

THE IMPACT OF “BIG-BOX” BUILDING MATERIALS STORES ON HOST
TOWNS AND SURROUNDING COUNTIES IN A MIDWESTERN STATE

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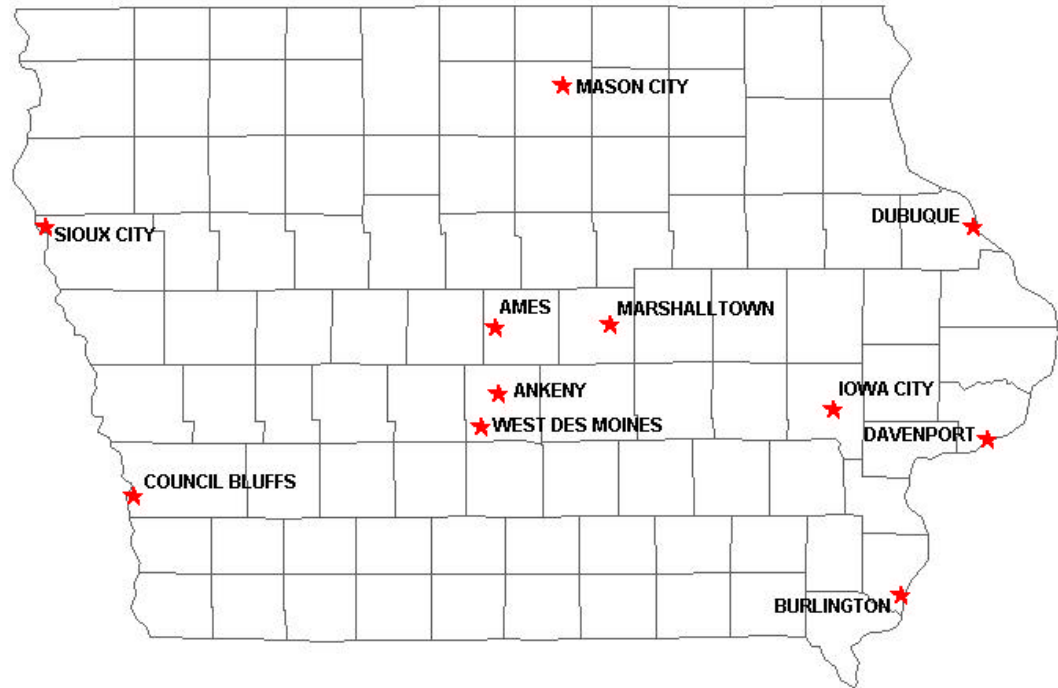
Background

In the last 10 or so years, “big-box” building materials stores such as Home Depot, Lowe’s and Menard’s have proliferated in many regional trade centers across the Midwest. Many economists believe that the zero-sum-game theory applies in situations such as these, namely that the sales gains enjoyed by the big-box stores are offset by similar losses by smaller existing building materials firms in the surrounding area. Many developers, however, claim that new and bigger stores only increase the demand and existing building materials dealers will not be harmed.

Earlier studies of the economic impact of "big-box" discount general merchandise stores, such as Wal-Mart, by the authors, showed a negative effect on existing businesses in the host town and surrounding smaller towns. However, since the impact was spread over so many stores, it was not always clear of the exact source of the change. In the case of big-box building materials stores, however, the impacts are constrained primarily to one merchandise category and the results should be more conclusive than with the discount general merchandise stores.

This study examined several cities in Iowa, where big-box stores have opened in the last decade and the theory of zero-sum-game was tested.

Figure 1. Location of Study Towns



Data Sources

Iowa Sales and Use Tax Reports published by the Iowa Department of Revenue and Finance were used to determine retail sales of building materials. The sales tax reports are published each year for every town and county in the state. For towns over 2,500 population and for counties, sales are reported by merchandise categories (building materials, food, general merchandise, home furnishings, apparel, etc.). These categories are by two-digit NAICS codes (North American Industry Classification System). The primary stores in the building materials category are lumberyards, hardware stores, paint and glass stores and the new big-box home improvement stores.

U.S. Census of Population was used as a source of population for towns and counties. The actual census figures were used for 1990 and 2000. Census estimates were used for interim years.

Sales and Marketing Management Magazine, Survey of Buying Power, was used as a source for income. The *Survey of Buying Power* is published annually and uses models to estimate various sales and demographics in the years between census years. Baseline data for this report comes from the *U.S. Census of Population*, the *Census of Retail Trade* and the *Census of Service Businesses*.

Methods

State sales tax data were used to establish baseline conditions in each area where a big-box building materials store opened. In addition to collecting standard data such as total sales, per capita sales and pull factors, the “sales surplus or leakage” was determined for the host town and county as well as for surrounding counties. Sales surplus or leakage is a very precise measure of trade capture since it considers population changes, income changes and statewide spending changes. It is determined by comparing a county’s potential sales to its actual sales. Potential sales is the estimated amount that residents of a county spend in various types of stores and is determined by the following equation:

$$PS(c) = POP(c) \times PCS(s) \times II(c)$$

Where: PS(c) = Potential sales for county building materials firms

POP(c) = Population of the county

PCS(s) = Per capita sales of building materials stores, statewide

II(c) = Index of income for the county (county average income divided by statewide average income)

The surplus or leakage of sales for building materials firms was then computed for each succeeding year after the opening of the big-box store and the results compared. The results are depicted in graphic format and show that the host town and county enjoy large gains in building materials sales and conversely, the surrounding counties suffer substantial losses of building materials sales. The results will attempt to show the dynamics of competing big-box stores. Some early host towns enjoyed large initial gains in building materials sales, but as big-box stores opened in competing trade centers, they captured sales from the early host towns.

Pull factors were computed for building materials for host cities before and after the opening of the big box stores. The pull factor is a city's per capita sales divided by statewide per capita sales. For example, if a city had per capita sales of \$1,000 per year and the statewide per capita sales were \$500, the pull factor would be $\$1,000$ divided by $\$500 = 2.0$. The interpretation is that the city was selling building materials to 200 percent of the city's population in full-time customer equivalents. The pull factor is a very accurate proxy measure of the size of the trade area. It accounts for changes in population and spending patterns.

