

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 = "Argentina"
```

Exposure files:
Exposure_Com_Argentina.csv
Exposure_Ind_Argentina.csv
Exposure_Res_Argentina.csv

Sanity checks and formats

Exposure at National level

Summary by occupancy type

| | OCCUPANTS | BUILDINGS | COST_USD | BUILDINGS_% | COST_USD_% |
|-----------|-----------|-----------|------------|-------------|------------|
| OCCUPANCY | | | | | |
| Res | 45.4M | 11,147.6K | \$1,057.5B | 93.92% | 81.59% |
| Ind | 0.0M | 198.7K | \$78.3B | 1.67% | 6.04% |
| Com | 0.0M | 522.9K | \$160.4B | 4.41% | 12.38% |

Other metrics to consider

| | AREA_SQM | COST_BUILDING_USD | AVG_BUILDING_AREA_SQM | AVG_COST_PER_AREA_USD |
|-----------|----------|-------------------|-----------------------|-----------------------|
| OCCUPANCY | | | | |
| Total | 1,302.5M | \$963.5B | 110 | \$995 |
| Res | 1,075.9M | \$814.6B | 97 | \$983 |
| Ind | 65.3M | \$42.5B | 329 | \$1,198 |
| Com | 161.3M | \$106.5B | 308 | \$995 |

Exposure summary at Admin level 1

| | COST_USD | BUILDINGS | OCCUPANTS | COST_USD_% | BUILDINGS_% | OCCUPANTS_% |
|---------------------------------|--------------|-----------|-----------|------------|-------------|-------------|
| NAME_1 | | | | | | |
| Buenos Aires | \$509,460.3M | 4,732.9K | 17,649.1K | 39.30% | 39.88% | 38.90% |
| Ciudad Autónoma de Buenos Aires | \$168,433.7M | 829.2K | 3,292.5K | 12.99% | 6.99% | 7.26% |
| Córdoba | \$115,444.4M | 1,100.6K | 3,768.3K | 8.91% | 9.27% | 8.30% |
| Santa Fe | \$111,490.9M | 1,017.7K | 3,601.7K | 8.60% | 8.57% | 7.94% |
| Mendoza | \$51,681.9M | 499.4K | 1,978.9K | 3.99% | 4.21% | 4.36% |
| Entre Ríos | \$37,492.3M | 383.6K | 1,399.8K | 2.89% | 3.23% | 3.09% |
| Tucumán | \$32,010.1M | 358.7K | 1,644.2K | 2.47% | 3.02% | 3.62% |
| Misiones | \$28,678.5M | 314.1K | 1,254.1K | 2.21% | 2.65% | 2.76% |
| Salta | \$26,184.2M | 284.2K | 1,376.8K | 2.02% | 2.39% | 3.03% |
| Chaco | \$25,269.7M | 283.5K | 1,190.3K | 1.95% | 2.39% | 2.62% |
| Corrientes | \$23,445.6M | 263.5K | 1,121.4K | 1.81% | 2.22% | 2.47% |
| Río negro | \$19,987.8M | 205.3K | 724.0K | 1.54% | 1.73% | 1.60% |
| Santiago del Estero | \$18,511.3M | 221.8K | 991.8K | 1.43% | 1.87% | 2.19% |
| San Juan | \$17,076.0M | 174.7K | 776.1K | 1.32% | 1.47% | 1.71% |
| Neuquén | \$16,376.8M | 166.9K | 622.7K | 1.26% | 1.41% | 1.37% |
| Jujuy | \$15,878.6M | 177.5K | 762.9K | 1.22% | 1.50% | 1.68% |
| Chubut | \$14,993.5M | 148.5K | 551.2K | 1.16% | 1.25% | 1.21% |
| San Luis | \$12,303.0M | 129.3K | 489.0K | 0.95% | 1.09% | 1.08% |
| Formosa | \$11,834.8M | 141.0K | 598.9K | 0.91% | 1.19% | 1.32% |
| La Pampa | \$11,349.9M | 119.9K | 362.0K | 0.88% | 1.01% | 0.80% |
| Catamarca | \$8,820.7M | 106.7K | 418.9K | 0.68% | 0.90% | 0.92% |
| La Rioja | \$8,571.9M | 100.0K | 378.4K | 0.66% | 0.84% | 0.83% |
| Santa Cruz | \$7,345.7M | 74.4K | 287.2K | 0.57% | 0.63% | 0.63% |
| Tierra del Fuego | \$3,589.8M | 36.0K | 134.2K | 0.28% | 0.30% | 0.30% |

