Joint Center for Housing Studies
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The Geography of Home Improvement Activity: A Metropolitan-Level Analysis of Remodeling Expenditures During the 2000s

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Abstract

In the decade spanning 2000 to 2009, the average US homeowner spent $2,432 annually on home improvement projects, but average expenditures across local markets in the US varied considerably. Indeed, among the 35 largest metropolitan areas, annual per homeowner spending ranged from $1,218 in San Antonio to $4,885 in San Jose. Since remodeling activity is in part a product of local market conditions, metro-level analysis offers a sharper lens for understanding the determinants of remodeling activity than a regional or national analysis might provide. This working paper examines to what extent remodeling activity and spending vary with key socioeconomic and geographic characteristics. In this paper, home improvement activity in the 2000-9 decade is examined across the 35 largest metros in combination with the demographic and market conditions of these areas. Remodeling spending patterns throughout the 2000s are also compared between low- and high-spending metropolitan areas. Looking across time, this paper examines how remodeling activity has changed throughout the decade, specifically focusing on trends leading up to the housing bubble and during the subsequent bust. Finally, the most important indicators of remodeling activity are assessed as a group to assess the relative significance of these intertwined characteristics of high-spending metros.

I. Introduction

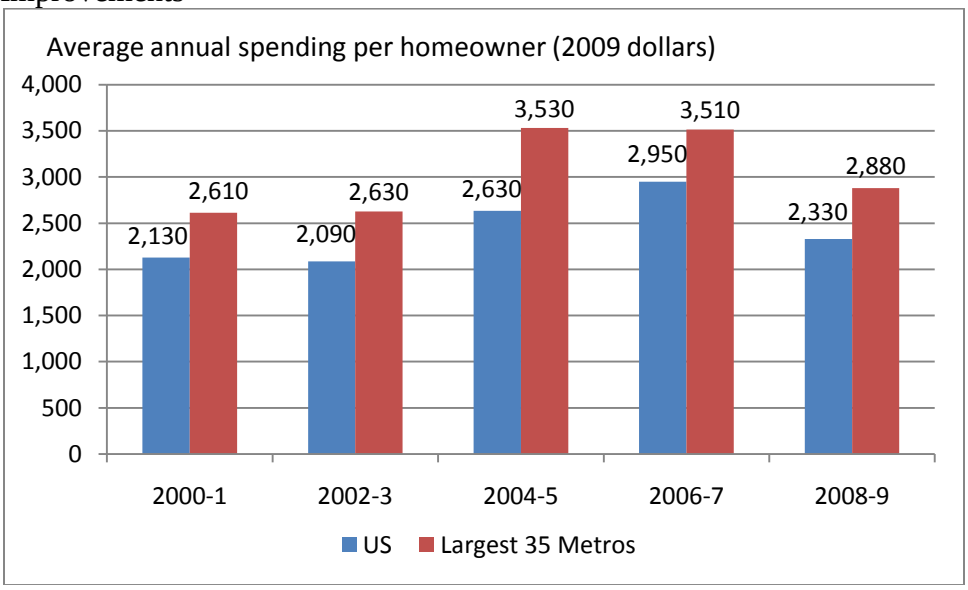
The past decade has been a tumultuous one for the home improvement industry. The strong housing market in the first half of the decade pushed home improvement activity to new levels of expansion before the housing crisis and recession seized away much of the growth. In inflation-adjusted terms, home improvement spending for the average US homeowner started out at $2,128 in 2000 and rose steadily until peaking at $2,950 – a 39% increase – in 2007. By 2009, however, the average annual spending had slipped back down to $2,432. Since home improvement activity is a product of demographic characteristics and market conditions that can differ widely from city to city, this story has varied quite a bit at the local level. In fact, per household remodeling spending over the decade ranged considerably across the US, up to three times higher in areas with robust long-term market environments compared to those with less favorable conditions during the 2000s.

The decision to undertake a home improvement project, and how much to spend on that project, is associated with a broad range of factors including household income, home values, and age of the home. In combination, these factors produce sharply different levels of activity across market areas. Furthermore, high-spending areas are likely to exhibit different spending preferences, such as undertaking more professionally-installed projects rather than do-it-yourself (DIY) projects. This research examines to what extent remodeling activity and spending can vary with key socioeconomic and geographic distinctions.

Remodeling expenditures in metropolitan markets also warrant study because major markets account for a disproportionate share of homeowner spending. Over the past decade, the country's 35 largest metropolitan areas[1] generated 54% of all home improvement spending (equivalent to $96.5 billion per year), whereas only 43% of US homeowners reside in these areas. Moreover, each year, average expenditures per homeowner for this group consistently exceeded the national average by about 25 percent, or about $600 [Figure 1].

[1] 35 metropolitan areas are the largest by population in 2009 for which remodeling data in the American Housing Survey (AHS) were available.

Figure 1. Homeowners in Large Metropolitan Areas Spend More Each Year on Home Improvements



Note: Spending is grouped in two-year intervals because the AHS data is collected biennially for spending over the previous two years. Spending has been reduced by half to obtain annual figures.
Source: US Census Bureau, 2001-9 AHS.

This paper updates and expands the 2001 Joint Center for Housing Studies working paper N01-4 "Remodeling Spending in Major Metropolitan Areas" by Julia Reade, which focused on remodeling activity in the 1990s. Using data from the 2000s, this paper studies the 35 largest metropolitan areas by population to compare and contrast remodeling activity and its drivers. First, home improvement activity in the past decade is examined on a metropolitan-level basis in combination with the demographic and market conditions of those areas. Then, the spending behaviors throughout the 2000s of low- and high-spending metropolitan areas are compared and contrasted. Next, this paper examines how remodeling activity has changed throughout the decade, specifically focusing on trends through the housing bubble and subsequent bust. Finally, the most telling and important indicators of remodeling activity are aggregated to obtain a complete picture of the overlapping characteristics of high-spending metros.

II. Methodology and Data

The American Housing Survey (AHS) is used as the primary data source on residential remodeling expenditures. The AHS is a national survey conducted every two years by the Census Bureau for the Department of Housing and Urban Development, and includes a module

in which respondents record the types and costs of remodeling projects they had undertaken over the preceding two years. Data include detailed costs on projects such as kitchen and bath remodeling, room alterations and additions, roofing, siding, window and door replacements, flooring, disaster repairs, and systems and equipment additions and replacements. All projects are also parsed into do-it-yourself (DIY) and professionally-installed categories.