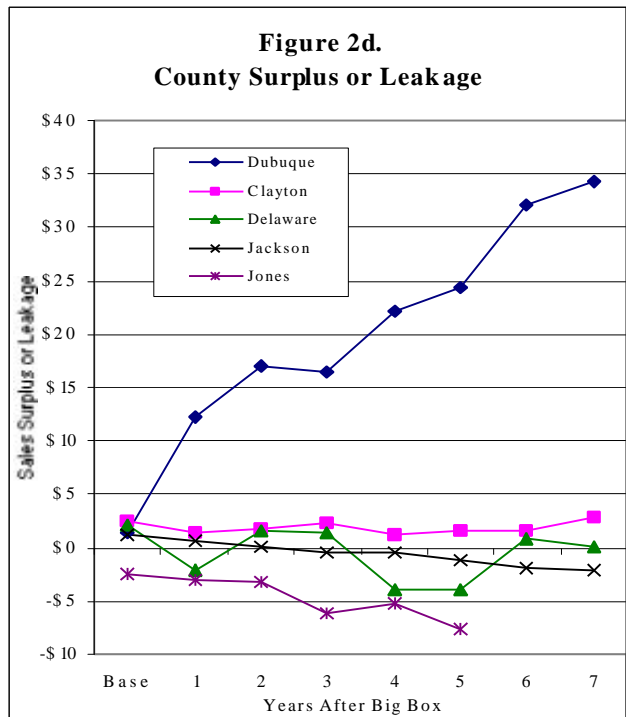
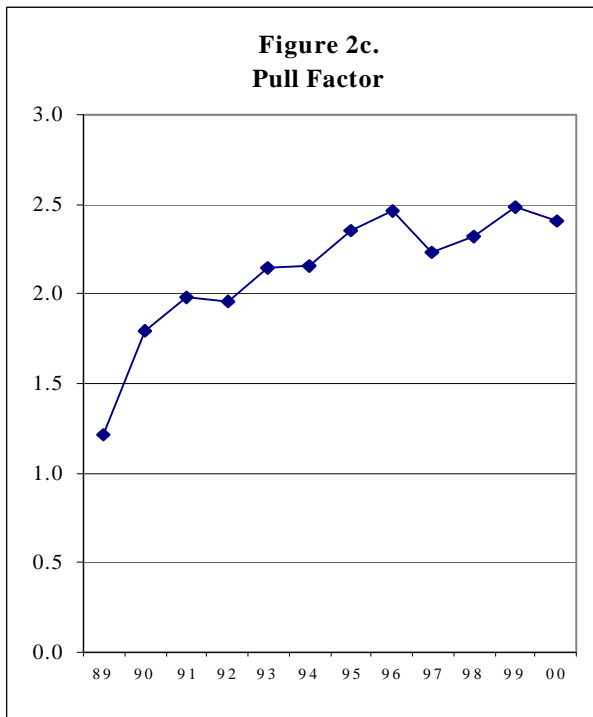
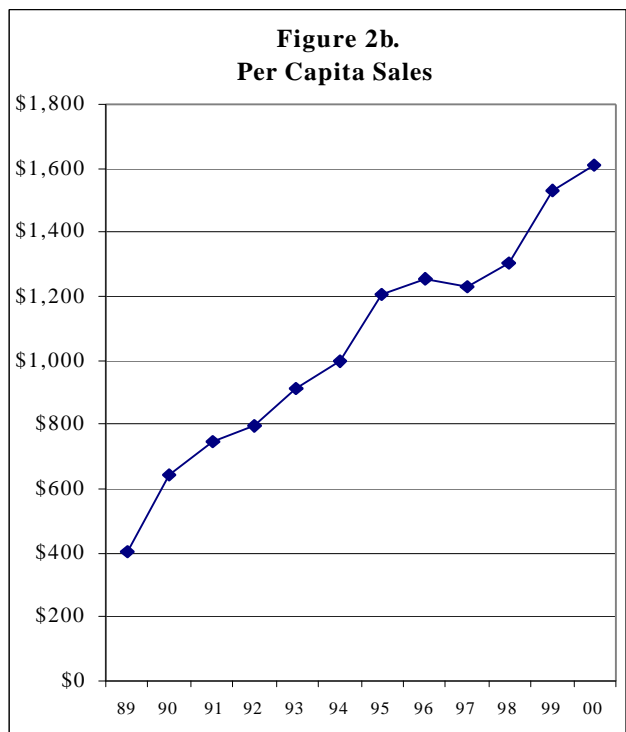
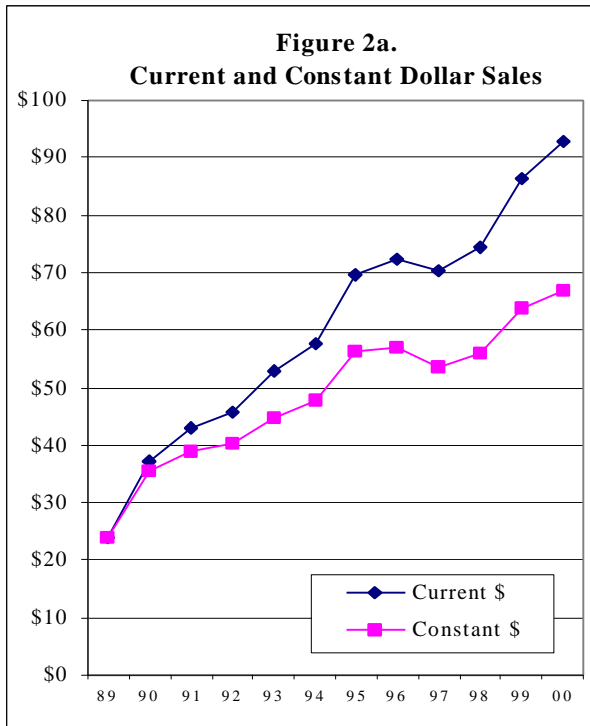
Findings

Big-box building materials stores were opened in 11 Iowa cities in the decade of the 1990s. The year before the opening was established as the base year and the changes in building materials surplus or leakage were established in succeeding years. The results from the counties with the most recently opened stores were not factored into the results because they shared adjacent counties. The building materials surplus or leakage for three to seven (depending on the geography of the area) adjacent counties was also determined. Figure 1 is an Iowa map that shows the locations of host cities. Results in order of store opening are discussed below.

