NOTEBOOK

SEPTEMBER 1999

EDITED BY PETE YOUNG & MARTIN HOLLADAY

Harvard Reports on Remodeling Industry

Small companies dominate, but will find it harder to compete, report predicts

Remodeling contractors should aim their marketing efforts at middle-aged families who have recently had a baby. That's just one of the deductions readers can make from "Improving America's Housing," a recent study conducted by the Joint Center for Housing Studies at Harvard University. Without collecting any original data, researchers analyzed existing sources — most important were the 1993 and 1995 American Housing Surveys from the U.S. Dept. of Housing and Urban Development — to reach conclusions on the size, nature, and future of the remodeling industry.

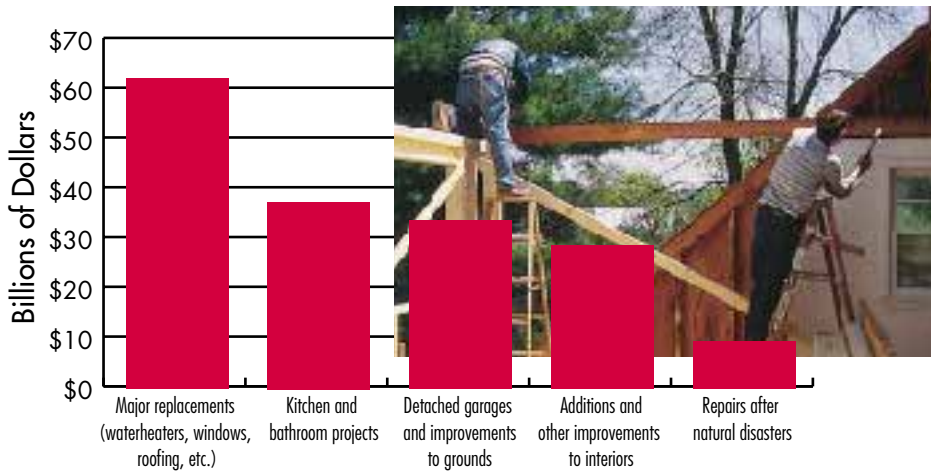
Remodelers making long-term business plans will find some useful statistics:

- Over 75% of homeowners who have had a child within the past two years report a home improvement. This group spends 40% more than those who have not had a child within the past two years.
- Home buyers spend an average of $2,000 more on remodeling during the first two years of home ownership than at any other time. The longer people live in their homes, the less likely they are to remodel.
- The typical homeowner between the ages of 35 and 44 spends twice as much on home improvements as the typical homeowner over the age of 64.

Lots of small companies. One surprising statistic in the Harvard report is the number of active U.S. remodeling companies, which at 800,000 is higher than

continued on next page

Amount Spent in the U.S. on Remodeling Projects in 1995



All Weather, All the Time

As if radio, cable TV, and weather Web sites weren't enough, a company called DTN Contractor Weather is offering a new service for builders who want detailed up-to-the-minute weather forecasts.

For $86 to $100 a month, plus start-up fees of $385, DTN sets customers up with a 3-foot satellite dish, a data storage box, and a monitor. The service allows contractors to access continuously updated data from the National Weather Service — including moving radar images, satellite cloud maps, and severe weather alerts. Forecasts cover 90 days.

According to DTN, which claims it has 18,000 subscribers, some roofing contractors and excavation contractors are finding that the service helps with their bottom line by making it possible to avoid the expense of sending a crew out to a job site when weather won't permit productive work. The equipment isn't mobile, however, so it's not much help for smaller companies with no full-time office staff to call out warnings.

