U.S. Housing and Urban Development, Office of Policy and Development and Research

Large Fluctuations in Addresses

White Paper on the Increases in the USPS No-Stat Category

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6-19-2019

Abstract

There are changes in the way the United States Postal Server (USPS) manages its address data that have made longitudinal analysis using the USPS Vacancy Data more challenging. The most recent change has been the introduction of a new program that the USPS calls Move to Competitive (MTC) Street Addressing for PO Boxes, which resulted in a dramatic increase in the number of addresses. This white paper provides the background and analysis of this problem of large fluctuations in addresses.

Problem Statement

There is a phenomenon that U.S. Housing and Urban Development (HUD) has been studying that involves a sudden, sharp increase in the number of addresses in the USPS No-Stat category that also manifests itself in an increase in the total number of Address Management System (AMS) addresses. The increase in total addresses is over 7 million since 2011, with the bulk of those increases happening in two quarters – one in 2011 and the other in 2014. There is no evidence to be found in any of the available national administrative or survey data sources that would make that kind of increase in the number of residential housing units plausible.

Background and Analysis

The U.S. Postal Service quarterly vacancy data totals show unusually high increases between Quarter 3 (Q3) and Quarter 4 (Q4) of 2011 and Quarter 2 (Q2) and Q3 of 2014. Preliminary analysis shows that both the magnitude and the rate of these increases cannot be explained relative to historic averages before or since and are not isolated to any discernable place or type of place. This suggests an institutional or procedural cause that HUD is unaware of and has the potential to compromise analysis of these data. Figure 1 shows the No-Stat totals and rates of change between Q2 2010 and Q4 2014.

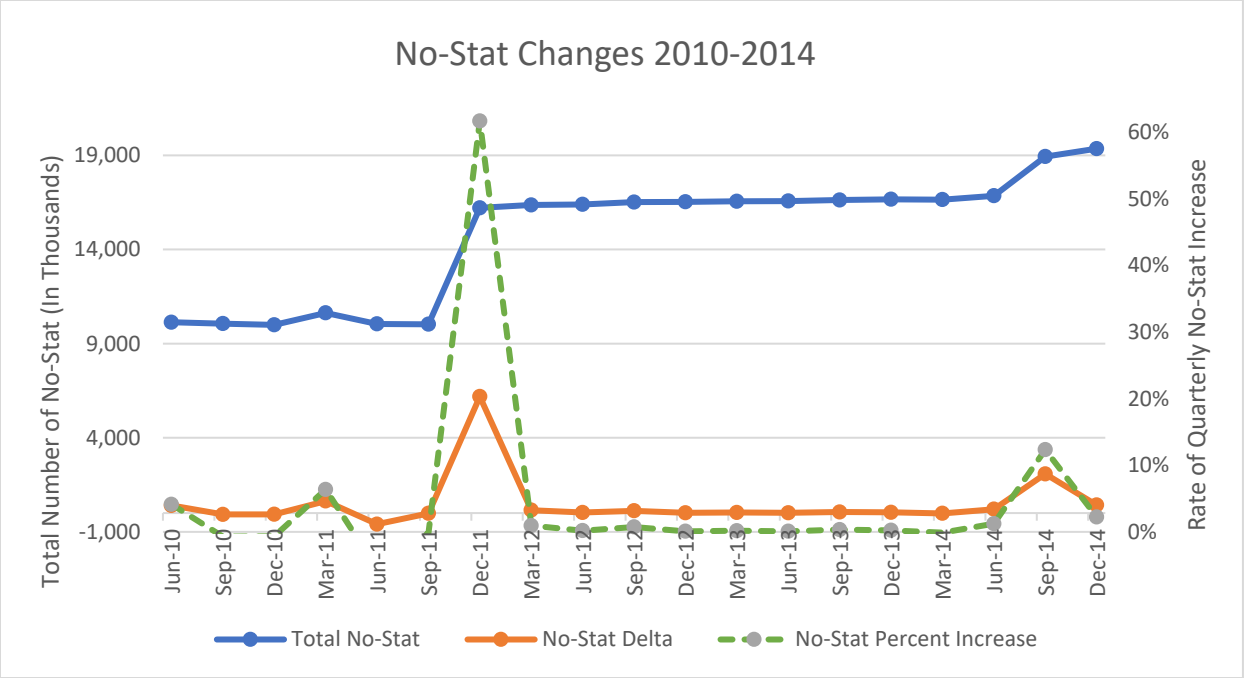

Figure 1. No-Stat totals and rates of change, Q2 2010 - Q4 2014

If you exclude the two suspect quarters, No-Stat totals changed by an average of 1% during this four-year period (which included negative changes).