Dubuque

Dubuque had a 2000 population of 57,686. Figure 2a shows the current and constant dollars for building materials sales for Dubuque for 1989 (the year before Menard's opened a home improvement store) and for several years afterward. Current dollar sales were \$23 million the year before Menard's opened, but increased fairly steadily to \$93 million by 2000. As would be expected, constant dollar sales increased during the same period. Per capita sales increased from \$400 in 1989 to \$1,600 in 2000. The pull factor increased from 1.2 (selling to 120 percent of the city population in full-time customer equivalents) in 1989 to 2.4 by 2000. Figure 2d shows the building materials surplus or leakage for Dubuque County and four other adjacent counties. Dubuque County had a building materials surplus of less than \$2 million in 1989 (the year before Menard's opened), but the surplus grew to nearly \$35 million by 2000.

Economic Impacts of Big Box Store in Dubuque, Iowa



Conversely, all the adjacent counties experienced some deterioration of their surplus or leakage situations, with the exception of Clayton County where a slight surplus increased by approximately \$ 1 million over the seven years.

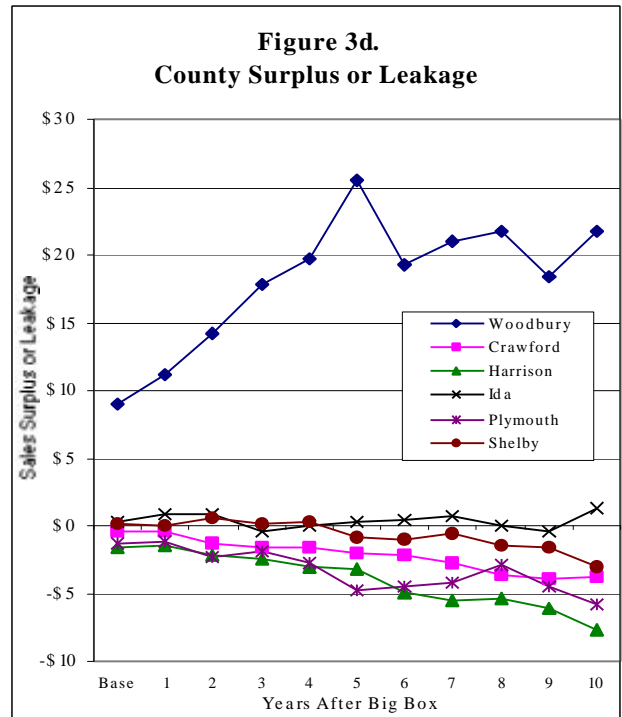
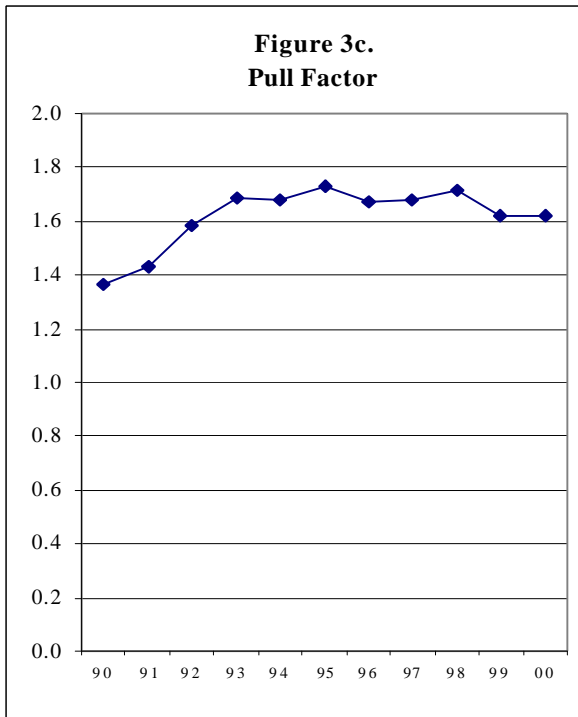
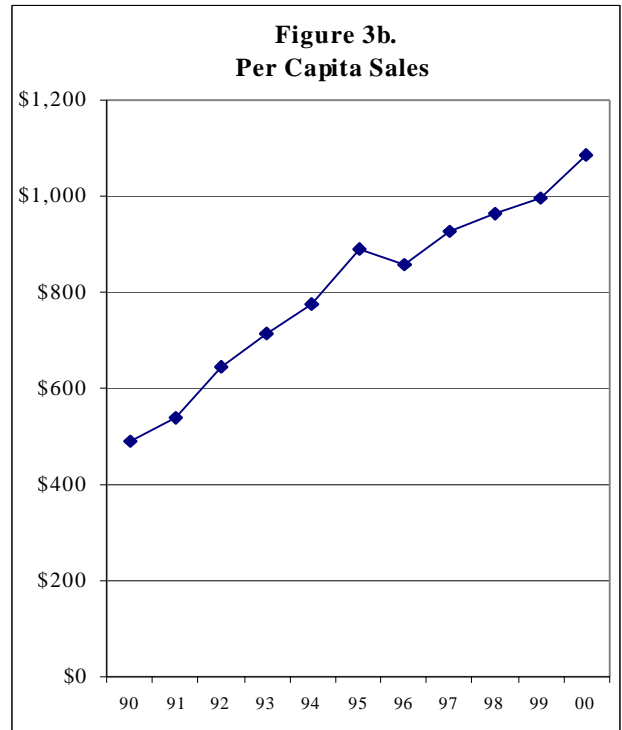
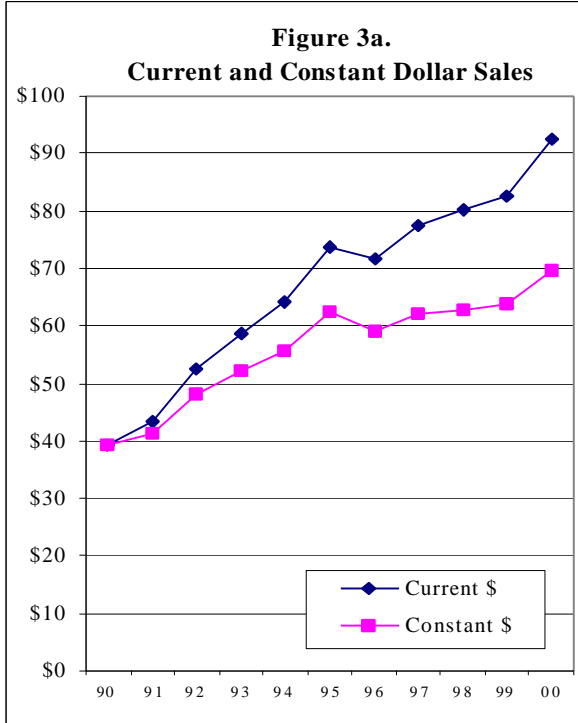
Sioux City

