.14%	0.16%	0.20%
HAKKARİ	\$1,715.5M	16.2K	282.4K	0.12%	0.17%	0.34%
KİLİS	\$1,492.9M	15.6K	142.6K	0.11%	0.16%	0.17%
İĞDİR	\$1,476.5M	21.1K	203.2K	0.11%	0.22%	0.24%
GÜMÜŞHANE	\$1,368.3M	19.9K	136.9K	0.10%	0.21%	0.16%
TUNCELİ	\$1,152.6M	9.5K	82.1K	0.08%	0.10%	0.10%
BAYBURT	\$917.6M	9.1K	81.4K	0.07%	0.10%	0.10%
ARDAHAN	\$624.7M	8.5K	96.0K	0.04%	0.09%	0.11%

## Exposure by simplified taxonomy

Adding `MACRO\_TAXO` column

	COST_USD	BUILDINGS	OCCUPANTS	COST_USD_%	BUILDINGS_%	OCCUPANTS_%
MACRO_TAXO						
RC	\$1,220,944.7M	5,411.6K	70,315.3K	87.55%	57.40%	84.09%
MUR	\$133,462.3M	3,111.6K	10,371.4K	9.57%	33.00%	12.40%
W	\$16,163.4M	308.9K	944.4K	1.16%	3.28%	1.13%
ADO/E	\$14,339.8M	504.0K	1,526.1K	1.03%	5.35%	1.83%
OT	\$8,330.0M	84.6K	437.8K	0.60%	0.90%	0.52%
S	\$1,315.8M	7.6K	25.2K	0.09%	0.08%	0.03%

## Exposure by taxonomy

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

		CR/LFINF(MUR+CL)+CDL+DUM/H:4/RES	\$59,535.7M	220,834	4.75%	2.57%
		CR/LFINF(MUR+CL)+CDM+DUM/H:5/RES	\$57,191.5M	133,495	4.56%	1.55%
		CR/LFINF(MUR+CL)+CDL+DUM/H:3/RES	\$55,057.9M	350,493	4.39%	4.08%
		CR/LFINF(MUR+CL)+CDL+DUM/H:6/RES	\$53,970.8M	100,174	4.30%	1.17%
		CR/LFINF(MUR+CL)+CDL+DUM/H:2/RES	\$49,968.7M	571,745	3.98%	6.66%
	RC	CR/LFINF(MUR+CL)+CDL+DUM/HBET:7-9/RES	\$48,387.1M	60,569	3.86%	0.71%
		CR/LFINF(MUR+CL)+CDM+DUM/H:4/RES	\$44,974.5M	169,010	3.59%	1.97%
		CR/LFINF(MUR+CL)+CDM+DUM/H:6/RES	\$40,326.2M	75,340	3.22%	0.88%
		CR/LFINF(MUR+CL)+CDM+DUM/H:3/RES	\$39,812.4M	264,643	3.17%	3.08%
		CR/LFINF(MUR+CL)+CDM+DUM/H:2/RES	\$36,309.1M	441,478	2.90%	5.14%
		CR/LFINF(MUR+CL)+CDM+DUM/HBET:7-9/RES	\$35,165.2M	44,559	2.80%	0.52%
		CR/LFINF(MUR+CL)+CDL+DUL/H:5/RES	\$27,545.6M	67,398	2.20%	0.78%
		CR/LFINF(MUR+CL)+CDL+DUL/H:4/RES	\$22,463.5M	85,397	1.79%	0.99%
	MUR	MUR+CLBRS/LWAL+DNO/H:2/RES	\$21,391.1M	438,710	1.71%	5.11%
