

# Correcting Census Counts Can Mean Dollars for Cities, Towns

BY SUSAN STRATE

Census numbers count—a lot. The data gathered by the U.S. Census Bureau every ten years determine each state’s Congressional representation. The counts also form the basis for future population projections and serve as controls for the American Community Survey’s detailed demographic data for small geographies.

Perhaps the most significant impact of the census numbers, however, is that they determine the distribution of billions of dollars in federal and state aid to cities and towns. In fiscal 2009, Massachusetts municipalities received more than \$5.5 billion from 168 formula-based federal funding programs, not including more than \$8.2 billion in Medicaid reimbursements. Excluding Medicaid, the federal funds for the year amounted to \$841 per Massachusetts resident.

The decennial U.S. Census is a massive undertaking. The federal government spent an estimated \$14.5 billion, recruited more than 3.8 million staffers, and joined with 255,000 private- and public-sector partners to ensure a successful 2010 Census. But with more than 11.5 million discreet geographic blocks in the United States—including 157,508 in Massachusetts—there is always the chance that, despite the extensive resources brought to bear, there will be inaccuracies in some places. So the question is, with so much riding on the accuracy of the results, what can a local government do when the Census Bureau gets it wrong?

Cities and towns seeking to correct their official population counts or estimates have the opportunity to do so either immediately following the Census 2010 count, through the Count Question Resolution Program, or over the course of the next decade, through the Estimates Challenge Program. These two options correspond with the two types of population “counts” produced by the U.S. Census Bureau: the Census Base Count, which is completed once every ten years, and the Annual Popula-

tion Estimates, which are created by the Census Bureau to update the population for every city, town, county, and state for each of the nine years between each census.

## Count Question Resolution

The Count Question Resolution Program is the only opportunity that cities and towns have to review and correct the Census 2010 counts for housing unit stock and “group quarters” facilities that existed in 2010 but were missed by count operations. The program window runs from June 2011 through June 2013. When the program concludes, there will be no additional opportunities to correct the 2010 Census Base Count except for official boundary annexations. The next opportunity for an accurate base count will be the next U.S. Census in 2020.

Group quarters population refers to unrelated persons sharing living quarters. These populations are classed as either “institutionalized” (e.g., correctional facilities, homes for juvenile population and hospital wards) or “non-institutional” (e.g., college dormitories, nursing homes and shelters). In Massachusetts, the group quarters population and its impact are significant; nearly 240,000 persons live in group quarters, including 135,773 in student housing and 43,833 in nursing homes, the two largest types of group quarters in the state. Massachusetts ranks sixth in the nation in group quarters population as a percentage of total population, based on Census 2000 data.

Corrections made through the Count Question Resolution Program will set the base for the official population estimates for each city and town in Massachusetts for the next ten years, so there is a multiplier effect when persons are added to the base through this process. Each person added to the base will count for formula-based federal funding to a community each year for the next ten years.

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Because of the high stakes for a post-census challenge result, the Donahue Institute’s Population Estimates Program has identified Count Question Resolution support to cities and towns as its priority project over the next two years. The program started laying the groundwork for technical support well before the actual Count Question Resolution Program opened in June 2011. The project has already collected supporting data and built the analysis tools to identify potential corrections issues around the state, and it will provide outreach and technical assistance to those communities wishing to proceed with a challenge on group quarters or housing unit counts.

Corrections made through the Count Question Resolution program can be the result of three types of challenges, as described below by the U.S. Census Bureau:

- “*Boundary Challenges* correct inaccurate reporting or recording of boundaries legally in effect on January 1, 2010.”
- “*Geocoding Challenges* correct the placement of living quarters and associated population within the correct governmental unit boundaries and 2010 census tabulation blocks.”
- “*Coverage Challenges* add or delete specific living quarters and people associated with them, identified during the census process but erroneously included as duplicates or excluded due to processing errors.”

The Population Estimates Program will focus on Geocoding and Coverage Issues—specifically housing unit counts and group quarters populations. In both of these instances, the challenge and supporting documentation must be submitted and will be evaluated at the Census 2010 block geographic level.