Sioux City had a 2000 population of 85,013. Figure 3a shows that after a Menard's building materials store opened, current dollar sales for Sioux City increased from \$40 million in 1990 to over \$90 million in 2000. Figure 3b shows a nice growth in per capita sales for Sioux City from \$500 in 1990 to \$1150 in 2000. Figure 3c shows the pull factor growing from 1.35 to a peak of 1.75. Figure 3d shows that Woodbury County's (the home of Sioux City) building materials surplus climbed from \$9 million in the base year (1990) to \$22 million in 2000. Leakage for four of the five adjacent counties continued to deteriorate. However, Ida County went from no surplus in 1990 to \$2 million in 2000.

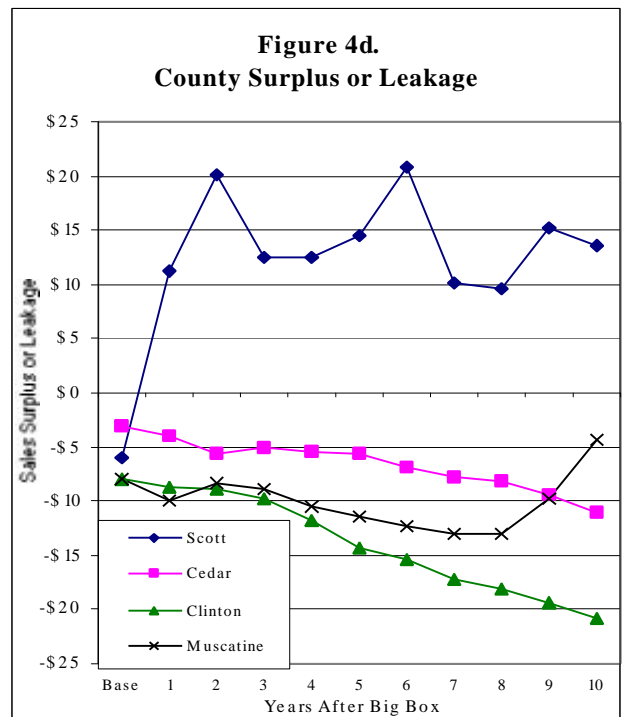
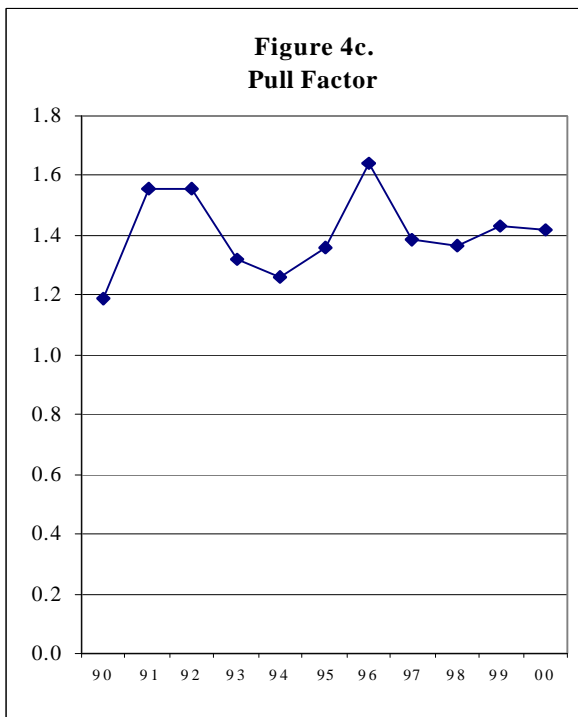
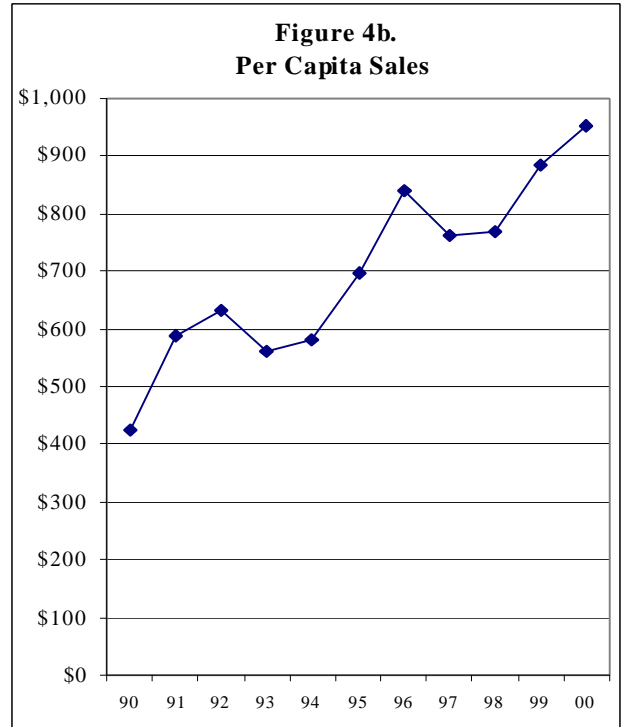
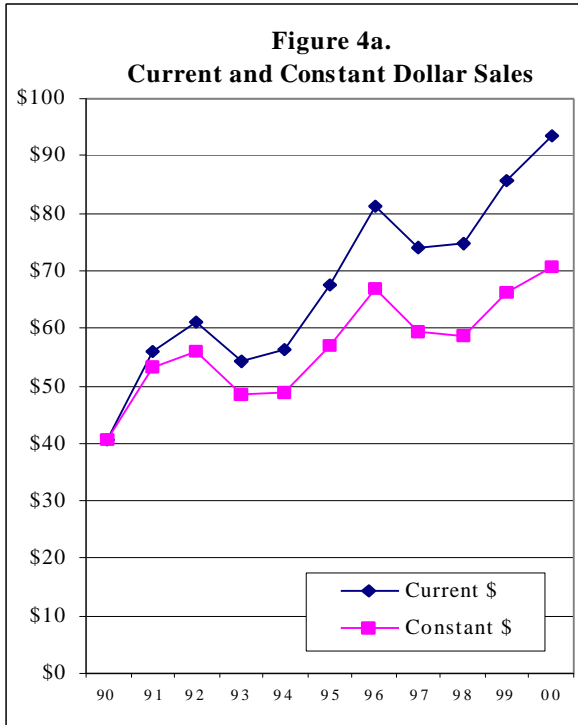
Davenport