		CR/LFINF(MUR+CL)+CDL+DUL/H:3/RES	\$20,744.7M	135,245	1.65%	1.57%
	RC	CR/LFINF(MUR+CL)+CDL+DUM/HBET:10+/RES	\$20,234.6M	8,539	1.61%	0.10%
		CR/LFINF(MUR+CL)+CDL+DUL/H:6/RES	\$20,107.8M	38,405	1.60%	0.45%
	MUR	MUR+CLBRS/LWAL+DNO/H:1/RES	\$19,006.4M	860,064	1.52%	10.01%
		CR/LFINF(MUR+CL)+CDL+DUL/H:2/RES	\$18,255.8M	214,460	1.46%	2.50%
		CR/LFINF(MUR+CL)+CDL+DUL/HBET:7-9/RES	\$17,310.7M	22,549	1.38%	0.26%
	RC	CR/LFINF(MUR+CL)+CDL+DUM/H:5/COM	\$15,960.9M	16,095	1.27%	0.19%
		CR/LFINF(MUR+CL)+CDL+DUM/H:1/RES	\$15,062.2M	365,888	1.20%	4.26%
		CR/LFINF(MUR+CL)+CDM+DUM/HBET:10+/RES	\$14,881.1M	6,944	1.19%	0.08%
	MUR	MUR+CBH/LWAL+DNO/H:1/RES	\$14,191.9M	609,457	1.13%	7.10%
		CR/LFINF(MUR+CL)+CDL+DUM/H:4/COM	\$13,264.9M	20,908	1.06%	0.24%
	RC	CR/LFINF(MUR+CL)+CDL+DUM/H:3/COM	\$11,916.6M	32,814	0.95%	0.38%
		CR/LFINF(MUR+CL)+CDL+DUM/H:6/COM	\$11,716.6M	9,453	0.93%	0.11%
	MUR	MUR+CLBRS/LWAL+DNO/H:3/RES	\$11,523.1M	126,589	0.92%	1.47%
	RC	CR/LFINF(MUR+CL)+CDM+DUM/H:1/RES	\$11,436.5M	299,377	0.91%	3.49%
		CR/LFINF(MUR+CL)+CDL+DUM/H:2/COM	\$11,011.3M	55,533	0.88%	0.65%
	MUR	MUR+STRUB/LWAL+DNO/H:2/RES	\$10,420.7M	197,738	0.83%	2.30%
		CR/LFINF(MUR+CL)+CDL+DUM/HBET:7-9/COM	\$10,235.9M	5,587	0.82%	0.07%
	RC	CR/LFINF(MUR+CBH)+CDL+DUM/H:2/RES	\$9,662.2M	97,893	0.77%	1.14%
		CR/LFINF(MUR+CL)+CDM+DUM/H:5/COM	\$9,353.9M	9,738	0.75%	0.11%
		CR/LFINF(MUR+CL)+CDL+DUM/H:5/IND	\$9,100.6M	5,322	0.73%	0.06%
	MUR	MUR+STRUB/LWAL+DNO/H:1/RES	\$8,637.0M	376,509	0.69%	4.38%
		CR/LFINF(MUR+CL)+CDM+DUM/H:5/IND	\$8,156.3M	4,435	0.65%	0.05%
	RC	CR/LFINF(MUR+CL)+CDL+DUM/H:4/IND	\$7,494.3M	7,048	0.60%	0.08%
		CR/LFINF(MUR+CL)+CDL+DUL/HBET:10+/RES	\$7,444.0M	3,276	0.59%	0.04%
	MUR	MUR+CBH/LWAL+DNO/H:2/RES	\$7,408.6M	139,543	0.59%	1.62%
	ADO/E	MUR+ADO/LWAL+DNO/H:1/RES	\$7,261.9M	358,746	0.58%	4.18%
		CR/LFINF(MUR+CL)+CDM+DUM/H:4/COM	\$7,241.2M	12,345	0.58%	0.14%