Figure 2 shows the number of No-Stat addresses before and after the increases.

	Prior Increase	Post Increase	Magnitude	Rate of Increase
2011 Q3-Q4	9,135,903	15,178,654	6,042,751	66%
2014 Q2-Q3	16,130,869	17,799,911	1,669,042	10%

Figure 2. Quarters with unusual No-Stat total increases

These jumps seem unusual and their rates of increase far outpace the rates of growth of total addresses and vacant addresses.

Figure 3 is a comparison of the Census Bureau's, annual new housing permits and the annual No-Stat increases from 2010 to 2012.

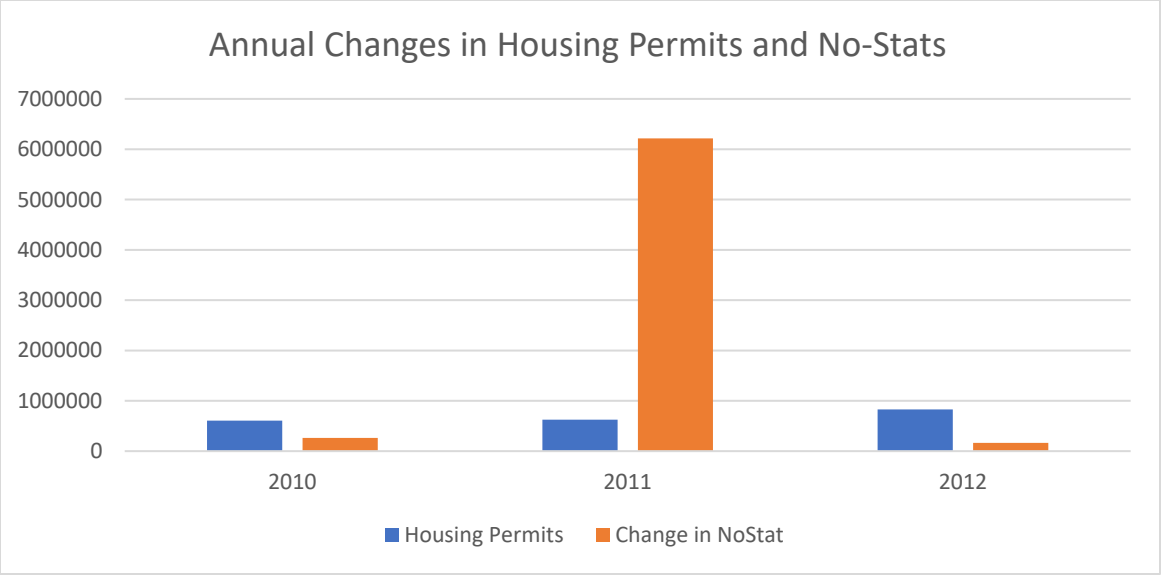

Figure 3. Comparison of annual new housing permits to net annual No-Stat increases

The No-Stat increases in 2011 far exceed the number of new housing permits despite being fewer in both 2010 and 2012. New housing is not a likely source of the observed increase.

Figure 4 includes the ten states with the highest rates of increase.

State	Net Residential Address Increase	No-Stat Increase	Rate of No-Stat increase	Share of net change of state's total addresses	Share of national increase
California	395,811	988,292	286%	250%	16.36%
Rhode Island	13,616	28,244	233%	207%	0.47%
Washington, DC	15,770	27,898	215%	177%	0.46%
Alaska	17,669	40,477	209%	229%	0.67%
Connecticut	57,479	68,490	201%	119%	1.13%
Massachusetts	106,939	185,653	196%	174%	3.07%
Wyoming	19,443	25,120	139%	129%	0.42%
New Jersey	92,903	186,572	116%	201%	3.09%
New York	172,187	355,034	111%	206%	5.88%
Hawaii	30,535	38,307	104%	125%	0.63%

Figure 4. States with the highest rate of 2011 increase

In Q4 2011, ten states saw their total No-Stat addresses more than double while five states saw their totals more than triple. For each of these states, the increase in No-Stat addresses exceeded the total increase in addresses and the decrease in total vacant addresses (34,939 nationwide) combined. This suggests that either large numbers of addresses were removed from the system as No-Stat addresses were added or a substantial number of active addresses were moved into the No-Stat category. Figure 5 includes the ten states with the highest total of increases.