Davenport hosted a Menard's store in 1990 and figure 4a indicates that building material sales increased from \$40 million in 1990 to \$92 million in 2000 in current dollars and real sales (constant dollars) also grew during this time span. Figure 4b shows Davenport's per capita sales of building materials growing from \$400 in 1990 to \$1,850 in 2000. The pull factor, as indicated in figure 4c grew from 1.2 to 1.4 during the first 11 years. Typically larger cities, such as Davenport, show moderated pull factor growth, however, this still equates to substantial sales increases. Figure 4d shows that Scott

Economic Impacts of Big Box Store in Sioux City, Iowa



Economic Impacts of Big Box Store in Davenport, Iowa



County (Davenport's home) went from a \$6 million leakage in the base year to \$10 million surplus in 2000. The three adjacent counties all experienced substantial increase in leakage, until Muscatine hosted a Menard's and recovered some losses.

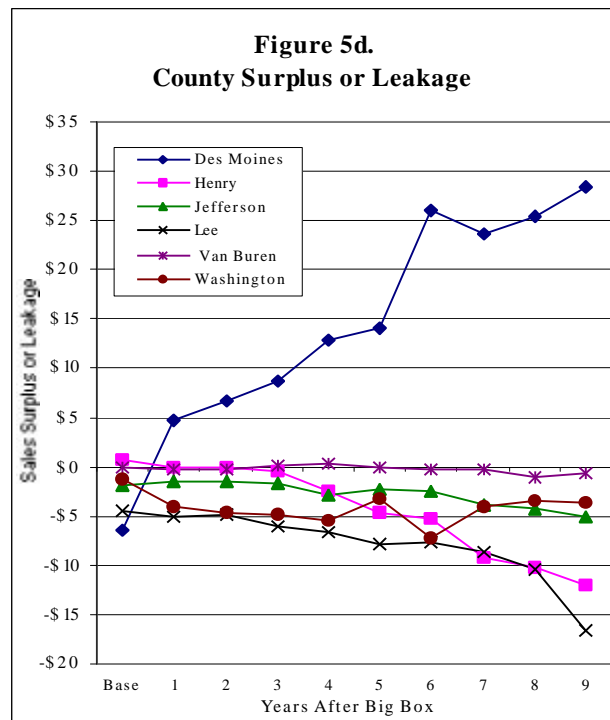
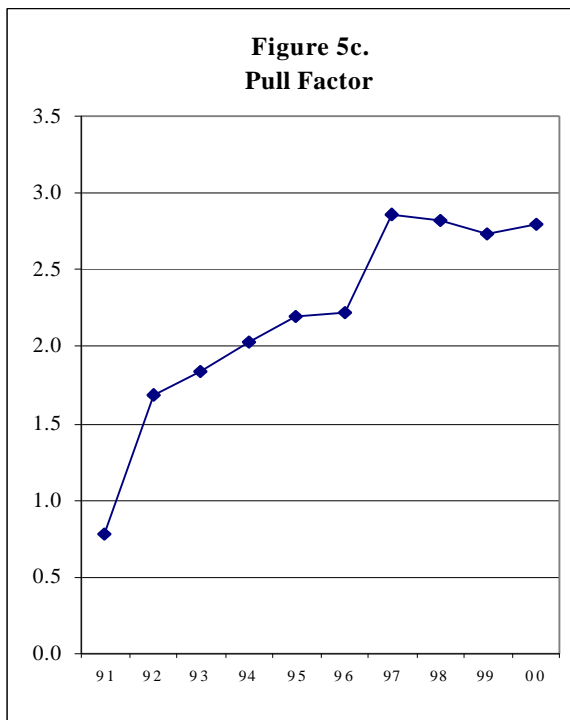
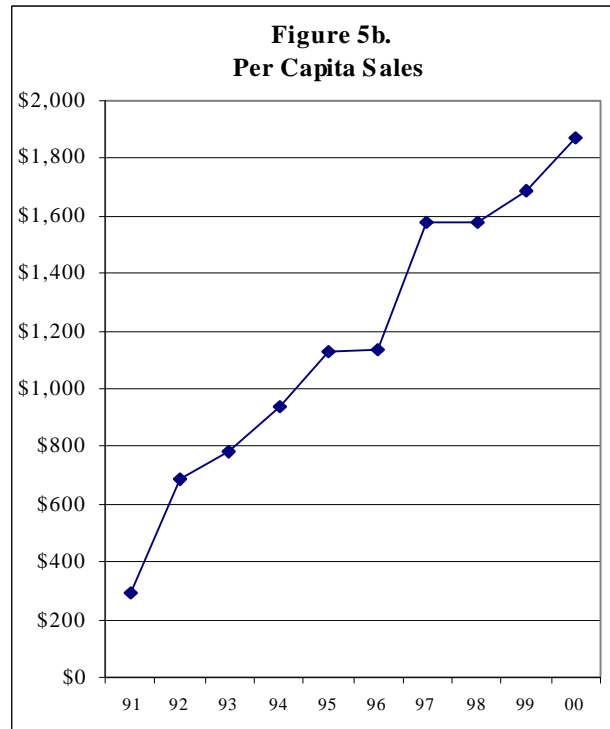
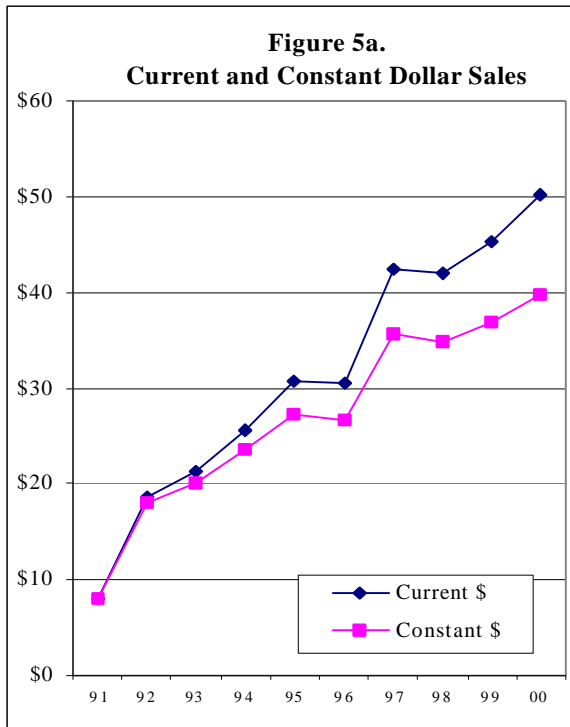
Burlington