The survey also reports the metropolitan statistical area in which the household is located. However, the AHS uses the metropolitan boundaries based on the 1980 decennial census instead of the most recent boundaries last updated in 2003 using the 2000 Decennial Census data.[2] In order to conduct an analysis on remodeling spending within the current metropolitan boundaries, the data were first modified. In many areas, adjacent metropolitan areas have merged since 1980 to form a single metropolitan area. Thus, the 1980 metro areas were first aggregated to better align with the current 2003 definitions.[3] For example, the households in the 2003 New York-Northern New Jersey-Long Island, NY-NJ-PA metro area were aggregated from the households located in several 1980 metropolitan areas: New York City, NY; New York Areas; Northern New Jersey Areas; Nassau Suffolk, NY; Newark, NJ; Jersey City, NJ; Monmouth Ocean, NJ; Middlesex Somerset Hunterdon, NJ; and Bergen Passaic, NJ. In order to ensure that the AHS survey sample size was large enough and robust enough for each metro area, the analysis was limited to the largest 35 metropolitan areas by population in 2009 for which AHS metropolitan data were available.[4] All areas included in this study contain at least 250,000 homeowners.

Additionally, the AHS data include household-level weights for each observation which are based on 1980 metropolitan geography. These household weights were adjusted to more accurately represent the number of households and level of expenditures within the current metro boundaries.[5] Three main demographic variables were used to create the new metro-level weights: year the home was built, structure type (one- or multi-unit, detached or attached), and

[2] See Appendix A for a map of the most recent boundaries of the metropolitan areas included in this research.
[3] See Appendix B for the full core-based statistical area (CBSA) names of the metros included in this research.
[4] The sample size for the metropolitan areas in the study was at least 400 homeowners.
[5] Before this step, these weights first undergo a process in which they are proportionally adjusted to sum to national household control totals from the American Community Survey (ACS) based on tenure, age, and race. This adjustment is completed for nearly all JCHS research using the AHS datasets. The rationale for this process is that ACS control totals are likely more realistic estimates of national household counts because the ACS household growth throughout the 2000s have been more reasonable than the growth shown in AHS data.

household income. On a household basis, these variables were among the most highly correlative with remodeling expenditures. Only homeowner households were included in the study sample since AHS remodeling data are collected for homeowners but not renters. Furthermore, homeowners make up the large majority of those participating in the remodeling market and typically spend twice as much on home improvements on a per unit basis as owners of rental units according to historical data from the Census Bureau's discontinued C50 report *Expenditures for Residential Improvements and Repairs*.

To update the household weights to reflect the current metro areas, the AHS household weights were adjusted using household data from the US Census 2005 American Community Survey (ACS). Although the ACS does not collect data on remodeling expenditures, it has a large sample size and robust data on household characteristics at the 2003-defined metropolitan statistical area level. ACS data from 2005 were used since it is a mid-point in the AHS survey data years (2001-2009) and the housing and household characteristics that we are interested in – the year the home was built, structure type, and household income – vary minimally from year to year within metro areas.[6] For each metropolitan area, the AHS data were adjusted to match ACS data on the number of homes built within each decade, the number of homes by structure type, and the number of households within various income brackets. For example, if the AHS data under-represented homes built in the 1970s in a certain metro area, the observations for which homes were built in the 1970s would all be given proportionally larger household weights. Each of the household characteristics used from the ACS was given equal influence on the final weighting.

Once the household weights have been adjusted, each observation in the AHS dataset has a new household weight that is used to estimate total remodeling expenditures in each metropolitan area. Since remodeling spending is recorded in the AHS as two-year expenditures, annual expenditures were estimated by reducing the two-year numbers by half. All figures have also been inflation-adjusted to 2009 dollars using the Bureau of Labor Statistics CPI-U for All Items.

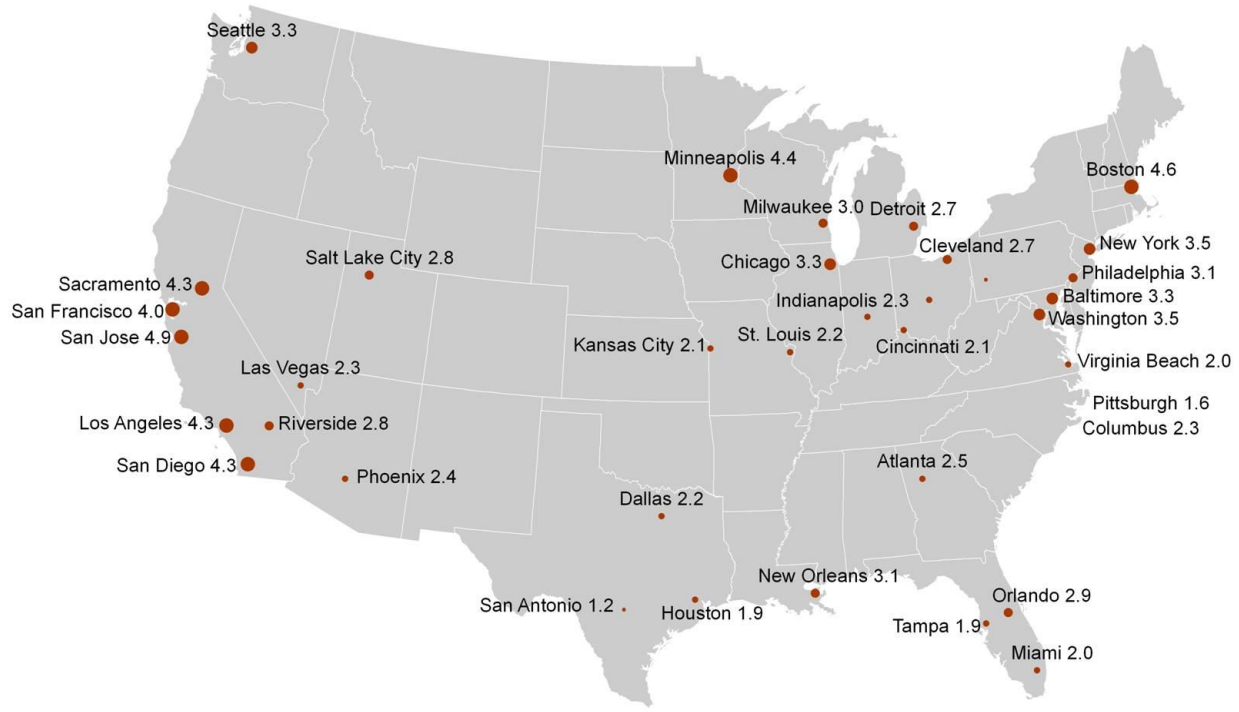
[6] Furthermore, metropolitan-level data from the ACS is only available starting in year 2005. Thus, averaging all years of data 2000-9 was not possible.