continued from previous page

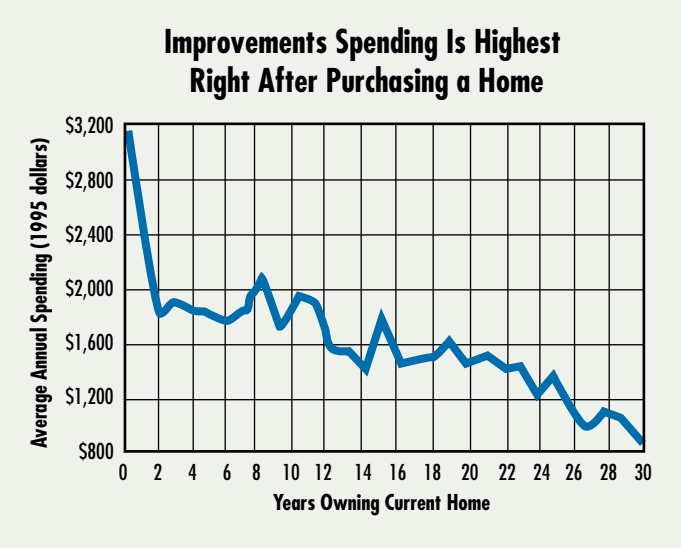
many recent estimates. The report also sheds light on the size of remodeling companies, claiming that "70% are self-employed individuals," and that 73% report annual revenues of less than $250,000.

As the report moves from statistics to analysis, however, its conclusions are less reliable. For example, the report speculates that so many people start remodeling companies because "entering the business is relatively easy, requiring little capital and no formal training." In support of this idea, the study notes that 30 states either have no licensing laws or no licensing examination, but does not compare the number of remodeling companies between states with and without licensing requirements.

And while the study is technically correct in pointing up the lack of "formal training," it does not acknowledge that many people enter the remodeling business after working as carpenters, sometimes for years, and that many have had extensive, if informal, on-the-job training from their employer or experienced co-workers.

Companies that "fail." Remodelers have long been cautioned about the high failure rate in the industry, but reliable numbers have been hard to come by. Unfortunately, the Harvard study does little to remedy this situation. The study uses figures from the Census of Construction Industries that show that "of the roughly 97,000 contractors that specialized in remodeling in 1987, 53% had failed by 1992."

These numbers may be skewed, however, because the study characterizes any company that closes its doors as a "failure," even when a financially successful remodeler takes a job with another contractor or leaves the business to find a different line of work. "Since these remodeling businesses were closed rather than sold," explained Kermit Baker, project director of the Harvard program that produced the study, "we concluded they had no value as companies, and were therefore failures."



Are Big Boxes Taking Over?

The report notes that installed sales programs by such giants as Home Depot have expanded from single-trade jobs such as replacement siding or windows, to "complicated jobs like whole-kitchen and bath remodels" (see *Notebook*, 3/99). For reasons that are not explained, however, the study foresees success and growth for these installed sales programs, and predicts that, "As retailers and distributors expand their installed sales programs (selling branded home improvement products and then arranging for installation), remodeling contractors will be under greater pressure to consolidate." The study further predicts that "larger, more established firms will enjoy a competitive advantage as homeowners increasingly look for reputation and warranties over price in making their contracting choices."

But the study provides no data to show that any large chain stores do, in fact, have a solid reputation for quality remodeling work. When Baker was asked to name companies other than Home Depot that are part of the installed-sales trend, the only name he came up with was Sears, one of the sponsors of the Harvard study. Baker explained that the source of the installed-sales analysis was Walt Stoeppelwerth, a well-known industry consultant. When Stoeppelwerth was asked if he knew of any data on the growth of installed sales, he answered, "It's difficult to get hard numbers. I don't think anyone has quantified the amount."

Crystal Ball Gazing

Other predictions about the future of remodeling appear to be less conjectural. Using known data on who is likely to spend money on remodeling projects, as well as data on the aging of the existing housing stock, the study claims:

- "Growth in spending on remodeling activities should outpace [growth in] spending on home building over the coming decade."
- "On balance, the future looks promising for businesses serving the remodeling market. With the aging of both the population and the housing stock, spending on home improvements and repairs should climb an average of $5-6 billion per year between now and 2010."

A free copy of "Improving America's Housing," can be downloaded from www.gsd.harvard.edu/jcenter; or the report can be ordered for $30 from the Joint Center for Housing Studies, 79 John F. Kennedy St., Cambridge, MA 02138; 617/495-7908.

OFFCUTS

Michigan's new "cost-effective" energy code is the first of its kind to require only those measures that cost less than the energy they save over seven years. The new regulation replaces the Model Energy Code, which the state repealed because of controversial allegations that it added excessive costs to a new house.

Faulty electrical systems cause more than 40,000 residential fires and 350 deaths each year, according to the Consumer Product Safety Commission. Bad plugs and cords cause 32% of these fires. For more information on electrical safety, contact the National Electrical Safety Foundation (703/841-3229; www.nesf.org).

