

Methodology for Vulnerability Risk Analysis

a. Analysis Tool

The vulnerability analysis involves assigning a “vulnerability score” that can range between 0 and 4 for each of the census tracts based on four risk factors. The following table details the risk factors, the evaluation criteria and the scoring method:

Risk Factor	Evaluation Criteria	Vulnerability Score: Yes (1)	Vulnerability Score: No (0)
% Renters	Is proportion of renters in the census tract greater than 45.6%?	1	0
% Communities of Color (CoC)	Is proportion of CoC in the census tract greater than 27.4%?	1	0
% Population age 25+ without bachelor’s degree	Is proportion of population 25+ without bachelor’s degree in the census tract greater than 56.3%?	1	0
% Households with income at or below 80% MFI	Is proportion of households with income at or below 80% MFI in the census tract greater than 43.7%?	1	0
Vulnerability Score		Max: 4	Min: 0

Every census tract gets evaluated based on the above listed criteria and the total scores on the four risk factors are added to get the overall “vulnerability scores”. Census tracts that score at least 3 out of maximum 4 are defined as “vulnerable census tracts”.

b. Calculation of Threshold

Risk Factor (a-d)	Citywide (Portland) proportion	Margin of Error for the estimate (MoE)	Calculation of threshold (adjusted to lower bound of MoE)
% Renters	46.2%	+/- 0.6	45.6% (46.2 -0.6)
% Communities of Color	27.7%	+/- 0.3	27.4% (27.7-0.3)
% Population age 25+ without bachelor’s degree	56.9%	+/- 0.6	56.3% (56.9-0.6)
% Households with income at or below 80% MFI [†]	43.7%	N/A	No correction

Source: 2008-2012 American Community Survey (ACS); [†]2007-2011 Comprehensive Housing Affordability Strategy data released by U.S. Dept. of Housing & Urban Development (HUD). No MoE is available for CHAS data.

c. Data sources

Data for the first three risk factors was drawn from tract-level 2008-2012 American Community Survey (ACS) estimates. Communities of Color (CoC) is defined as all residents except for Non-Hispanic Whites.

The percentage of households with incomes at or below 80% of the HUD-adjusted MFI was calculated from 2007-2011 HUD Comprehensive Housing Affordability Strategy (CHAS) data. The values relevant to this calculation come from Table 8 of the census tracts dataset. Tracts with boundaries in more than one local jurisdiction are split into multiple rows; values for each portion were summed before calculating percentages for the overall tract. For FY 2011 HUD-adjusted MFI for the Portland-Vancouver-Hillsboro, OR-WA area was \$72,900. So, the 80% MFI is equal to \$57,600 for a four person household.

d. Products of the 2012 Analysis

The six maps depict the 2012 vulnerability analysis for the City of Portland:

I. Risk Factor Maps (a-d):

- a. Vulnerability 2012 renters : all census tracts that scored 1 on rent factor evaluation;
- b. Vulnerability 2012 Communities of Color (CoC): all census tracts that scored 1 on CoC evaluation;
- c. Vulnerability 2012 bachelor's degree: all census tracts that scored 1 on bachelor's degree evaluation;
- d. Vulnerability 2012 MFI 80: all census tracts that scored 1 on households at or below 80% MFI evaluation;

II. Vulnerability 2012 Maps:

- a. Vulnerability 2012 Risk Scores: the map shows total risk scores that range from 0 to 4 for every census tract in Portland.
- b. Vulnerability 2012: composite map that shows all census tracts that have 3-4 total risk scores from the aforementioned risk factors and thereby get identified as "vulnerable" census tracts.

Note: Map layers of Vulnerability Analysis are available for City Bureaus in the CGIS Layer Manager.

For questions/clarifications on methodology contact [Uma Krishnan](#), 503-823-5771