III. Demographic and Economic Influences on Home Improvement Spending, 2000-2009

The national remodeling market is a product of regional and local factors which are not immediately apparent when observing activity at the national scale. Metro-level analysis thus provides a sharper lens for viewing and understanding remodeling cycles. In the decade spanning the years 2000 to 2009, annual per homeowner spending varied greatly across the 35 largest cities, from $1,218 in San Antonio to $4,885 in San Jose [Figure 2].[7] In general, per household spending was higher in metros in the West and Northeast than in the South and Midwest, where incomes and home price appreciation rates were generally lower. Overall, expenditure levels were closely linked with the demographic and economic characteristics of these areas, with greater spending in areas with higher incomes, higher home values, and older homes. While this fact alone is not surprising, little research has been conducted to understand to what degree these characteristics relate to differences in remodeling spending over a decade-long period.

[7] These amounts exclude disaster-related expenditures. The AHS questionnaire collects data on repair work after major disasters such as earthquakes, tornados, hurricanes, landslides, fires, and floods. Since this type of activity fluctuates based on weather occurrences rather than demographic or economic characteristics, these expenditures go beyond the scope of this research and are thus excluded from the total remodeling figures reported. See the sidebar on the next page for more detail on the effects of excluding disaster spending.

Figure 2. Top Remodeling Markets are Located Along the Coasts
Average annual homeowner spending, 2000-9 (Thousands of 2009 dollars)



Note: Metros shown are the 35 largest by population for which AHS data are available.
Source: JCHS tabulations of US Census Bureau, 2001-9 AHS.

Total remodeling expenditures skyrocketed in New Orleans in 2006 and 2007 as the after-effects of Hurricane Katrina necessitated large home improvement expenses. Whereas the average homeowner in New Orleans spent $5,193 in the two-year period from 2004-5, this number swelled to $16,676 in the 2006-7 period. Even after averaging the 2006-7 level of expenditures with those from the other years in the decade, New Orleans propelled to the top of the metro list, with the average homeowner spending $5,673 per year from 2000-9. The next biggest spenders - San Jose homeowners - spent an average of $5,064 annually throughout this time period. Excluding disaster spending, however, New Orleans drops to a more realistic 14th place, averaging $3,053 per year per homeowner. Due to such an anomaly, disaster spending is removed from the expenditure amounts reported in this paper. In most other areas, disaster spending is relatively minimal and removing this component does not affect a metro's expenditure ranking much, if at all.

One key driver of home improvement expenditures is household income since these homeowners are more likely to take on discretionary projects in addition to the necessary replacement projects that virtually all homeowners undertake. Moreover, higher income households have the ability to

spend more per project, regardless of the nature of the project. Homeowners in the 10 highest-income metros spent about one-third, or $973, more annually on home improvements than the 35-metro average of $3,033 [Figure 3]. In the high-spending metros of San Jose, San Francisco, and Washington, DC, the median homeowner household income exceeded $100,000, well above the US median of $63,306.[8] In comparison, the median homeowner income in the three lowest-spending metros, Tampa, Pittsburgh, and San Antonio, was $60,870 or lower.

[8] Household incomes are 2009 values from the ACS.

Figure 3. High- and Low-Spending Metropolitan Areas Diverge in Income, Age of Home, and Home Value

Characteristics of 10 Highest-Spending Metropolitan Areas

	Average Annual Spending Per Household, 2001-9 (2009 dollars)	Median Owner Household Income, 2009 (2009 dollars)	Median Year Built of Owned Homes in 2009	Median Home Value, 2000-9 (Thousands of 2009 dollars)
San Jose	4,885	108,662	1971	721.5
Boston	4,583	91,741	1960	392.1
Minneapolis	4,357	78,297	1978	219.1
San Diego	4,348	82,393	1978	490.9
Los Angeles	4,319	82,524	1964	431.8
Sacramento	4,271	76,568	1982	284.3
San Francisco	3,983	100,901	1964	664.5
Washington	3,548	106,976	1980	346.7
New York	3,454	91,541	1958	406.1
Seattle	3,314	83,784	1978	323.7
10 Highest-Spending Metros	4,106	90,339	1971	428.1
Largest 35 Metros	3,033	73,243	1975	253.7
US	2,432	63,306	1976	205.9

Sources: JCHS tabulations of US Census Bureau, 2001-9 AHS; US Census Bureau, 2009 ACS; and NAR Single-Family Sales Price (SA).

Characteristics of 10 Lowest-Spending Metropolitan Areas

	Average Annual Spending Per Household, 2001-9 (2009 dollars)	Median Owner Household Income, 2009 (2009 dollars)	Median Year Built of Owned Homes in 2009	Median Home Value, 2000-9 (Thousands of 2009 dollars)
San Antonio	1,218	60,870	1982	140.5
Pittsburgh	1,585	57,975	1957	121.3
Tampa	1,891	51,698	1981	178.9
Houston	1,903	72,814	1985	153.5
Virginia Beach	2,030	69,317	1979	221.8
Miami	2,046	57,488	1980	286.9
Cincinnati	2,087	67,294	1974	150.8
Kansas City	2,091	68,577	1976	158.9
St. Louis	2,156	65,079	1971	141.7
Dallas	2,173	73,873	1986	154.9
10 Lowest-Spending Metros	1,918	64,499	1977	170.9
Largest 35 Metros	3,033	73,243	1975	253.7
US	2,432	63,306	1976	205.9

Sources: JCHS tabulations of US Census Bureau, 2001-9 AHS; US Census Bureau, 2009 ACS; and NAR Single-Family Sales Price (SA).