Burlington, a city of 26,839 population in 2000, became the new home of a Menard's in 1991. Figure 5a shows current dollar sales for building materials increasing from \$9 million in 1991 to \$50 million in 2000. It can also be seen that constant dollar sales increased substantially also during this period. Figure 5b shows per capita sales increased from \$300 to nearly \$1,900 in 2000. Figure 5c depicts the increase in Burlington's building materials pull factor from 0.75 in 1991 to 2.80 in 2000. Figure 5d shows that Des Moines County went from a \$7 million leakage in 1991 to \$28 million surplus in 2000 for building materials. The adjacent counties showed deterioration in building materials sales with Lee County slipping from a \$4 million leakage in 1991 to a \$17 million leakage in 2000.

Marshalltown

Marshalltown's 2000 population was 26,009. A Menard's building materials store located in Marshalltown in 1993. Figure 6a shows that building materials current dollar sales increased from \$11 million in 1993 to \$23 million in 2000; figure 6a shows an increase in constant dollars as well. Figure 6b shows that per capita building materials sales in Marshalltown increased from \$450 in 1993 to \$900 in 2000. Figure 6c shows building materials pull factor increasing from 1.05 in 1993 to 1.35 in 2000. Figure 6d

Economic Impacts of Big Box Store in Burlington, Iowa



shows county surplus or leakage for building materials. Marshall County went from a \$6 million leakage in 1993 to a \$2.5 million surplus in 1994, but drifted back to a \$2.5 million leakage by 2000. All adjacent counties except for Story County (the home of Ames) experienced worsening leakages from 1993 to 2000. In the case of Story County, a new Lowe's opened in 1998 at which point building materials sales went from a \$14 million leakage to a \$7.5 million surplus in 1999. However, the surplus disappeared in 2000 when a new Lowe's and a new Home Depot opened in and around Des Moines in Polk County.