**Group quarters include:**

- Nursing homes
- Prisons
- Dormitories
- Group homes
- Shelters
- Military facilities

In order to prepare for the Count Question Resolution program, the Donahue Institute’s Population Estimates Program has:

- Mapped more than 2.5 million residential housing units based on Massachusetts assessors’ records
- Mapped the state’s inventory of more than 2,000 group quarters facilities with 2010 population counts
- Collected and processed the 2010 redistricting data files and the recently released advance 2010 group quarters counts
- Begun analysis of the U.S. Census Bureau’s 2010 housing units and group quarters population counts against the program’s own database

Once the Population Estimates Program has mapped assessors’ records and their corresponding number of housing units to the new Census 2010 block geographies, the program can display the total number of housing units that can be expected in each block around the state. Instances where the Population Estimates Program count varies substantially from the Census 2010 count warrant further research.

As a second step, the program maps the block(s) in question. In many cases, a geocoding error will place housing units in an adjacent block. Because the Population Estimates Program’s addresses for housing units are geocoded by street address, while the Census Bureau has geocoded using on-the-ground coordinates when possible, these types of mismatches will be common, and usually warrant no further investigation.

The Population Estimates Program is, however, interested in housing unit deficits that are not accounted for in a neighboring block. In these cases, the program will generate a list of addresses and associated housing unit numbers for the block in question and ask the municipality to review the case and to verify the address information, should it wish to proceed with a challenge. If a city

# CORRECTING CENSUS COUNTS CAN MEAN DOLLARS FOR CITIES, TOWNS

or town does wish to proceed, the program will provide additional technical support in preparing the documentation and other materials needed for submission to the Census Bureau.

For the group quarters component, the Population Estimates Program has surveyed the April 1 counts for the major group quarters types and mapped these to the new Census 2010 blocks statewide. Like the housing units, these were then associated to new Census 2010 blocks for comparative analysis. Unlike the housing units, the group quarters have been geocoded to coordinates (referencing ortho imagery) so that the large populations associated with a single building are most accurately located. In cases where the anticipated group quarters count for a certain block is significantly higher than what the Census Bureau has reported, the Population Estimates Program will notify the municipality and proceed with the next research and documentation steps.

The Population Estimates Program is analyzing data for the whole state, and it will contact any city or town when it finds a substantial challenge issue. Municipalities also can—and should, if possible—conduct their own analysis and initiate a process if something looks inaccurate.

Those who identify a potential issue should:

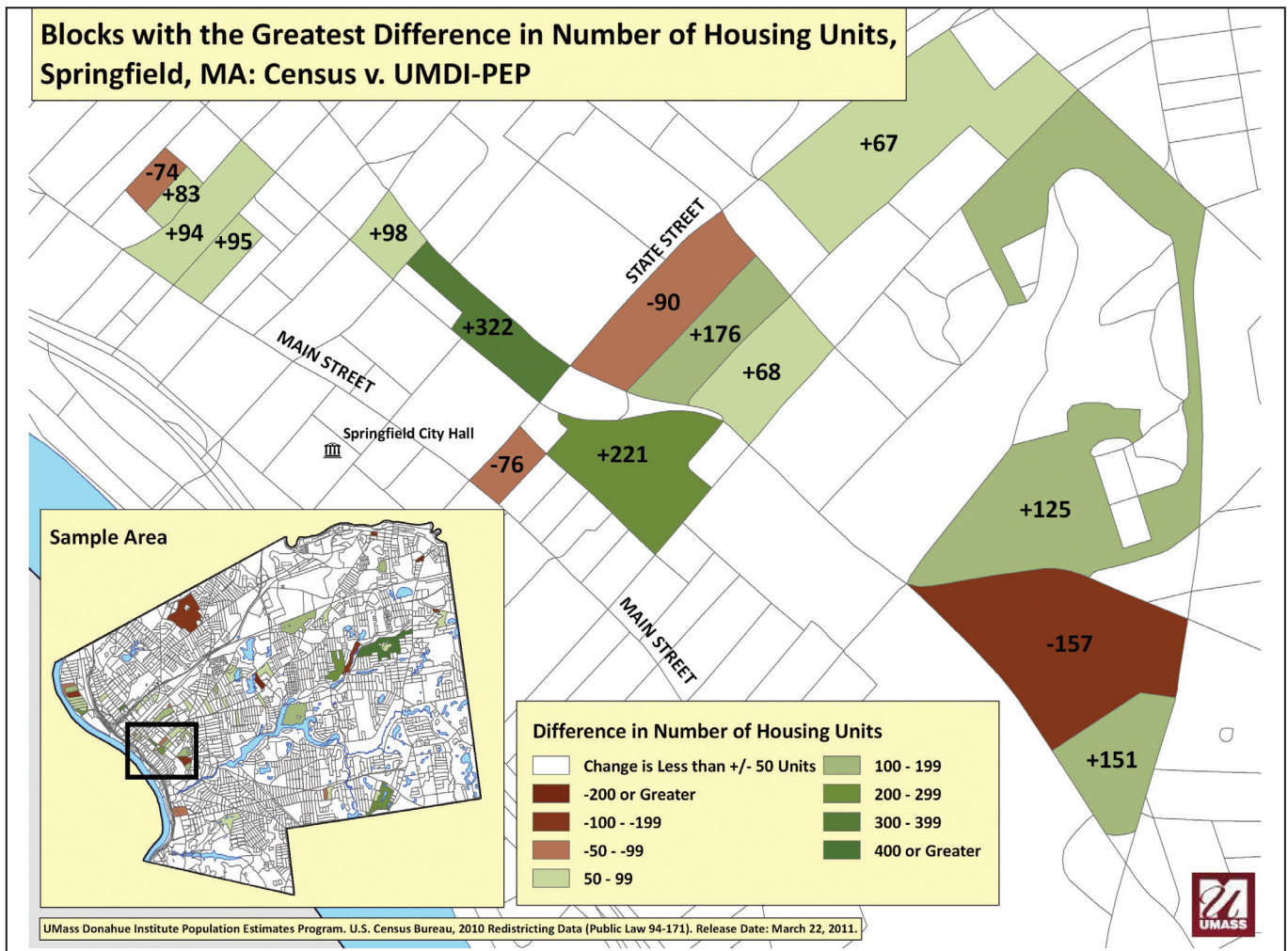
- Identify the basis for the challenge or issue
- Identify the blocks in question

- Assemble the documentation and challenge package, or request assistance from the Population Estimates Program
- Send the package to the Census Bureau after June 1, 2011, and before June 1, 2013

Municipalities requesting corrections will need to submit the following documents:

- Maps that identify the state, county, 2010 census tract(s), and 2010 census tabulation blocks associated with the challenge
- A list of the living quarters under revision
- For housing unit corrections, a list of residential addresses that existed as viable living quarters in each contested block on April 1, 2010
- For group quarters count corrections, an address list for all group quarters facilities that existed and were operating on April 1, 2010, in each contested block (including facility name, and the name, address and telephone number for the administrative office)

The Census Bureau only will add to its inventory living quarters that, at some point, were part of the Census Master Address file and were erroneously deleted or missed in 2010.



## The Estimates Challenge Program

The Estimates Challenge Program, which will start its next cycle in 2012, allows state and local governments to correct their Annual Population Estimates by updating the *components* used to calculate them. By understanding these components, and how they enter into the estimates formula used by the Census Bureau, cities and towns can think about how to track their own data to ensure an accurate estimate for their community.

As a first step, the Census Bureau calculates a new county population for the new year. This is done by taking the previous (or base) year Household County Population (which excludes the population in group quarters), adding the births and subtracting the deaths recorded for that county by the Department of Public Health, and then adding net migration, which is estimated by the bureau as a sum of the internal migration (“domestic” or county-to-county migration, based on IRS and Medicare data) and international migration. (The Census Bureau aggregates city- and town-level birth and death data to the county level in this model to feed into the county population component rather than being added into each community individually.)