Another telling indicator of remodeling spending is home value. In areas with higher home prices, homeowners have more incentive to maintain or increase the value of their homes with more extensive remodeling projects. Homeowners in the 10 markets with the highest home values spent an average of $3,875 per year on remodeling expenses, 84% more than homeowner spending of the 10 markets with the lowest home values, who spent $2,111 annually. Compared with the 35-metro average, homeowners in the 10 markets with the highest home values spent 28% more each year. Home improvement projects also tend to have a higher share of remodeling costs recaptured in increased home values in areas with higher home prices. After ranking the largest metros by median sales price[9], the upper half of metro areas by home values reported average remodeling returns of 100.1% in 2005, according to Remodeling Magazine's Cost vs Value study.[10] This means that on average, in 2005 a homeowner in this metro group could expect to recoup all of the cost of a home improvement project in the estimated value of their home. In comparison, average remodeling returns for the remainder of the metros with lower home values was only 81.9%, a disparity of 18.1 percentage points.

Home values are also an important indicator of remodeling expenditures because houses with higher values may be larger with more features and expensive systems, requiring more costly improvements and repairs. Additionally, more expensive homes are likely to be in areas with higher living costs where home improvement materials and labor expenses are greater. As a result, when home values are higher, remodeling spending is more likely to reach a higher threshold. Indeed, median home values averaged $428,100 in the 10 highest-spending metros, and these areas spend almost twice as much on home improvement activity than the 10 lowest-spending metros where home values averaged $170,900.

The age of the housing stock is another significant factor affecting remodeling activity. Much of the oldest inventory is located in the Northeast and Midwest. Fanning out toward the West and South, homes are newer and require less remodeling to maintain or modernize the stock. Accordingly, as a group, homeowners in the 10 metro areas with the newest housing stocks –

[9] Based on the average NAR median single-family home sales price 2000-2009.
[10] The following metros were excluded because average remodeling returns (the share of remodeling costs recaptured in the home value) were not available for these areas in the Cost vs. Value study: Riverside, CA; San Jose, CA; and Virginia Beach, VA.

areas where the median home was built in the 1980s and 1990s such as Las Vegas, Atlanta, and Phoenix – spent $2,430 on remodeling, equivalent to 20% less than the 35-metro average. Homeowners in areas where the median home was built in the 1950s and 1960s – including metros such as New York, Philadelphia, and Boston – spent an average of $3,268 per year on remodeling spending. This amount is 10% higher than the 35-metro average and 34% above the average expenditures in metros with median homes built in the 1980s and 1990s.

In general, many of the same metros appear again and again in the "highly favorable" categories, defined in this section as higher incomes, older homes, and higher home values. Among the largest 35 metros, Washington DC, San Francisco, Boston, New York, Los Angeles, and San Diego are consistently in the group of metros with the 10 highest median incomes, oldest homes, and highest home values. However, these metros do not rank in the same order for remodeling spending as they do for these metrics, and this is true for all 35 metros. In an effort to disentangle these factors and their relationship to home improvement expenditures, Section 6 of this paper explores which metros are strong in all, some, or few of these metrics.

IV. Differences in Types of Projects Across High- and Low-Spending Markets

In addition to household income and housing stock characteristics, a key difference between high-and low-spending metropolitan areas is the type of remodeling projects that the homeowners undertake. In particular, high-spending metros typically have a larger share of optional or elective projects and more upscale projects. Interestingly, while DIY projects may be more attractive to homeowners aiming to spend less on home improvements, the share of professional versus do-it-yourself project spending does not appear to be closely linked with metro-level expenditures.

From 2000 to 2009, across the 35 metros the average annual share of households undertaking home improvements ranged from 45.7% in New York City to 67.9% in Salt Lake City. However, it is higher project costs, rather than a larger share of households making improvements, that drove up expenditures in the high-spending areas. In the 10 markets with the highest expenditures, 58% of homeowners reported at least some remodeling activity during the 2000s –

which is the same as the 35-metro average and only slightly above the 56% in the bottom 10 markets. In contrast, the homeowners in these high-spending metros that made improvements spent twice as much each year on average ($7,167) than those in the low-spending metros ($3,424).

Higher-cost projects also typically fall into the discretionary rather than the replacement category. Discretionary projects include remodeling work that is optional or elective, rather than the replacement projects necessary to upkeep a home. Projects categorized as discretionary include kitchen and bath remodels and room additions and alterations, whereas replacement projects include work on plumbing, electrical systems, HVAC, roofing, siding, flooring, and insulation. Since discretionary projects are often completed in addition to replacement work, this supplementary amount of spending can propel a metro's average homeowner spending much higher. Among the 10 top-spending metros, the majority of remodeling expenditures was on discretionary projects, with the share of discretionary spending averaging 59%[11] in 2000-9 [Figure 4]. In comparison, the 10 lowest-spending metros spent only 42% of their remodeling dollars on discretionary projects with the majority of home improvement expenditures going toward replacement projects. San Diego and Houston came in with the highest and lowest shares of discretionary spending at 66% and 32%, respectively.

[11] The discretionary share is calculated from the sum of discretionary and replacement spending. Other spending categories are ignored in this analysis.

Figure 4. Total Spending in High-Spending Metros is Driven By Discretionary Projects
Remodeling spending behaviors of 10 highest-spending metropolitan areas, 2001-9

	Average Spending Per Household (2009 dollars)	Share of Spending on Discretionary Projects	Share of Spending on Upscale Discretionary Projects	Share of Households Undertaking Upscale Discretionary Projects
San Jose	4,885	54%	38%	7.3%
Boston	4,583	57%	46%	7.4%
Minneapolis	4,357	62%	47%	9.8%
San Diego	4,348	66%	52%	8.3%
Los Angeles	4,319	59%	45%	7.2%
Sacramento	4,271	60%	47%	6.0%
San Francisco	3,983	60%	47%	7.9%
Washington	3,548	58%	43%	7.8%
New York	3,454	57%	45%	6.5%
Seattle	3,314	57%	44%	7.0%
10 Highest-Spending Metros	4,106	59%	45%	7.3%
10 Lowest-Spending Metros	1,918	42%	23%	3.5%
Largest 35 Metros	3,033	53%	38%	5.5%
US	2,432	51%	33%	4.2%

Notes: The share of spending on replacement projects can be calculated by subtracting the share of spending on discretionary spending from 100%. Upscale discretionary spending is defined as more than $10,000 over a 2-year period.
Source: JCHS tabulations of US Census Bureau, 2001-9 AHS.

