



## Change in Residential Vacancy Rate from 2010–2014

This EnviroAtlas national map portrays the change in the residential vacancy rate between 2010 and 2014 in percentage points (2014 rate minus 2010 rate) for each census tract. This dataset counts buildings that have remained vacant for more than one year. The data were compiled from the United States Postal Service (USPS) Vacant Address Data.

### Why is residential address vacancy important?

Around the world, many urban areas are challenged by vacant and abandoned residential property. High vacancy has often been associated with increased crime and decreased public safety.<sup>1</sup> High vacancy in urban built areas also results in declining property values and a subsequently declining tax base.<sup>1</sup> Abandoned buildings are at increased risk of vandalism and fire, and vacant lots are sometimes used for illegal dumping.<sup>3</sup> Problems such as soil contamination can make it harder to redevelop a site or put it to other uses, like recreation.<sup>3,4</sup> Finally, high vacancy leads to visible signs of decline in a city, which is a significant barrier to community revitalization.<sup>2,3</sup>

Understanding the other characteristics of urban areas with high vacancy is important to help communities make better decisions to sustain a healthy community and environment. This data layer identifies vacancy in metro areas across the U.S. and provides the basis for understanding the potential causes of vacancy and its influence on society and the surrounding natural environment. Furthermore, this data layer provides vital information for the management and rehabilitation of vacant built areas.

Until recently, only limited vacancy information had been compiled or quantified for a small number of regions.<sup>1,4</sup> Additionally, how vacancy was defined and calculated varied due to different sources of information, which limited future comparisons and generalization. Since 2005, USPS has collaborated with the U.S. Department of Housing and Urban Development (HUD) to record quarterly aggregate data on addresses identified as having been "vacant" or "no-stat" (addresses that may or may not be vacant, but are unlikely to receive mail) in the previous quarter. This information provides an opportunity to investigate vacancy phenomena in built areas from a stable and continuous data source for the contiguous U.S. The USPS dataset offers other



Photo: Vacant house, Gary Indiana, Wikimedia Commons

advantages as well: 1) it tracks neighborhood changes over time; 2) it uses full counts of all addresses in an area; and 3) it provides a single source of vacancy data categorized into residential, business, and other types of properties.<sup>1,5</sup>

### How can I use this information?

This data layer depicts the change in residential vacancy rate from 2010–2014 in percentage points (2014 rate minus 2010 rate). Researchers from government and the private sector can use this data to study local vacancy significance, patterns, and causes. For instance, this data layer can be used with socioeconomic data to examine whether and how vacancy is associated with socioeconomic factors (e.g. household income level, age, and employment).<sup>3</sup> Secondly, vacancy data can also be examined together with environmental factors (e.g. land use types, or green space) to see whether there is any interaction between the natural environment and vacancy phenomena. Some of the buildings might only be temporarily vacant, while others might be permanently abandoned. Looking at vacancy rate changes over time can indicate whether an area is regenerating, declining, or maintaining a steady rate of vacancies.

Related layers that can be viewed in the EnviroAtlas interactive map include Business Address Vacancy Rate for 2014; Residential Address Vacancy Rate for 2014; and Change in Business Vacancy Rate from 2010–2014.

### How were the data for this map created?

This data layer was based on the [HUD-aggregated USPS Vacant Address Data](#) for the contiguous US. The residential

vacancy rates were calculated using the following equation:

$$\frac{\text{Number of vacant residential addresses}}{\text{Total number of residential addresses}} \times 100\%$$

For each census tract, the percentage of residential addresses that was vacant in 2010 was subtracted from the percentage that was vacant in 2014. Vacancy data were analyzed from December 2010 to December 2014 and recorded based on the 2010 census tract map. For each year, residential buildings that had been vacant for more than one year were included. The total number of vacant building units within a geographic unit (census tract) was counted using the ArcGIS 10.2 Table Join tool. “No-stat” addresses are not included in this dataset.

The rate of vacant residences was recorded as zero only if the number of vacant building units was zero. If vacancy information was missing, data were recorded as Null. If the number of total residential addresses was zero, the vacancy rate was recorded as -9999.

### What are the limitations of these data?

Although EnviroAtlas aims to use the best data available, there are still limitations. The vacancy rate was quantified based on USPS Vacant Address Data, which could be limited by the USPS’s estimation method. The USPS reported that the vacancy estimation is also much more accurate in urban areas than in rural areas. In addition, a small amount of vacancy information was missing from the USPS data for some years; we recorded those as NULL.

### Selected Publications

1. Silverman, R., L. Yin, and K.L. Patterson. 2013. [Dawn of the dead city: An exploratory analysis of vacant addresses in Buffalo, NY 2008–2010](#). *Journal of Urban Affairs* 35(2): 131–152.
  2. Kirnbauer, M.C., and B.W. Baetz. 2014. [A prototype community-based planning tool for evaluating site suitability for the temporary reuse of vacant lands](#). *International Journal of Urban Sustainable Development* 6(2): 221–240.
  3. Nassauer, J.I., and J. Raskin. 2014. [Urban vacancy and land use legacies: A frontier for urban ecological research, design, and planning](#). *Landscape and Urban Planning* 125: 245–253.
  4. Kremer, P., Z.A. Hamstead, and T. McPhearson. 2013. [A social–ecological assessment of vacant lots in New York City](#). *Landscape and Urban Planning* 120: 218–233.
  5. Renner, R. 2008. [USPS Administrative Data on Address Vacancies](#). 2008 ESRI Federal User Conference, February 2008.
- U.S. Postal Service. [USPS Vacancy Data FAQ](#). 2012. Accessed April 2018.

Alternative sources of vacancy data have been examined, such as American Community Survey (ACS) data. However, ACS recorded vacancy is based on a snapshot instead of long-term observations; it is also difficult to differentiate vacancy from abandonment in the ACS estimates.

### How can I access these data?

The vacancy data used to make this dataset can be downloaded from the [HUD User website](#). EnviroAtlas data can be viewed in the interactive map, accessed through web services, or downloaded. Additional data on business and residential vacancy rates for 2010–2014 and the total number of vacancies per census tract for 2010–2014 are available in the national metric tables on the EnviroAtlas [data download](#) page.

### Where can I get more information?

A selection of resources related to vacancy data is listed below. For more information on the data creation process for EnviroAtlas, access the [metadata](#) for the data layer from the drop down menu on the interactive map table of contents and click again on metadata at the bottom of the metadata summary page for more details. To ask specific questions about this data layer, please contact the [EnviroAtlas Team](#).

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