Exposure by simplified taxonomy

Adding `MACRO_TAXO` column

| | COST_USD | BUILDINGS | OCCUPANTS | COST_USD_% | BUILDINGS_% | OCCUPANTS_% |
|------------|----------|-----------|-----------|------------|-------------|-------------|
| MACRO_TAXO | | | | | | |
| MCF | \$562.3B | 3,590.3K | 14,709.9K | 43.38% | 30.25% | 32.42% |
| MUR | \$395.2B | 6,618.5K | 23,137.4K | 30.49% | 55.76% | 50.99% |
| RC | \$230.0B | 496.5K | 3,683.0K | 17.74% | 4.18% | 8.12% |
| W | \$42.5B | 590.5K | 2,214.6K | 3.28% | 4.98% | 4.88% |
| S | \$37.6B | 114.3K | 0.0K | 2.90% | 0.96% | 0.00% |
| ADO/E | \$21.3B | 357.3K | 1,274.5K | 1.64% | 3.01% | 2.81% |
| OT | \$7.2B | 101.8K | 354.7K | 0.56% | 0.86% | 0.78% |

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/H:1/RES | \$233.2B | 3,768.6K | 20.07% | 33.35% |
| MCF | MCF/LWAL+DNO/H:1/RES | \$177.1B | 1,563.0K | 15.25% | 13.83% |
| | MCF/LWAL+DNO/H:2/RES | \$117.3B | 517.4K | 10.10% | 4.58% |
| MUR | MUR/LWAL+DNO/H:2/RES | \$87.9B | 1,893.5K | 7.56% | 16.76% |
| RC | CR/LFINF+DNO/H:3/RES | \$56.6B | 177.7K | 4.88% | 1.57% |
| MCF | MCF/LWAL+DUL/H:1/RES | \$53.4B | 471.1K | 4.60% | 4.17% |
| | MCF/LWAL+DNO/H:3/RES | \$52.9B | 311.5K | 4.56% | 2.76% |
| | MCF/LWAL+DUL/H:2/RES | \$42.2B | 186.4K | 3.64% | 1.65% |
| W | W+WO/LN+DNO/H:1/RES | \$31.4B | 412.7K | 2.71% | 3.65% |
| MUR | MUR/LWAL+DNO/H:3/RES | \$29.8B | 321.0K | 2.57% | 2.84% |
| RC | CR/LFINF+DNO/HBET:4-6/RES | \$28.1B | 18.9K | 2.42% | 0.17% |
| MUR | MUR+ST/LWAL+DNO/H:1/RES | \$25.8B | 417.4K | 2.22% | 3.69% |
| MCF | MCF/LWAL+DUL/H:3/RES | \$23.7B | 139.6K | 2.04% | 1.24% |
| ADO/E | MUR+ADO/LWAL+DNO/H:1/RES | \$18.9B | 306.0K | 1.63% | 2.71% |
| RC | CR/LFINF+DUL/HBET:4-6/RES | \$16.5B | 11.1K | 1.42% | 0.10% |
| MCF | MCF/LWAL+DNO/H:2/COM2 | \$16.1B | 34.2K | 1.39% | 0.30% |
| RC | CR+PC/LFM+DUL/H:1/COM2 | \$14.4B | 56.9K | 1.24% | 0.50% |
| | CR/LFINF+DUL/HBET:4-6/COM2 | \$14.4B | 11.4K | 1.24% | 0.10% |
| S | SR/LFM+DUL/HBET:1-3/COM2 | \$13.8B | 28.6K | 1.19% | 0.25% |
| MCF | MCF/LWAL+DNO/H:1/COM1 | \$13.2B | 93.1K | 1.13% | 0.82% |
| RC | CR/LFINF+DNO/HBET:1-3/IND2 | \$9.8B | 10.8K | 0.85% | 0.10% |
| MCF | MCF/LWAL+DNO/H:2/COM1 | \$8.8B | 30.9K | 0.75% | 0.27% |
| | MCF/LWAL+DNO/H:2/IND2 | \$8.7B | 10.0K | 0.75% | 0.09% |
| | CR/LFINF+DUL/H:3/RES | \$8.6B | 26.9K | 0.74% | 0.24% |
| RC | CR/LFINF+DNO/HBET:1-3/COM2 | \$7.6B | 17.1K | 0.66% | 0.15% |
| | UNK/LN+DNO/H:1/RES | \$7.2B | 101.8K | 0.62% | 0.90% |
| MCF | MCF/LWAL+DUH/H:1/RES | \$7.1B | 39.2K | 0.61% | 0.35% |
| MUR | MUR+ST/LWAL+DNO/H:2/RES | \$6.7B | 144.4K | 0.58% | 1.28% |
| RC | CR/LFINF+DNO/HBET:1-3/IND3 | \$6.6B | 14.6K | 0.57% | 0.13% |
| MUR | MUR/LWAL+DNO/H:1/COM1 | \$6.6B | 46.6K | 0.57% | 0.41% |
| RC | CR/LFINF+DUL/HBET:4-6/COM3 | \$5.8B | 7.7K | 0.50% | 0.07% |
| W | W+WO/LN+DNO/H:2/RES | \$5.6B | 98.1K | 0.48% | 0.87% |
| MCF | MCF/LWAL+DNO/H:2/IND5 | \$5.4B | 12.5K | 0.47% | 0.11% |