In addition to devoting a larger share of their spending to discretionary projects, homeowners in top remodeling markets allocate a greater share of their spending to major or upscale discretionary renovations at the upper-end of the cost distribution. In particular, high-spending metros are home to more households that have expenditures of more than $10,000 over a two-year period. In the 10 highest spending metros, over the past decade, 7.3% of homeowners undertook such high-end discretionary improvements, double the share in the 10 lowest-spending metros. Thus upscale discretionary projects contributed 45% of total remodeling expenditures in the top markets but only 23% in the bottom 10 markets. In the metros of San Diego and Minneapolis, which are among the top-spending markets, upscale discretionary spending from the 15% of households that undertake remodeling projects accounted for about half (52% and 47%, respectively) of all remodeling expenditures.

It might be expected that homeowners in metros that spend more would also be more likely to hire professionals rather than undertake the projects themselves. DIY projects may present cost savings on labor for homeowners and may be an attractive option for those looking to spend less on home improvements. In general, however, there does not appear to be a clear indication that lower-spending metros take on a larger share of DIY remodeling or that households in higher-spending metros have a higher share of expenditures on professionally-completed projects. The data show that homeowners actually opt for professional work in similar proportions among both the high- and low-spending metros. Across the 10 highest-spending metros, the share of professionally-installed remodeling expenditures averaged 81.2%, compared to 79.2% in the lowest-spending metros.[12]

A reason why the share of DIY spending may be only moderately characteristic of low-spending metros is that the nature of many replacement remodeling projects, such as plumbing or electrical replacements, generally requires professional experience. Since these projects make up a large share of remodeling activity in low-spending metros, professionally-installed projects comprise a sizeable portion of home improvement activity even if the desire to save costs through DIY work is there.

V. Spending Throughout the Decade's Housing Bubble and Bust

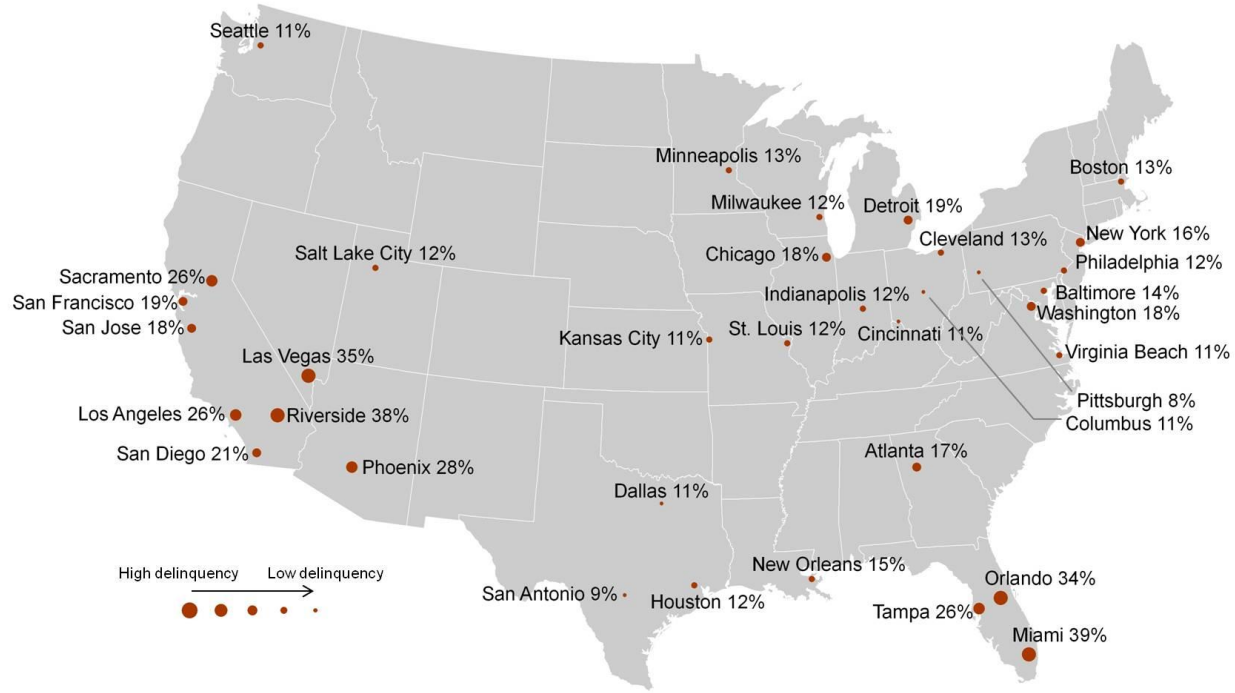
In early 2000s, the US housing market radiated with energy and robust indicators pointed toward strong growth in the coming years. Booming housing markets encouraged home improvement activity and the home improvement industry quickly expanded in the first half of the decade. However, the aftermath of the housing market bust included sharp home price depreciation and soaring mortgage delinquencies in many parts of the country – particularly in those areas where home prices had skyrocketed earlier in the decade. As the housing markets collapsed, home

[12] It is important to note that the DIY share of total remodeling spending is reported at low levels in this paper because expenditures for DIY projects only include material costs in the AHS, whereas spending for professional home improvements include large additional costs such as labor costs and overhead. Therefore, the reported figures are a measure of spending rather than project activity.

investments including remodeling activity tumbled. As a group, total home improvement spending for the largest 35 metros raced upwards from 2000 to 2007, increasing by 34.9%. By 2009, however, home improvement spending had fallen so far that overall decade spending ended only 10.5% above 2000 levels.

As an indication of the troubles beleaguering the housing markets, mortgage delinquencies reached new heights in many areas, moving in tandem with rising unemployment and tumbling home prices. Among the 35 largest metros, CoreLogic reports that the share of mortgages originated in 2006 and 2007 that were at least 90 days delinquent in 2009 ran as high as 39% in the Miami metropolitan area and 38% in the Riverside, CA metro [Figure 5]. Even the metros with the lowest rates had mortgage delinquency rates that were much higher than the norm, with Pittsburgh reaching 8% and San Antonio at 9%. Delinquencies in most metros of the Midwest, and particularly Texas, remained in the 9 to 13% range, but these rates jumped above 25% in many areas of California, Florida, and Arizona.