Smaller timber companies will get their fair share of lumber from federal lands, according to new rules for U.S. Forest Service timber allocations that are based on past sales dollar amounts. The former rules, which made allocations based on volume of timber purchased, were biased against mills that produced a small volume of higher quality — and higher priced — material.

Coal Ash Fill Swells, Buildings Razed

Using power plant coal ash as backfill was supposed to convert power company waste into a profit-earning construction site material. Unfortunately, it didn't turn out that way, according to recent articles in Engineering News-Record and the Richmond Times Dispatch. Over $100 million in damages has been tallied so far on construction sites in and around Richmond, Va., all stemming from the use of XtraFill, a fill material produced by a subsidiary of Cogentrix Energy. Different types of ashes in the mix reportedly reacted to form ettringite, a substance that can expand to twice its original volume within 30 days of mixing by chemically bonding with water molecules. Ettringite, which expands with enough force to crack concrete slabs and foundations, is typically used as an impermeable surface, such as when capping landfills and building roads.

In one case, five of seven buildings in the Genito Glenn apartment complex had to be demolished after the foundations and framing were damaged beyond repair. In another instance, a newly built Home Depot store had to be closed after slab elevation differences of several inches developed, moving structural columns.

Although coal ash can be a stable fill product, the use of a particular ash from power plants that use smoke stack scrubbers leads to the ettringite phenomenon. Area power plants now find themselves paying to dispose of ash instead of earning added revenue selling it. And the owners of damaged buildings find themselves in court trying to recoup losses.

AC HISTORY LESSON

GE's air-conditioning system was considered a luxury when this 1967 photo was taken. Stay Cool, a National Building Museum exhibit, explores the history of AC.

If you're passing through D.C., check out the history of AC. Giant hvac ducts serve as the entrance to *Stay Cool! Air Conditioning in America*, a National Building Museum exhibit where visitors can learn how artificial weather has transformed architecture. While air conditioning had the most dramatic effects on glass skyscrapers and other commercial structures, the exhibit also shows how on-demand cool air influenced residential design. For example, AC made possible the common ranch house design, which discontinued natural cooling features such as wide eaves, deep porches, thick walls, high ceilings, and cross ventilation.

The exhibit includes murals, artifacts, and television commercials, as well as actual AC equipment — all with interactive displays. Admission is free (401 F St., NW, Washington, D.C. 20001; 202/272-2448; www.nbm.org).

How Strong Are Masonry Walls?

Masonry wall failures intrigue Clayford Grimm, a consulting architectural engineer from Austin, Texas. Grimm, who likes to clip newspaper reports of brick facade failures, says that heavy windstorms have been known to "suck the bricks right off of buildings." As Grimm explains in a recent *Southern Building* article, one possible reason for these failures is that the existing codes for brick construction are based on optimistic assumptions that do not account for the effects of water saturation or quality of workmanship.

When a brick wall is saturated, as it might be during driving rain, Grimm reports that it is only 83% as strong in compression as when dry. Grimm also presents data showing that a poorly constructed brick veneer wall is only 50% to 70% as strong as a well-built one. Common examples of poor workmanship include unfilled mortar joints, laying bricks that are too dry, using over-sanded mortar, making fat mortar joints, and creating walls with bows.

Taken together, these figures led Grimm to conclude that the tested average compressive strength of dry brick masonry of good workmanship should be cut in half to approximate the strength of saturated brick masonry of poor workmanship. The new *1999 Building Code Requirements for Masonry Structures* assumes that average brick laid in ASTM C 270 Type S mortar has a compressive strength of 3,790 psi. Grimm notes that while dry walls of good workmanship exceed this standard (averaging 5,370 psi), when cut in half to 2,685 psi to account for potentially poor workmanship and water saturation, the resulting compressive strength falls nearly 30% short of the code assumptions.

Poor workmanship and wind-driven rain may reduce the strength of masonry walls to levels below code. Corrosion of galvanized steel brick ties can also lead to failure.

Rusting brick ties. In another recent article, which ran in *The Construction Specifier*, Grimm and co-authors Paul Marenbrecher and Rejean Brousseau argue that common galvanized steel brick ties are subject to rust. "Cases have been observed where ties have corroded through in less than 10 years," the authors write.