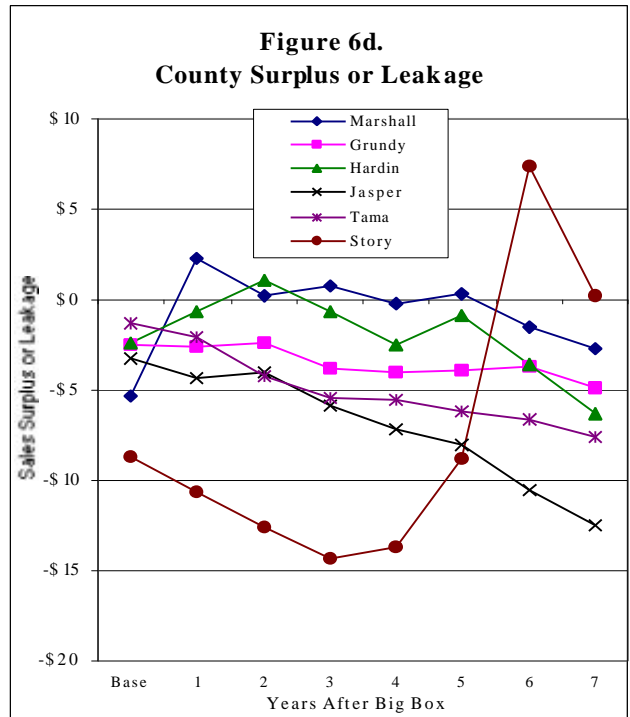
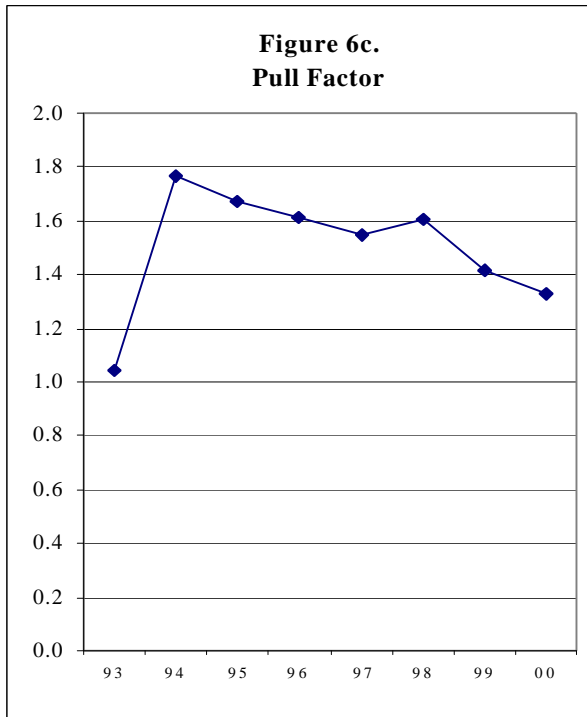
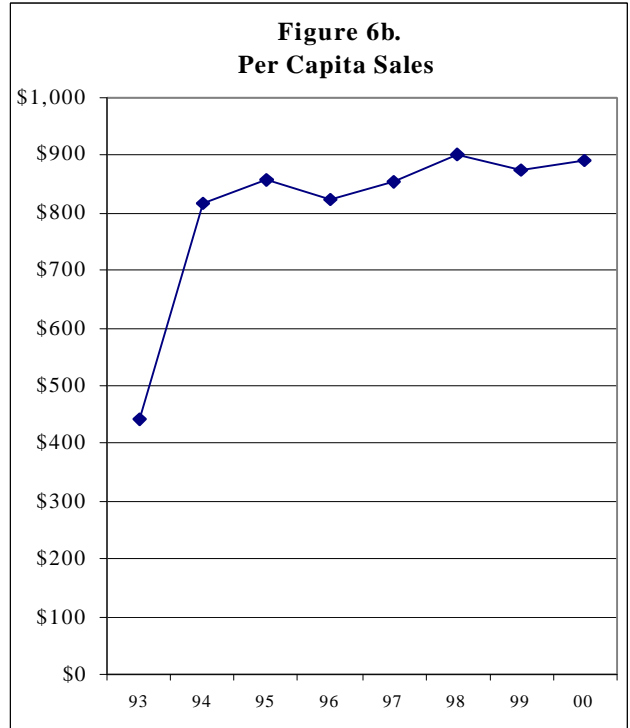
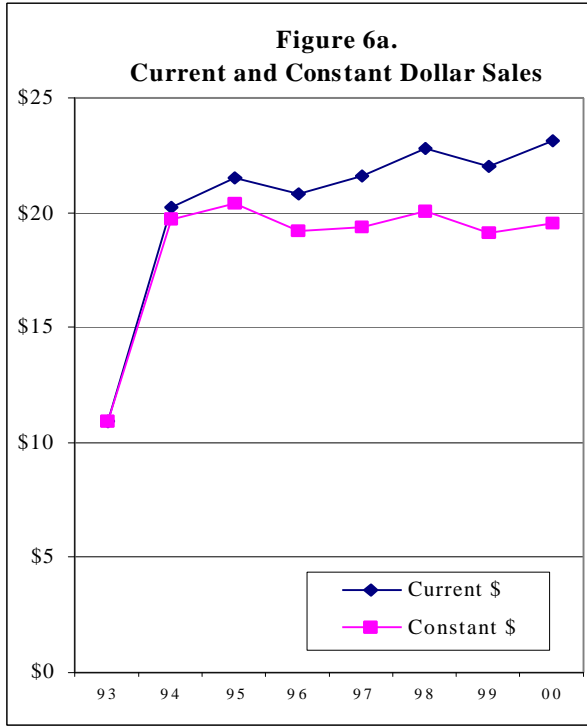
Mason City

Mason City's 2000 population was 29,172. Figure 7a shows that current dollar sales for Mason City's building materials went from \$15 million in 1994 to \$50 million in 2000. Figure 7a also shows that constant dollar sales increased during the same time. Per capita sales increased from \$500 in 1994 to \$1,750 in 2000, as shown in Figure 7b. The pull factor increased from 1.1 in 1994 to 2.6 in 2000, as shown in table 7c. Table 7d shows that Cerro Gordo County's building materials sales went from a \$4 million leakage in 1994 to a \$23 million surplus in 2000. The seven adjacent counties showed a worsening leakage condition from 1994 to 2000.