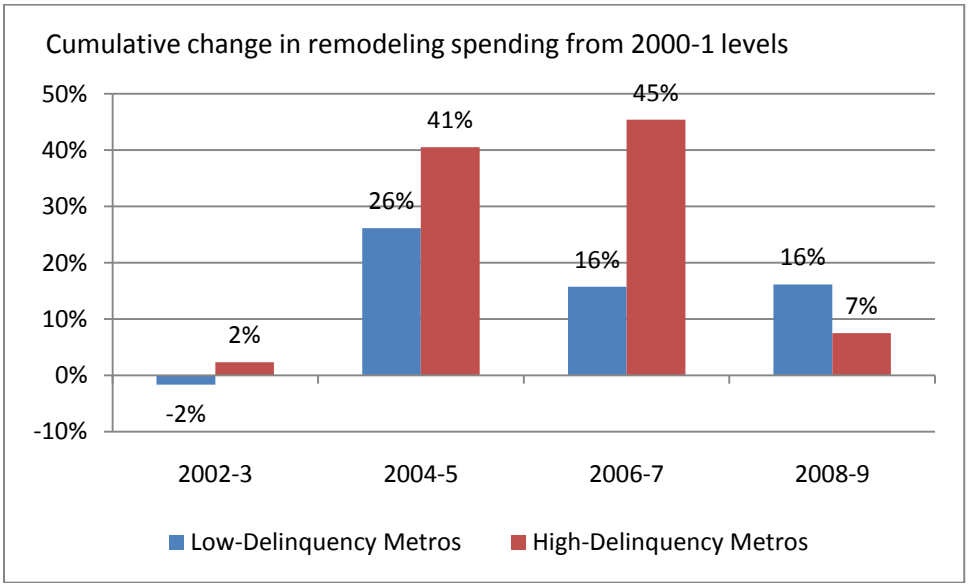
Figure 5. By 2009, More than a Quarter of 2006-7 Vintage Mortgages Were 90+ Days Delinquent In Bubble Metros
Mortgage delinquency rate, 2009



Note: Delinquency rates are of loans originated in 2006 and 2007 and delinquent 90+ days.
Source: CoreLogic.

Coupled with falling house prices and rising unemployment, the increase in loan delinquencies dramatically slowed remodeling activity in these overheated markets. In the wake of the housing crisis, mortgage delinquency rates became a simple but reliable measure of the degree to which a metro was affected by the housing bubble, as well as the strength of a metro's housing market and overall economy. Indeed, the level of home remodeling activity in a metro could be largely estimated by its mortgage delinquency rate. After an astonishing 45% surge in 2000-7, home improvement expenditures in the largest bubble metros, defined here as those with delinquency rates above 14% (the median for the 35 largest metros), lost most of those gains by 2009 [Figure 6]. As a result, remodeling activity in these areas rose only 7.5% from 2000 to 2009.

Figure 6. Remodeling Markets in Metros with Lower Mortgage Delinquencies Fared Better Over the Course of the Decade



Notes: Cumulative change is reported as two-year values because the AHS data on remodeling spending is collected on a two-year basis. Low-delinquency metros are defined as those with 90+ days mortgage delinquency rates of less than 14%. High-delinquency metros are defined as those with 90+ days mortgage delinquency rates of greater than 14%. Delinquency rates are as of 2009 for loans originated in 2006 and 2007.
Sources: JCHS tabulations of US Census Bureau, 2001-9 AHS; CoreLogic.

Markets that did better at avoiding housing bubbles and mortgage problems, however, saw steadier growth in home improvement activity. In metro areas with mortgage delinquency rates below 14% in 2009 – such as Pittsburgh, Dallas, and Houston – spending peaked in 2005, albeit with a smaller cumulative increase of 26% from 2000 levels. But in stark contrast to the areas that had undergone a dramatic boom and bust cycle, these metros emerged relatively unscathed from the remodeling recession. From 2005 to 2009, the low-delinquency metros remained at a steady level of remodeling expenditures, whereas the high-delinquency metros plunged 26%. By 2009, average spending in metro areas with lower mortgage delinquencies was up 16% over the course of the decade, twice the growth among metros with higher delinquency rates.

A large component of these spending changes over the decade was the amount of discretionary spending undertaken by the homeowners. During the housing boom, homeowners in the fast-growing bubble metros[13] increased their discretionary spending by 57.2%, whereas homeowners in the other top 35 metros increased spending by 26.1%. From 2007 to 2009, however, the

[13] Estimated as those with higher mortgage delinquency rates by the end of the decade.

metros facing high mortgage delinquencies saw discretionary spending sink 28.4%. Metros with lower delinquency rates, on the other hand, maintained a small but positive growth of 4.3% over this period. Among the high-delinquency metros, such a dramatic plunge in spending during 2007-9 retracted much of the expansion in the previous seven years. Whereas many metros such as Las Vegas and Tampa were on the trajectory for record remodeling growth in the first half of the decade, the housing bust derailed and erased much of the expansion. By 2009, growth in decade-long discretionary remodeling spending for high-delinquency metros reached only 12.6%, compared to 31.5% among the low-delinquency group.

DIY spending suffered particularly large declines in the 35 largest metro areas over the past decade. Whereas DIY spending grew by 7.5% nationally, it declined by 21.1% in the 35 largest metros, highlighting that professionally-installed projects fueled the growth in total remodeling activity over the past decade. In the half of the metros that experienced more mortgage delinquencies following the housing downturn, DIY spending fell much more than the other metros with fewer delinquency problems. From 2007 to 2009, DIY spending fell 30.8% within the high delinquency group, whereas DIY spending for the other group actually grew by 6.0%. This movement underpins the notion that DIY projects tend to be more heavily concentrated in discretionary project categories and can be postponed when the economic outlook is uncertain.

One spending category that experienced smaller declines in 2007-9 in all regions of the country was energy-related projects, likely due in part to federal tax credits for energy-efficient retrofits. These tax credits refunded households up to 30% of the cost of home improvements that upgrade the energy efficiency of the home's building envelope. These technologies include qualifying heating and cooling equipment, insulation, windows, doors, and roofing. Whereas total remodeling expenditures fell by 18.1% from 2007 to 2009 among the largest 35 metros, replacement projects (a category of projects that include energy-related projects as well as other projects such as plumbing and flooring) fell by 15.2%. More specifically energy-related projects[14], which include the types that qualify for the tax credit, fell by only 10.3%.

[14] Energy-related projects are defined as additions and replacements to (a) the building envelope including roofing, siding, windows, doors, and insulation and (b) energy-intensive systems including HVAC systems and appliances or other major equipment.