		CR/LFINF(MUR+CL)+CDM+DUM/H:3/COM	\$6,830.2M	20,541	0.54%	0.24%
		CR/LFINF(MUR+CL)+CDL+DUM/H:6/IND	\$6,824.1M	3,123	0.54%	0.04%
	RC	CR/LFINF(MUR+CL)+CDM+DUM/H:2/COM	\$6,671.9M	37,421	0.53%	0.44%
		CR/LFINF(MUR+CL)+CDL+DUM/H:3/IND	\$6,627.1M	11,020	0.53%	0.13%
		CR/LFINF(MUR+CL)+CDM+DUM/H:4/IND	\$6,614.9M	6,047	0.53%	0.07%
		CR/LFINF(MUR+CL)+CDL+DUL/H:5/COM	\$6,563.4M	6,910	0.52%	0.08%
		CR/LFINF(MUR+CL)+CDM+DUM/H:6/COM	\$6,376.9M	5,287	0.51%	0.06%
	MUR	MUR+CLBRS/LWAL+DNO/H:4/RES	\$6,135.8M	38,648	0.49%	0.45%
		CR/LFINF(MUR+CL)+CDM+DUL/H:5/RES	\$5,913.0M	14,642	0.47%	0.17%
		CR/LFINF(MUR+CL)+CDM+DUM/H:3/IND	\$5,873.5M	9,706	0.47%	0.11%
		CR/LFINF(MUR+CBH)+CDL+DUM/H:1/RES	\$5,851.8M	139,098	0.47%	1.62%
		CR/LFINF(MUR+CL)+CDL+DUL/H:1/RES	\$5,610.8M	143,289	0.45%	1.67%
	RC	CR/LFINF(MUR+CL)+CDL+DUM/H:2/IND	\$5,602.0M	16,782	0.45%	0.20%
		CR/LFINF(MUR+CL)+CDL+DUL/H:4/COM	\$5,526.2M	9,090	0.44%	0.11%
		CR/LFINF(MUR+CBH)+CDL+DUL/H:2/RES	\$5,495.1M	59,495	0.44%	0.69%
		CR/LFINF(MUR+CL)+CDM+DUM/H:2/IND	\$5,456.7M	16,077	0.44%	0.19%
		CR/LFINF(MUR+CL)+CDM+DUM/HBET:7-9/COM	\$5,415.4M	3,040	0.43%	0.04%
	ADO/E	MUR+ADO/LWAL+DNO/H:2/RES	\$5,399.8M	120,598	0.43%	1.40%
		CR/LFINF(MUR+CL)+CDM+DUM/H:6/IND	\$5,368.9M	2,308	0.43%	0.03%
		CR/LFINF(MUR+CL)+CDL+DUM/HBET:7-9/IND	\$5,364.7M	1,685	0.43%	0.02%
		CR/LFINF(MUR+CL)+CDL+DUL/H:3/COM	\$5,020.2M	14,232	0.40%	0.17%
	RC	CR/LFINF(MUR+CL)+CDL+DUL/H:6/COM	\$4,959.1M	4,002	0.40%	0.05%
		CR/LFINF(MUR+CL)+CDM+DUL/H:4/RES	\$4,858.8M	19,394	0.39%	0.23%
		CR/LFINF(MUR+CL)+CDM+DUM/HBET:7-9/IND	\$4,576.5M	1,353	0.36%	0.02%
		CR/LFINF(MUR+CL)+CDL+DUM/HBET:10+/COM	\$4,568.4M	883	0.36%	0.01%
		CR/LFINF(MUR+CL)+CDM+DUL/H:3/RES	\$4,483.2M	31,129	0.36%	0.36%
	MUR	MUR+CLBRS/LWAL+DNO/H:5/RES	\$4,390.6M	16,778	0.35%	0.20%
		CR/LFINF(MUR+CL)+CDL+DUL/H:2/COM	\$4,266.1M	22,179	0.34%	0.26%