State	Population ranking	No-Stat increase ranking	State No-Stat increases	Share of total addresses	Share of No-Stat Increase	Disproportion	Rate of No-Stat Increase
California	1	1	988,292	12.15%	16.36%	34.61%	286%
Texas	2	2	520,986	8.62%	8.62%	0.02%	70%
Florida	3	3	507,498	6.38%	8.40%	31.64%	67%
New York	4	4	355,034	6.11%	5.88%	-3.84%	111%
Georgia	8	5	217,062	3.19%	3.59%	12.61%	58%
North Carolina	10	6	197,846	3.14%	3.27%	4.27%	43%
New Jersey	11	7	186,572	2.77%	3.09%	11.46%	116%
Massachusetts	14	8	185,653	2.11%	3.07%	45.61%	196%
Illinois	5	9	181,165	3.96%	3.00%	-24.29%	51%
Washington	13	10	166,763	2.26%	2.76%	22.11%	88%
Total/Avg	-	-	3,506,871	50.69%	58.03%	14.49%	109%

Figure 5. Ten states with the highest total 2011 No-Stat increases

The Q4 2011 No-Stat increases are also disproportionate to a state's share of total national addresses. The ten states with the highest total increases in No-Stat addresses, 58% of the total national increase, represent only 51% of the nation's total addresses. On average, these large contributors overperformed by 14% but there was substantial variance in this group.

Figure 8 includes the top ten No-Stat gaining tracts in Q4 2011.

CBSA Location of Tract	Q4 Total Residential Addresses	Q4 Tract addresses compared to mean tract	Q4 No-Stat Addresses	Total Residential Address Increase	Total No-Stat Increase	Q4 No-Stat Increase compared to mean tract increase	No-Stat share of Total Increase
San Jose-San Francisco-Oakland, CA	9,244	386.55%	6,840	6,601	6,516	7,811.72%	99%
Mobile-Daphne-Fairhope, AL	12,392	552.24%	8,616	7,225	7,176	8,613.09%	99%
San Antonio, TX	7,481	293.76%	5,421	4,870	4,881	5,826.51%	100%
Houston-Baytown-Huntsville, TX	5,812	205.91%	5,810	5,810	5,810	6,954.50%	100%
San Diego-Carlsbad-San Marcos, CA	6,970	266.86%	5,430	5,399	5,357	6,404.47%	99%
San Diego-Carlsbad-San Marcos, CA	7,896	315.60%	5,992	5,968	5,967	7,145.13%	100%
Los Angeles-Long Beach-Riverside, CA	9,033	375.45%	6,148	6,134	6,134	7,347.90%	100%
Denver-Aurora-Boulder, CO	6,620	248.44%	6,398	6,287	6,286	7,532.46%	100%
Twin Falls, ID	6,629	248.91%	6,517	6,483	6,484	7,772.87%	100%
Anchorage, AK	8,470	345.81%	6,480	5,963	5,942	7,114.77%	100%
Average	8,055	323.95%	6,365	6,074	6,055	7,252.34%	99.71%

Figure 8. Top ten No-Stat gaining tracts in Q4 2011

The distribution of No-Stat addresses throughout tracts are extremely skewed with the top 5% of tracts accounting for 74.9% of the net increase. A brief survey of the ten tracts with the greatest increase in No-Stat addresses showed no clear pattern. Each of these tracts contain more total addresses than the average but did have enormously disproportional gains in No-Stats. The increase in No-Stats for each of these tracts was at least 60 standard deviations beyond the mean increase for a tract in that quarter. The likelihood of a single tract seeing such a gain in a normally distributed dataset approaches zero. In Q4 of 2011 there we 14 such tracts.

Figures 9 through 14 are 6 sample maps of the top gaining tracts with their location and number of additional No-Stats gained in Q4 2011. For example, Monterey Bay, CA is the location of the tract outlined in red and +6516 is the additional No-Stats gained in Q4 2011.

Monterey Bay, CA **+6516**

Figure 9.

Sawtooth National Forest, ID **+6584**

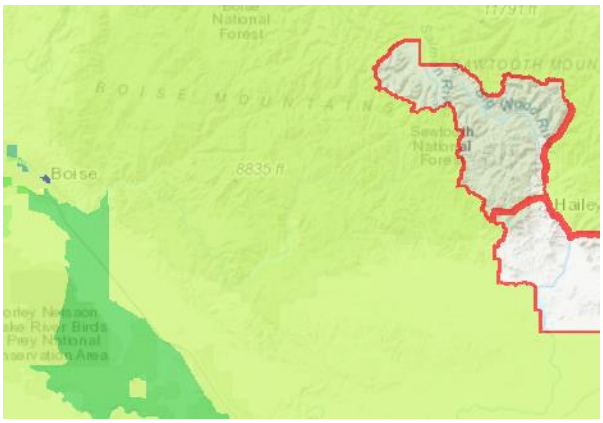

Figure 10.