VI. Aggregated Remodeling Trends and Indicators of the Top 35 Metro Markets

As this research shows, there are several socioeconomic factors and behaviors observable at the metropolitan level that correlate with remodeling spending. However, many of these characteristics are intertwined, which can complicate the understanding of how they relate to remodeling activity. Metros that spend more are likely to have many of the remodeling-favorable characteristics in combination, rather than scoring high in only one category. Specifically, many metros that have high incomes are also likely to have higher home values. Wealthier metros are also likely to have more to spend on discretionary projects, especially so if they were not as severely impaired by the housing crisis and ensuing mortgage woes. In efforts to disentangle these characteristics to better understand their correlation with remodeling activity, each of the metropolitan areas was scored based on their ranking across a range of metro characteristics.

In Figure 7, the largest 35 metros are listed in the order of highest to lowest spending per homeowner over the 2000-9 period. Each of the top 35 metropolitan markets are also sorted into quintiles for each demographic, economic, or behavior variable. The quintile number is denoted into the appropriate table cells, with 1 indicating the highest (most favorable for remodeling activity) category and 5 indicating the lowest (least favorable) category. In particular, a value of 1 stands for a metro that ranks in the quintile with each of the following characteristics: highest median income, oldest median home age, highest median home value, highest share of discretionary spending, highest share of households doing upscale discretionary remodeling, highest share of professional spending, and lowest delinquency rate. Since there are 35 metropolitan markets and 5 quintile groups, a quintile for each variable includes 7 metros. This exercise helps to pinpoint the remodeling-related characteristics of the high-, mid-, and low-spending areas and how they contrast from one metropolitan area to another.

While many of the metros fall into the expected quintiles for most categories, it appears that mortgage delinquencies are not highly indicative of decade-spanning expenditures. On the one hand, fewer mortgage woes in some metros helped to sustain higher levels of remodeling activity toward the end of the decade. Conversely, the housing bubble metros spent more in the first half of the decade as appreciation took off. These opposing forces thus obscured the relationship of housing market troubles (defined here through mortgage delinquency rates) and home

improvement spending when looking at decade-long spending. For example, the California metros of San Jose, San Diego, and Los Angeles experienced soaring mortgage delinquencies, placing them in the 4th and 5th quintiles in this category and yet they were among the highest-spending metros. Along the same lines, San Antonio and Pittsburgh – the two lowest-spending metros – ranked among the metros with the lowest delinquency rates.

There are also several instances in which high- or low-spending metros rank highly in some categories but lower in others. For example, Pittsburgh and Houston were ranked in the most favorable quintile in median home age and professional share of spending, respectively, and yet placed 34th and 32nd out of 35 metros. In the case of Pittsburgh, a greater share of older homes which are likely to need more upkeep or modernization improvements is not enough to support high levels of remodeling expenditures. This table highlights the idea that a combination of several factors is necessary for greater remodeling activity. Even Dallas, which ranked in the second-highest quintile for median household income, placed in the bottom 10 metros in terms of remodeling spending. It appears that the likelihood for higher remodeling activity in Dallas were hurt by the newer housing stock, lower home values, and lower levels of discretionary remodeling activity. Furthermore, although homeowners in Dallas have relatively higher household incomes, they are less likely to engage in upscale discretionary activity.

Typical of the metros in the middle of the spending rankings is the large range of variation among the characteristics in Figure 7. Riverside and Cleveland ranked 18th and 19th, respectively, and showed some similarities in household incomes and shares of spending on professional remodeling. However, the levels of remodeling activity in these areas appear to be driven by different forces. In Riverside, the homes are much newer but home values were relatively high throughout the decade which likely encouraged investments in the housing stock through remodeling. Cleveland, on the other hand, placed in the lowest quintiles for median home values, but has an older housing stock to maintain.

Figure 7. Remodeling-Related Characteristics of the Largest 35 Metropolitan Areas

	Total Spending, 2000-9 (millions of 2009 dollars)	Average Annual Spending Per Homeowner, 2000-9 (2009 dollars)	Median Owner Household Income, 2009	Median Owned Home Age, 2009	Median Home Value, 2000-9	Discretionary Share of Total Spending, 2000-9	Share of Homeowners Doing Upscale Discretionary Projects, 2000-9	Professional Share of Total Spending, 2000-9	Mortgage Delinquency Rate, 2009
San Jose	17,452	4,885	1	2	1	2	1	1	4
Boston	49,017	4,583	1	1	1	2	1	2	3
Minneapolis	39,179	4,357	2	3	3	1	1	2	3
San Diego	26,241	4,348	2	3	1	1	1	2	4
Los Angeles	92,680	4,319	2	2	1	1	1	3	5
Sacramento	19,993	4,271	2	4	2	1	2	5	4
San Francisco	35,611	3,983	1	1	1	1	1	3	4
Washington	45,166	3,548	1	3	1	1	1	2	4
New York	123,561	3,454	1	1	1	2	2	3	3
Seattle	26,380	3,314	1	4	2	2	2	5	2
Baltimore	21,871	3,269	1	2	2	3	2	1	3
Chicago	74,535	3,251	2	2	2	3	2	4	4
Philadelphia	46,238	3,057	2	1	3	2	2	3	2
New Orleans	8,949	3,053	5	3	4	4	2	5	3
Milwaukee	11,460	3,029	3	1	3	2	4	1	2
Orlando	13,626	2,949	5	5	3	3	3	2	5
Salt Lake City	6,528	2,832	3	4	3	3	3	4	2
Riverside	22,602	2,768	4	5	2	5	4	4	5
Cleveland	15,316	2,712	5	1	5	3	3	5	3
Detroit	33,919	2,705	5	2	5	4	3	3	4
Atlanta	28,791	2,454	3	5	4	2	5	1	3
Phoenix	23,160	2,406	4	5	3	3	4	2	5
Indianapolis	9,973	2,297	4	3	5	5	5	4	2
Columbus	9,955	2,269	3	3	4	1	4	1	1
Las Vegas	8,447	2,264	4	5	2	4	3	3	5
Dallas	27,557	2,173	2	5	4	4	4	1	1
St. Louis	16,948	2,156	4	2	5	3	3	4	2
Kansas City	10,963	2,091	3	3	4	5	4	5	1
Cincinnati	11,245	2,087	4	2	5	4	3	2	1
Miami	27,538	2,046	5	4	2	4	5	4	5
Virginia Beach	7,989	2,030	3	4	3	4	5	3	1
Houston	21,680	1,903	3	5	4	5	5	1	2
Tampa	14,692	1,891	5	4	4	5	4	5	5
Pittsburgh	10,846	1,585	5	1	5	5	5	5	1
San Antonio	5,229	1,218	4	4	5	5	5	4	1

Notes: Median home value is the annual median single-family sales price of the metropolitan area, averaged from years 2000 to 2009. Mortgage delinquency rate is the share of 2006 and 2007 vintage mortgages that were 90+ days delinquent by 2009. Sources: JCHS tabulations of US Census Bureau, 2001-9 AHS; US Census Bureau, 2009 ACS; NAR Single-Family Sales Price (SA); and CoreLogic.