	RC	CR/LFINF(MUR+CBH)+CDL+DUM/H:3/RES	\$4,156.7M	22,265	0.33%	0.26%
		CR/LFINF(MUR+CL)+CDM+DUL/H:6/RES	\$4,019.1M	7,585	0.32%	0.09%
	MUR	MUR+CLBRS/LWAL+DNO/H:2/COM	\$3,952.4M	33,899	0.32%	0.39%
		CR/LFINF(MUR+CL)+CDL+DUL/H:5/IND	\$3,871.4M	2,247	0.31%	0.03%
	RC	CR/LFINF(MUR+CL)+CDM+DUL/H:2/RES	\$3,823.1M	49,287	0.30%	0.57%
		CR/LFINF(MUR+CL)+CDL+DUL/HBET:7-9/COM	\$3,750.0M	2,083	0.30%	0.02%
	MUR	MUR+CLBRS/LWAL+DNO/H:1/COM	\$3,589.2M	68,579	0.29%	0.80%
		CR/LFINF(MUR+CL)+CDL+DUM/H:1/COM	\$3,553.6M	39,306	0.28%	0.46%
		CR/LWAL+CDL+DUM/HBET:10+/RES	\$3,309.9M	1,288	0.26%	0.01%
	RC	CR/LFINF(MUR+CBH)+CDL+DUL/H:1/RES	\$3,136.0M	77,555	0.25%	0.90%
		CR/LFINF(MUR+CL)+CDL+DUL/H:4/IND	\$3,122.4M	2,951	0.25%	0.03%
		CR/LFINF(MUR+CBH)+CDL+DUM/H:2/COM	\$3,023.8M	13,715	0.24%	0.16%
	W	W/LWAL+CDL+DUL/H:2/RES	\$2,911.9M	43,642	0.23%	0.51%
		CR/LFINF(MUR+CL)+CDM+DUL/HBET:7-9/RES	\$2,886.0M	3,784	0.23%	0.04%
		CR/LFINF(MUR+CL)+CDL+DUL/H:3/IND	\$2,648.8M	4,368	0.21%	0.05%
		CR/LFINF(MUR+CBH)+CDL+DUM/H:5/RES	\$2,501.8M	3,831	0.20%	0.04%
	RC	CR/LFINF(MUR+CBH)+CDL+DUM/H:4/RES	\$2,490.3M	6,866	0.20%	0.08%
		CR/LFINF(MUR+CL)+CDL+DUL/H:6/IND	\$2,417.6M	1,104	0.19%	0.01%
		CR/LFINF(MUR+CBH)+CDL+DUL/H:3/RES	\$2,388.7M	14,148	0.19%	0.16%
		CR/LFINF(MUR+CL)+CDM+DUM/HBET:10+/COM	\$2,301.1M	505	0.18%	0.01%
	MUR	MUR+CBH/LWAL+DNO/H:1/COM	\$2,239.1M	41,584	0.18%	0.48%
		CR/LWAL+CDM+DUM/HBET:10+/RES	\$2,235.3M	898	0.18%	0.01%
	RC	CR/LFINF(MUR+CL)+CDL+DUM/HBET:10+/IND	\$2,165.5M	246	0.17%	0.00%
		CR/LFINF(MUR+CL)+CDM+DUM/H:1/COM	\$2,154.2M	26,460	0.17%	0.31%
	W	W/LWAL+CDL+DUL/H:1/RES	\$2,134.2M	69,679	0.17%	0.81%
	MUR	MUR+CLBRS/LWAL+DNO/H:3/COM	\$2,127.8M	9,712	0.17%	0.11%
		CR/LFINF(MUR+CL)+CDL+DUL/H:2/IND	\$2,102.5M	6,378	0.17%	0.07%
	RC	CR/LFINF(MUR+CBH)+CDL+DUM/H:1/COM	\$2,064.9M	22,320	0.16%	0.26%
		CR/LFINF(MUR+CL)+CDL+DUL/HBET:7-9/IND	\$2,033.5M	638	0.16%	0.01%