This new county population is then distributed to the cities and towns based on their share of the housing units in the county, with consideration also given to each city or town’s unique person-per-household ratio and occupancy rate as determined by the last decennial census. Finally, the group quarters population counted in each community is added back in.

Here is the key for local officials: Of all the components, or ingredients, that go into making an official population estimate, the group quarters population and the number of household units are the only

two for which the Census Bureau seeks local data input or corrections. It’s important to note that, in its estimates production, the U.S. Census Bureau assumes zero growth in the group quarters population between each census, unless a state submits data documenting growth.

After the 2000 Census, Massachusetts went without a dedicated population program from 2002 until 2007, so its official population estimate started falling behind its actual population. When the UMass Donahue Institute’s Population Estimates Program got started in fiscal 2007, its first task was to help Massachusetts catch up on six years of missing group quarters data.

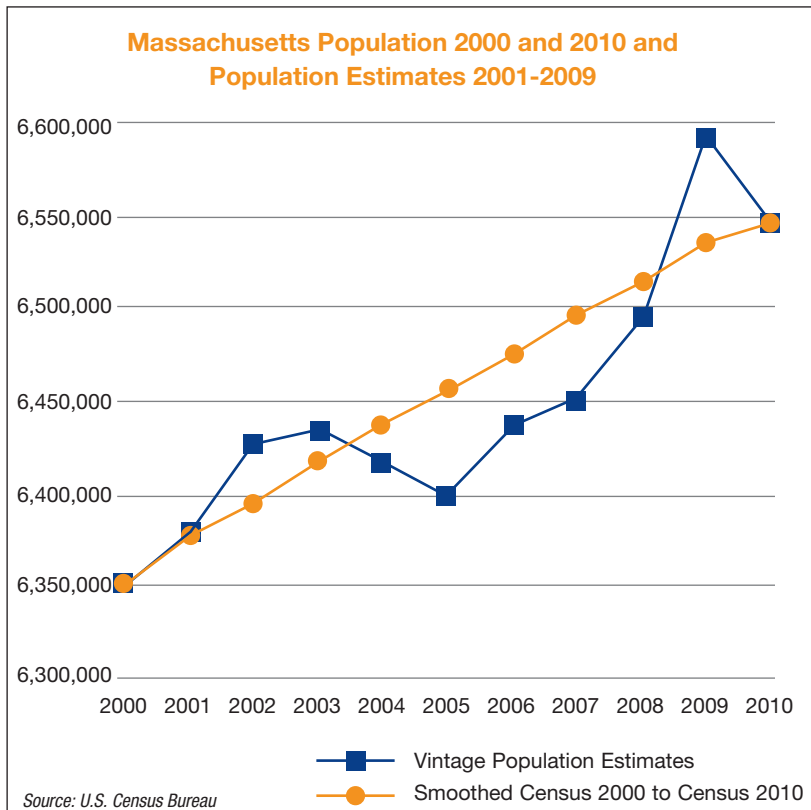
In its first year, the Population Estimates Program completed a group quarters survey that yielded an updated inventory of 1,937 active facilities in Massachusetts, accounting for 228,089 persons. The program used this data to support sixteen municipalities in challenging their official 2007 population estimates, which resulted in an increase of more than 21,000 in the official Massachusetts population. The program continued to provide annual updates to the Census Bureau thereafter, including data for non-challenging communities, which added another 6,400 to the state population for the year following the group quarters survey.

While the Population Estimates Program continues to collect and submit group quarters data for all municipalities in the state (including non-challengers), cities and towns can help to ensure an accurate count of their group quarters population by reporting new or closed group quarters facilities to the Donahue Institute’s Population Estimates Program or by completing the municipal survey the program sends out periodically. Since 2007, the program has sent two group quarters update surveys to municipalities, with ninety-nine cities and towns providing group quarters updates in the first survey year and 210 providing updates in the second year (2009).