Grimm notes that in Canada, Sweden, Germany, and Switzerland, masonry walls above a certain height must use stainless-steel ties. "When it comes to metal connectors in clay brick and concrete masonry," writes Grimm, "the U.S. is an underdeveloped country."

Professor Max Porter from Iowa State University, chairman of the Masonry Standards Joint Committee that revised the code, says it is "still debatable" whether the U.S. should mandate stainless-steel ties. Concerning Grimm's assertions on the effects of poor workmanship, Porter says, "The code and specifications cannot really anticipate all areas of poor workmanship."

OFFCUTS

1999 housing projections are even higher than in busy 1998. As of the end of May, the U.S. Census Bureau forecast an annual total of 1,409,000 site-built single-family construction starts, up from 1,383,000 in 1998.

Employers will have to pay for all of their workers' protective gear if a proposed OSHA rule passes. Exceptions are safety toe shoes and prescription eyewear. If adopted, the rule will not become official policy for about a year.

Reflective roofing can qualify for the EPA's Energy Star program. Although light-colored shingles are eligible (a sloped roof must have a reflectance of at least 25%), the only companies to apply for certification are metal-roofing producers.

$12 billion is earmarked for Atlanta to help 60,000 low- and moderate-income families make downpayments on homes. The funds come from Fannie Mae.

Remodeling expenditures increased about 1% to $119.5 billion from 1997 to 1998. Of this, 67% was spent on improvements; the rest was spent on maintenance and repairs.

Women are the owners or 50% co-owners of 230,000 construction companies nationwide, according to a Nation's Building News story on the 1992 U.S. Census Bureau's report on women-owned businesses. The article cites an NAHB's Women's Council member, who noted that because women owners sign paychecks, they face fewer obstacles than tradeswomen when entering the industry.

Most Older U.S. Houses Too Leaky

U.S. houses vary widely in their airtightness and "appear to be even leakier than previously estimated," according to a recent study conducted by staff at the Lawrence Berkeley National Laboratory that analyzed blower-door data on 12,946 homes (see chart).

The study found that two-story houses are 11% leakier, on the average, than one-story houses. Houses built on slabs, or above fully-conditioned basements, were 5% tighter than houses with crawlspaces or unheated basements. Surprisingly, homes with duct systems were found to be tighter than houses without duct systems. (The study did not speculate as to why this is so.) Study houses that were measured both before and after weatherization improvements showed that the average retrofit reduced leakage by about 25%.

Air-tightness of U.S. Homes

	Normalized leakage	Air changes per hour @50 pascals
Mean	1.720	29.70
Leakiest house	4.758	83.60
Tightest house	0.023	.047

When the age of the houses was considered, a "break point" was found in 1980. Houses built after 1980 are tighter than average, with the older houses in this group being no leakier or tighter than the newer houses. Houses built before 1980 are leakier than newer houses, and show a clear increase in leakage with increasing age.

Fewer than 10% of the houses tested meet the airtightness standard set by the American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE). According to Max Sherman, one of the study's authors, ASHRAE's standard varies from region to region, requiring tighter houses in more severe climates.

TAX TALK

Separating Business from Personal Expenses

by Milton Zall

Operating a business out of your home or one where you can mix business with personal activities may seem convenient, but unless you keep complete records that segregate the two types of expenses, you could be asking for trouble.

A recent Tax Court decision illustrates this issue quite well. The case involved a husband and wife who operated a daycare service in their home. In addition to deductions for various business expenses such as advertising and vehicles, they deducted nearly $5,500 in entertainment and exercise equipment, more than $7,000 for groceries, about $15,000 for legal and professional services that included the cost of several home improvements (landscaping and a deck), and meal and entertainment expenses that included about $2,000 for video rentals.

In court, the taxpayers established legitimate reasons for some of these expenses — most of the groceries, for example, were used to feed the daycare children — but failed to prove that other questionable expenditures were "ordinary and necessary" for their business. The Court found the taxpayers liable for additional taxes plus interest, and also imposed a negligence penalty.

