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 S
hapely GEOS version (3.9.1-CAPI-1.14.2) is incompatible with the GEOS version PyGEOS was compil
ed with (3.10.1-CAPI-1.16.0). Conversions between both will be slow.
  warnings.warn(
```

```
# Parameters
country = "North_Korea"
```

```
Exposure files:
  Exposure_Res_North_Korea.csv
```

Sanity checks and formats

```
  North_Korea
  WARNING - Missing occupancy types. Only {'Res'}
   Exposure/Exposure/Exposure_Res_North_Korea.csv
  Not possible to check if No_dwellings >= No_buildings.
               Missing column 'DWELLINGS' in DataFrame
   Occupants / Buildings = 4.8
  WARNING - Check avg householde size:
    UN 2019 avg household = No data
    PRB 2019 avg household = 3.8
   Population (exposure / UN_2021) = 0.98
  Exposure models  OK
```

Exposure at National level

Summary by occupancy type

OCCUPANCY	OCCUPANTS	BUILDINGS	COST_USD	BUILDINGS_%	COST_USD_%
Res	25.5M	5.3M	$111.4B	100.00%	100.00%

Other metrics to consider

OCCUPANCY	AREA_SQM	COST_BUILDING_USD	AVG_BUILDING_AREA_SQM	AVG_COST_PER_AREA_USD
Total	685.4M	$92.8B	130	$163
Res	685.4M	$92.8B	130	$163

Exposure summary at Admin level 1

NAME_1	COST_USD	BUILDINGS	OCCUPANTS	COST_USD_%	BUILDINGS_%	OCCUPANTS_%
P'yŏngan-namdo	$19,076.0M	929.1K	4,373.8K	17.12%	17.65%	17.16%
P'yŏngyang	$16,297.9M	571.3K	3,736.8K	14.63%	10.85%	14.66%
Hamgyŏng-namdo	$15,204.3M	718.3K	3,486.1K	13.65%	13.64%	13.68%
Hwanghae-namdo	$11,308.9M	633.5K	2,592.9K	10.15%	12.03%	10.17%
P'yŏngan-bukto	$10,648.4M	569.6K	2,441.5K	9.56%	10.82%	9.58%
Hamgyŏng-bukto	$9,837.8M	486.3K	2,255.6K	8.83%	9.24%	8.85%
Hwanghae-bukto	$8,697.1M	441.4K	1,994.1K	7.81%	8.38%	7.82%
Kangwŏn-do	$7,161.5M	347.0K	1,642.0K	6.43%	6.59%	6.44%
Chagang-do	$5,836.5M	244.3K	1,287.7K	5.24%	4.64%	5.05%
Ryanggang	$3,184.0M	166.6K	730.0K	2.86%	3.16%	2.86%
Sinŭiju	$1,391.3M	33.6K	319.0K	1.25%	0.64%	1.25%
Kaesŏng	$1,360.3M	59.7K	311.9K	1.22%	1.13%	1.22%
Rasŏn	$956.9M	39.0K	219.4K	0.86%	0.74%	0.86%
Kumgangsan	$437.2M	25.0K	100.2K	0.39%	0.47%	0.39%

Exposure by simplified taxonomy

```
Adding `MACRO_TAXO` column
```

MACRO_TAXO	COST_USD	BUILDINGS	OCCUPANTS	COST_USD_%	BUILDINGS_%	OCCUPANTS_%
S	$58,880.7M	2,718.6K	13,473.5K	52.86%	51.64%	52.86%
MUR	$24,151.6M	1,115.1K	5,526.6K	21.68%	21.18%	21.68%
RC	$18,662.9M	861.7K	4,270.6K	16.75%	16.37%	16.75%
ADO/E	$5,247.0M	307.9K	1,200.6K	4.71%	5.85%	4.71%
W	$4,456.0M	261.5K	1,019.7K	4.00%	4.97%	4.00%

Exposure by taxonomy

```
Showing only taxonomies that represent 90% of the total `COST_USD`
```

MACRO_TAXO	TAXONOMY	COST_USD	BUILDINGS	COST_USD_%	BUILDINGS_%
S	**S/LFINF+DLO/HEX:2/RES**	$48.7B	2,250.1K	53.23%	53.23%
MUR	**MUR/LWAL+DLO/HEX:1/RES**	$24.2B	1,115.1K	26.38%	26.38%
RC	**CR/LWAL+DLO/HEX:2/RES**	$18.7B	861.7K	20.39%	20.39%