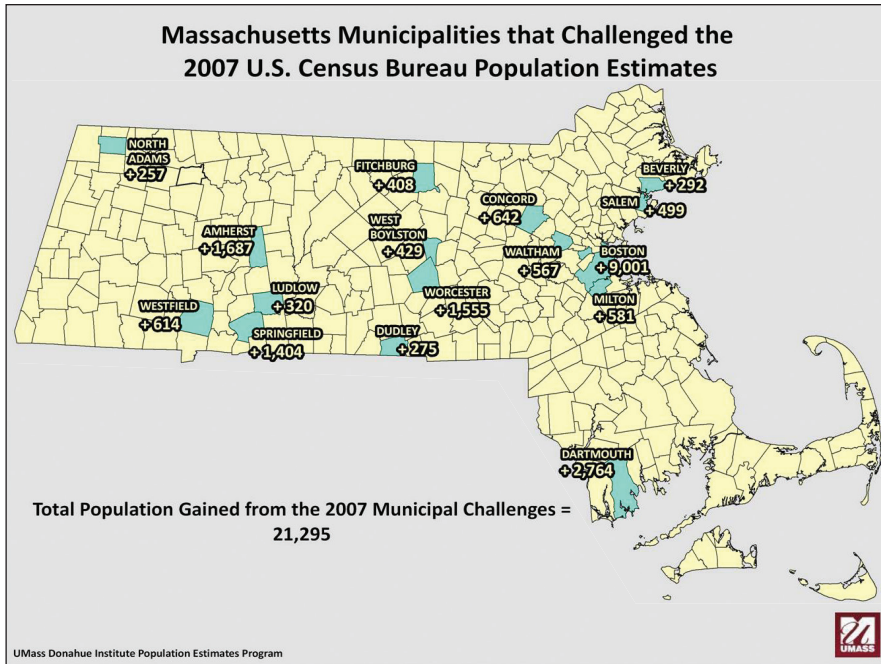
The number of household units is the second component for which municipalities can submit corrections or updates. Since all municipalities are surveyed on a monthly and annual basis by the Census Bureau on their building permit data, it would seem that the housing unit estimates used to distribute county population *should* be accurate. The Census Bureau’s overall housing unit estimate formula, however, includes one component—demolition—that is not collected from cities and towns; rather, it is an estimated rate of demolition.

The basic formula for the estimated housing units in each community starts with the number of units counted in the last U.S. Census, plus additional building permits issued and mobile homes placed since that count, minus the number of units lost through demolition and other means. This new number of housing units is then used to distribute the latest county-level population estimate among the municipalities within that county. The 2009 estimates, for example, were calculated as follows:

$$\text{No. of Housing Units 2009} = \text{Housing Units 2000} + \text{Building Permits 2000-2009} + \text{Mobile Home Placements 2000-2009} - \text{Housing Unit Loss (demolition, conversion, or other) 2000-2009}$$



# CORRECTING CENSUS COUNTS CAN MEAN DOLLARS FOR CITIES, TOWNS



ted with alterations permits, which can include anything from replacing a side porch or roof to converting an old mill into a hundred condominium units. While the Census Bureau did start offering cities and towns the opportunity to add these alterations via housing unit review opportunities in 2008 and 2009, most of the resulting increases in housing stock were completely missed during the last decade. In 2005, Boston caught up on five years of missed adaptive reuse by means of an estimates challenge; as a result, 37,604 persons were added to its official 2005 population estimate. In all communities where larger structures are split into multiple units, especially in gateway cities and other old mill towns, missed units of this type start to add up and skew a community's population estimate over time.

## Lessons Learned

While researching data for housing-unit based challenges, the Donahue

Institute's Population Estimates Program found that even cities with sophisticated and thorough permit and building tracking systems were tracking data in a way that is at odds with the documentation required for census updates and challenges. With some simple changes to their existing tracking systems, cities and towns could put themselves in a much better position to ensure more accurate population estimates for their community.