A comparable scenario for a builder might be to remodel part of his home for use as a home office, redo his kitchen and bath, then write it all off as a business expense. If the IRS asks, the builder might say that meals for clients were prepared in the kitchen and that clients visiting the office used the bathroom facilities. Unfortunately, that dog won't hunt. The IRS and the courts are alert to the considerable opportunities for deducting personal expenses and do not have to allow any deduction if you cannot prove the amount and show that the expenditure is an ordinary and necessary business expense.

Paper trail. Typically, a business expense must be verifiable through a canceled check or receipt. But if you don't keep good records, you run the risk of having a legitimate business expense disallowed because you can't show what portion of your outlay was business and what portion was personal.

When a single invoice mixes personal and business expenses, it's best to pay the invoice with two checks, one business, one personal. If that's impractical, then separate subtotal business and personal amounts and record them in a journal or on your checkbook stub. Do this at the time of the transaction so it's clear you didn't go back afterwards and "plug" a documentation gap. For example, if you receive an invoice from a lumberyard that itemizes materials used for both a personal remodel and a paying client, you are expected to annotate the invoice on the day you get it, separating the business portion from the personal portion.

Milt Zall *(miltzall@pop.dn.net) is a Certified Internal Auditor and a Registered Investment Advisor based in Silver Spring, Md. He can be reached at 301/649-6044.*

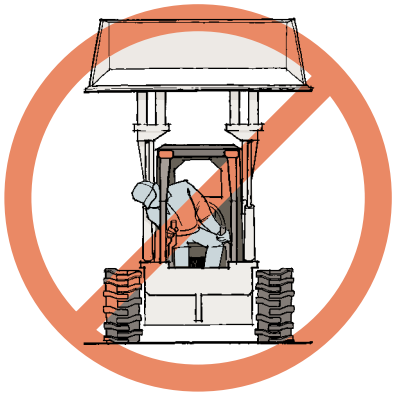
Government Warns of Deadly Skid-Steer Mishaps

by Ted Cushman

Six fatal accidents involving skid-steer loaders would not have occurred if operators had followed safe practices, according to a safety alert issued recently by the National Institute for Occupational Safety and Health (NIOSH). Along with a summary of safety rules and practices, the NIOSH document describes in detail the deaths of two farmers, three landscaping employees, and a tree service worker, all killed while operating skid-steer loaders.

One landscaper was killed while using the machine's bucket to compact finish fill; the man backed the skid-steer up over the foundation and died when the rig flipped over into the basement (he was not wearing the seat belt).

Most of the deaths, however, resulted from the loader's powerful arms and bucket striking, pinching, or crushing unwary operators. The tree service worker's skull was crushed when he stuck his head outside the operator's compartment (according to NIOSH, the side screens had been removed). A sudden loss of hydraulic pressure may have caused the arm to drop and crush the man's skull, according to investigators.



In separate incidents, two workers were crushed to death while trying to clean ice or mud from the foot controls of a skid-steer with the engine running, while positioned under the raised bucket. Each victim had defeated a safety device — one had jammed a glove into a seat-belt interlock switch, and the other had exited the cab by squeezing around the safety bar. Neither worker had engaged the lift-arm supports, which lock the arms in the up position. Each man died by unintentionally activating the lift-arm controls, allowing the bucket to drop.

For a full copy of the alert, contact NIOSH at 800/356-4674 or visit the NIOSH home page at www.cdc.gov/niosh.

Ted Cushman, *of Great Barrington, Mass., is a freelance photojournalist and frequent* JLC *contributor.*

Southern California to Ban Smog-Producing Paints

In an attempt to curb smog-producing emissions, California's South Coast Air Quality Management District (AQMD) has enacted a new rule that will strictly limit the emission of volatile organic compounds (VOCs) in all paints. According to an article in the *National Home Center News*, paint manufacturers have until 2002 to develop and introduce lower-VOC alternatives to their current products. By 2006, the regulations call for even more drastic reductions. Many types of both water- and oil-based paints are affected. It is estimated that about half of all paint currently sold in California will no longer be available in the affected counties after the ban goes into effect, including most enamels, stains, sealers, and many primers. The AMQD estimates that the new paint regulations will eliminate the equivalent daily emissions of 1.2 million passenger cars, while raising prices around 30%.

The National Paint and Coating Association (NPCA) has filed a lawsuit alleging that the recently enacted AQMD regulations are too strict. The paint manufacturers contend that low-VOC paints are not as easy to handle and apply, and are not as durable over time.