VII. Summary

Home improvement activity has varied substantially across the largest 35 metropolitan areas during the 2000-9 decade. At the metropolitan level, it is clear that the demographic characteristics and economic conditions of an area have a strong relationship with remodeling expenditures in which higher-spending metros are likely to have wealthier homeowners, higher home values, and older homes. In comparison to the 10 metros where homeowners spent the least on home improvements, the 10 highest-spending metros were much wealthier, with homeowners averaging $25,840 more in annual incomes. The median home value also averaged 2.5 times higher – equivalent to an additional $257,200– in the 10 highest-spending metros than the 10 lowest-spending metros. The housing stock in the high-spending metros was also about 6 years older than in the low-spending metros.

Moreover, the types of remodeling projects that high-spending metros undertake vary from those of low-spending metros. Metros that show higher remodeling spending per homeowner often undertake more discretionary or elective projects in addition to the replacement projects necessary to maintain a home. The 10 top-spending metros spent 59% of their remodeling dollars on discretionary improvements whereas the share of discretionary spending averaged only 42% in the 10 lowest-spending metros. In these low-spending areas, the majority of home improvement expenditures went toward replacement projects, indicating that fewer homeowners were taking on projects outside basic upkeep projects. Furthermore, the highest-spending metros were likely to allocate a larger share of total spending to major or upscale discretionary renovations. In the 10 highest-spending metros, 45% of remodeling spending went toward discretionary projects totaling more than $10,000 over a two-year period. In comparison, total remodeling projects in the 10 lowest-spending metros comprised of a greater share of small projects, and only 23% of total remodeling dollars were spent on these large upscale projects.

Looking across time, remodeling spending has also fluctuated widely among the 35 largest metros. In the metropolitan areas affected by housing bubbles, remodeling spending peaked at an average of 45% above 2000 levels before plunging to end the decade with little overall growth. In comparison, changes in remodeling spending have been less dramatic in areas less severely affected by housing bubbles and mortgage delinquency problems. Remodeling spending in these

areas peaked at 26% above 2000 levels but fell much less sharply by 2009. As a result, the slow-and-steady metros ended the decade with 16% growth, twice as high as the 7% growth in the bubble metros where remodeling activity was quick to grow and fall.

Using the Census Bureau's American Housing Survey, this research shows that home improvement behavior can vary by a large magnitude across metropolitan areas, interacting extensively with local area characteristics. By exploring remodeling activity at a smaller geographic scale, this research takes a step toward better understanding the drivers of remodeling cycles both locally and nationally. One area for future research is remodeling spending in areas outside the largest 35 metros, including the smaller metros and non-metro areas. While national remodeling expenditures grew from 2005 to 2007, spending in the largest 35 metros remained at stationary levels. This indicates that the growth during this time period was driven by remodeling spending in the areas outside the largest 35 metros. It would be interesting to gain more insight into the drivers of growth in these areas over the 2000-9 decade to juxtapose with home improvement activity in the largest 35 metros.

Appendix A

Boundary Map of the 35 Major Metropolitan Area Included in the Analysis

Note: The metropolitan boundaries are the 2003 core based statistical area boundaries created from the 2000 Decennial Census.
Source: US Census Bureau.

Appendix B

Full names of the 35 Major Metropolitan Areas Included in the Analysis

Short name	Full name of metropolitan area
Atlanta	Atlanta-Sandy Springs-Marietta, GA
Baltimore	Baltimore-Towson, MD
Boston	Boston-Cambridge-Quincy, MA-NH
Chicago	Chicago-Naperville-Joliet, IL-IN-WI
Cincinnati	Cincinnati-Middletown, OH-KY-IN
Cleveland	Cleveland-Elyria-Mentor, OH
Columbus	Columbus, OH
Dallas	Dallas-Fort Worth-Arlington, TX
Detroit	Detroit-Warren-Livonia, MI
Houston	Houston-Sugar Land-Baytown, TX
Indianapolis	Indianapolis-Carmel, IN
Kansas City	Kansas City, MO-KS
Las Vegas	Las Vegas-Paradise, NV
Los Angeles	Los Angeles-Long Beach-Santa Ana, CA
Miami	Miami-Fort Lauderdale-Pompano Beach, FL
Milwaukee	Milwaukee-Waukesha-West Allis, WI
Minneapolis	Minneapolis-St. Paul-Bloomington, MN-WI
New Orleans	New Orleans-Metairie-Kenner, LA
New York	New York-Northern New Jersey-Long Island, NY-NJ-PA
Orlando	Orlando-Kissimmee, FL
Philadelphia	Philadelphia-Camden-Wilmington, PA-NJ-DE-MD
Phoenix	Phoenix-Mesa-Scottsdale, AZ
Pittsburgh	Pittsburgh, PA
Riverside	Riverside-San Bernardino-Ontario, CA
Sacramento	Sacramento--Arden-Arcade--Roseville, CA
St. Louis	St. Louis, MO-IL
Salt Lake City	Salt Lake City, UT
San Antonio	San Antonio, TX
San Diego	San Diego-Carlsbad-San Marcos, CA
San Francisco	San Francisco-Oakland-Fremont, CA
San Jose	San Jose-Sunnyvale-Santa Clara, CA
Seattle	Seattle-Tacoma-Bellevue, WA
Tampa	Tampa-St. Petersburg-Clearwater, FL
Virginia Beach	Virginia Beach-Norfolk-Newport News, VA-NC
Washington	Washington-Arlington-Alexandria, DC-VA-MD-WV

A complete list of the counties that comprise these metropolitan areas can be found in the December 2009 OMB Bulletin No. 10-02 at http://www.whitehouse.gov/sites/default/files/omb/assets/bulletins/b10-02.pdf