The first tracking problem is that conversions are often mixed in with alterations records. In order to identify the number of new residential units added by conversions, staff had to sort through hundreds of minor modifications records. In the alterations records, an old library converted to 100 new condo units was sandwiched between a new roof permit and an additional bath permit, with no special "flag" attached to it.

In researching demolitions data, staff found that addresses were clearly marked, but oftentimes the building type was not, and in many cases the number of units was not indicated at all.

The U.S. Census Bureau uses actual building permit data when it is available from reporting municipalities and substitutes estimated data for non-reporting municipalities. For housing unit loss, the bureau calculates a loss-by-age-of-structure rate for the nation as a whole by conducting a sample survey across the country; the bureau then applies this rate to all regions. For Massachusetts, this methodology leads to an overestimate of housing unit loss, and thus an underestimate of the current number of housing units. This occurs because the housing stock in Massachusetts and New England tends to be older than in the rest of the country. For example, a national sample would indicate that a structure that is 150 years old would be demolished, but this is less likely to occur in New England.

For all components, but especially in cases of demolitions, the Census Bureau's housing estimates can be improved if actual data is available in lieu of estimated components. When the Donahue Institute conducted an independent survey of Massachusetts cities and towns to capture actual demolitions from 2000 to 2008, every one of the 157 responding municipalities reported housing unit losses that were significantly lower than what the Census Bureau's sampling method had indicated for their area. Corrections to this data over the period reduced the total number of units lost by more than 10,000 among the respondents. The corrected housing unit loss figures were significant enough in some areas to form the basis of a challenge to the 2008 estimate released in July 2009. (The results are listed below.)

Another issue that creates a disadvantage for Massachusetts is that the housing unit estimates method only tracks new permits, and not conversions, in its regular survey. As most building inspectors will tell you, conversions are normally tracked and permit-

### Population Estimate, July 1, 2008

Area	Original	Revised	Change	Estimated Value in Formula-Based Federal Funding (excluding Medicare)
Boston	609,023	620,535	11,512	\$9,681,592
Bridgewater	25,774	27,218	1,444	\$1,214,404
Fitchburg	40,239	42,215	1,976	\$1,661,816
Springfield	150,640	155,521	4,881	\$4,104,921
Westfield	40,608	42,125	1,517	\$1,275,797
Worcester	175,011	182,596	7,585	\$6,378,985
<b>State total</b>			<b>28,915</b>	<b>\$24,317,515</b>

So at a particular address, it was difficult to say how many units were lost by demolition and how many of those were residential. To work around this issue, staff had to cross-reference historical assessors' records to match up type of unit with the address in question—an extremely time-consuming process.