Breckenridge, Colorado **+6286**

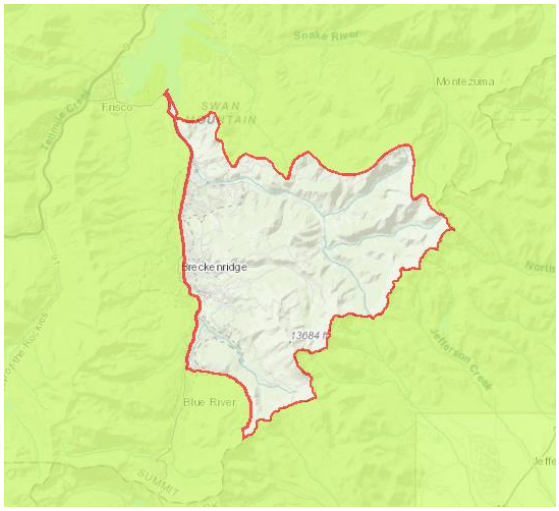

Figure 11.

Beverly Hills, CA **+6134**

Figure 12.

San Diego, CA **+5967**

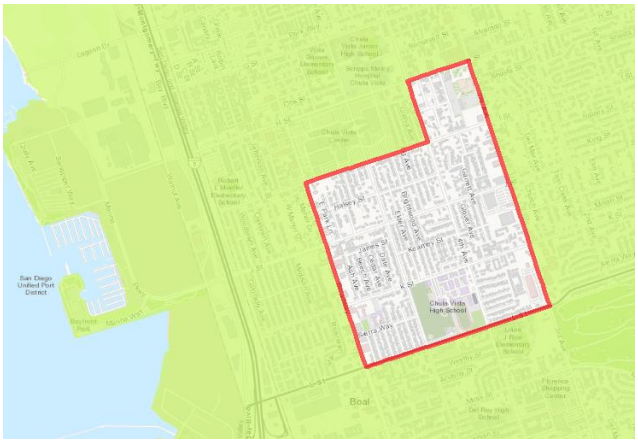

Figure 13.

Wasilla, AK **+5942**

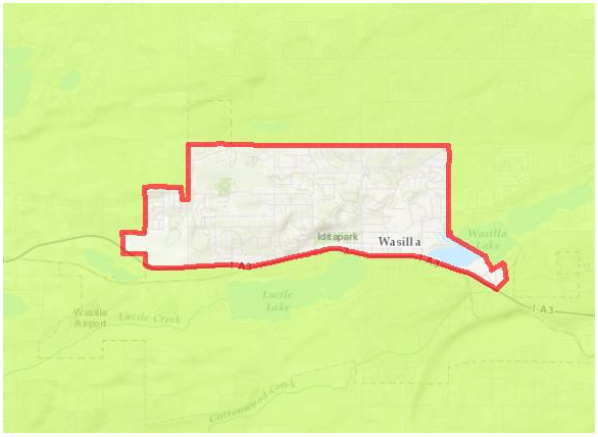

Figure 14.

Solution

HUD raised this issue with USPS and they confirmed that the reason for these increases can be traced to a relatively new program called Move to Competitive (MTC) Street Addressing for PO Boxes which enables USPS customers to register their PO Boxes as a street address in order to receive packages and deliveries from private carriers who require a street address for delivery, such as UPS and FedEx. The implementation of this program has had the undesired effect of essentially bloating the number of addresses in the USPS's Address Management System (AMS). Each time a customer registers their PO Box with the MTC program, a "new" address record is created, and that address is coded as a No-Stat.

Conclusion

This has potential ramifications for our users depending on how they are applying the data. For example, if a user calculates a vacancy rate for residential addresses by dividing the number of vacant residential addresses by the total number of residential addresses, the rate might be artificially depressed because the denominator might include a rather large number of MTC addresses (i.e. PO Boxes that are not physical addresses but now show up in the inventory of total addresses). We know that some users are already subtracting the No-Stat address count from the total address count before calculating a vacancy rate, which would help to address this issue.