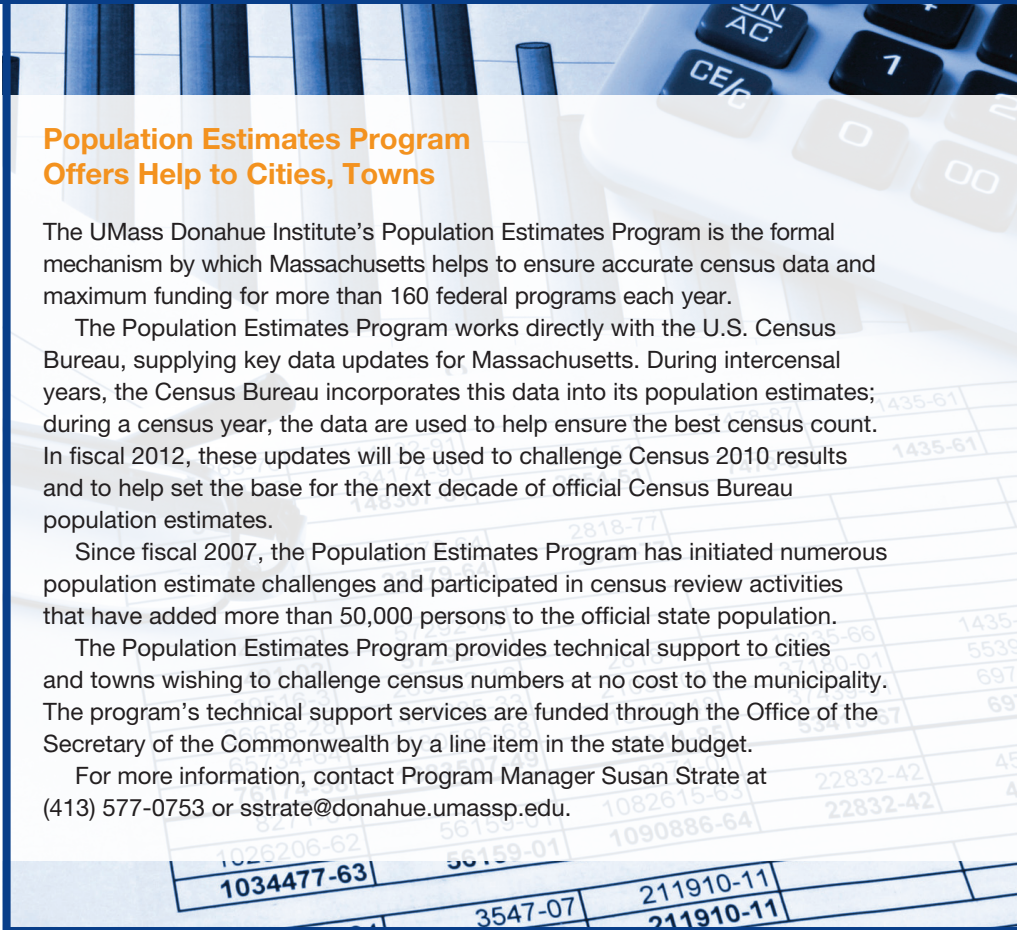
The Donahue Institute's Population Estimates Program offers three recommendations to municipalities that want to improve their position to accept, refute, or revise Census Bureau estimates for their city or town:

- 1. Adaptive reuse and conversion:** Log the net number of residential units added *or subtracted* by conversion, by net number and by address. Adding a flag to alterations permits and a box for number of residential units before and after would achieve this. Alternatively, cities or towns could choose to file this type of alteration with their building permit records.
- 2. Demolitions:** Keep track of residential units demolished, by number of units and by address. One check-off box for "residential," and one field for "number of residential units" would suffice for measuring this data.
- 3. Building permits:** Report building permits to the Census Bureau, and be sure to log the number of residential units and the street address.

Now is the time to begin recording new building, alterations and demolition data. All challenges to population estimates over the next nine years will require complete data reporting back to the last census, in April 2010. Given the high stakes tied to accurate census numbers, for both planning purposes and federal aid, these data tracking procedures represent small investments with potentially large rewards. 🌟

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*For more details on Count Question Resolution Program and its challenge requirements, visit <http://2010.census.gov/2010census/about/cqr.php>. The guidelines provide detailed instructions and examples for how to prepare and submit a CQR challenge.*



## Population Estimates Program Offers Help to Cities, Towns

The UMass Donahue Institute's Population Estimates Program is the formal mechanism by which Massachusetts helps to ensure accurate census data and maximum funding for more than 160 federal programs each year.

The Population Estimates Program works directly with the U.S. Census Bureau, supplying key data updates for Massachusetts. During intercensal years, the Census Bureau incorporates this data into its population estimates; during a census year, the data are used to help ensure the best census count. In fiscal 2012, these updates will be used to challenge Census 2010 results and to help set the base for the next decade of official Census Bureau population estimates.

Since fiscal 2007, the Population Estimates Program has initiated numerous population estimate challenges and participated in census review activities that have added more than 50,000 persons to the official state population.

The Population Estimates Program provides technical support to cities and towns wishing to challenge census numbers at no cost to the municipality. The program's technical support services are funded through the Office of the Secretary of the Commonwealth by a line item in the state budget.

For more information, contact Program Manager Susan Strate at (413) 577-0753 or [sstrate@donahue.umassp.edu](mailto:sstrate@donahue.umassp.edu).