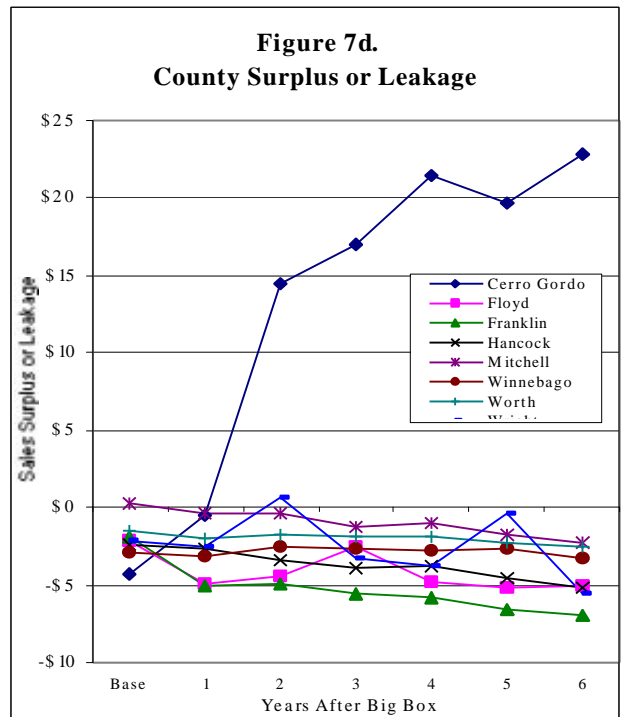
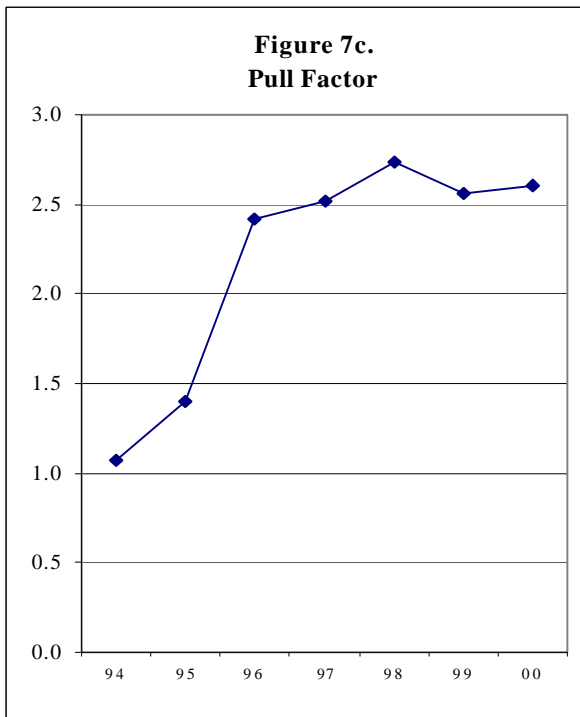
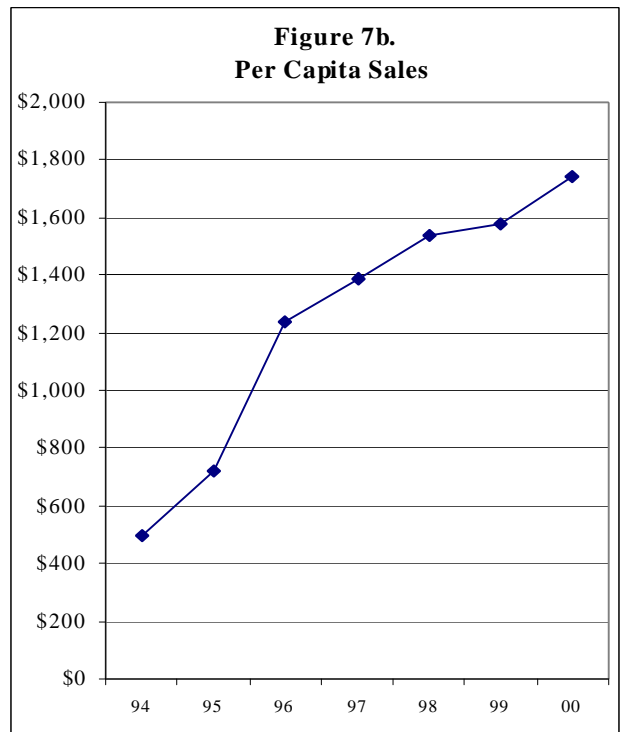
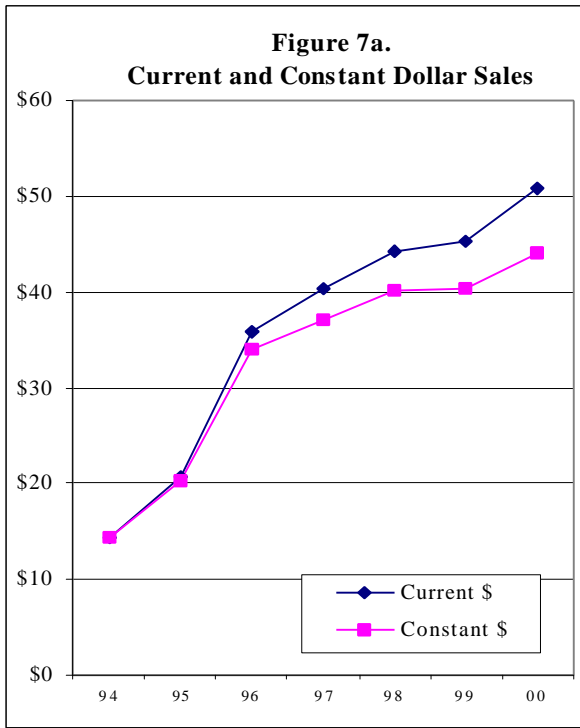
Council Bluffs

Council Bluff's 2000 population was 58,268. Building material sales went from \$22 million in current dollars in 1994 to \$57 million in 2000, as shown in figure 8a. Constant dollars also increased during this period as shown in figure 8a. Figure 8b shows

Economic Impacts of Big Box Store in Marshalltown, Iowa



Economic Impacts of Big Box Store in Mason City, Iowa



that per capita sales in building material sales went from \$400 in 1994 to nearly \$1,000 in 2000. The pull factor increased from 0.8 in 1994 to 1.4 in 2000 as shown in figure 8c. Figure 8d shows that Pottawattamie County (the home of Council Bluffs) went from an \$11 million leakage in 1994 to a \$5.7 million surplus in 2000. All the adjacent counties experienced a worsening leakage situation during this period.

Average Change in County Building Materials Surplus or Leakage

Figure 9 shows the average surplus or leakage for the above host counties for the first six years after the opening of a building materials big box store. This is compared to the average leakage for the adjacent counties for the same time period. On average host towns went from a \$3 million leakage in the year before opening to a \$21 million surplus after six years. Conversely, the adjacent counties went from a \$2 million leakage in the base year to an average \$5 million leakage after six years.

Economic Impacts of Big Box Store in Council Bluffs, Iowa

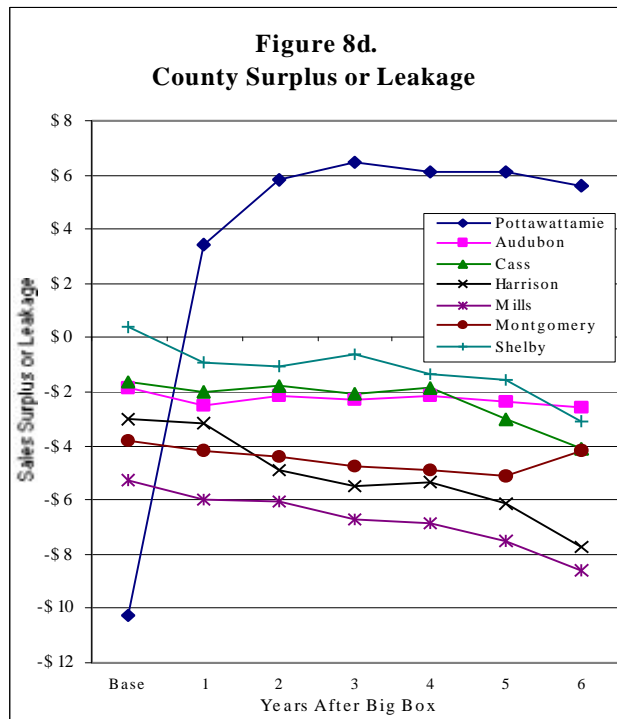
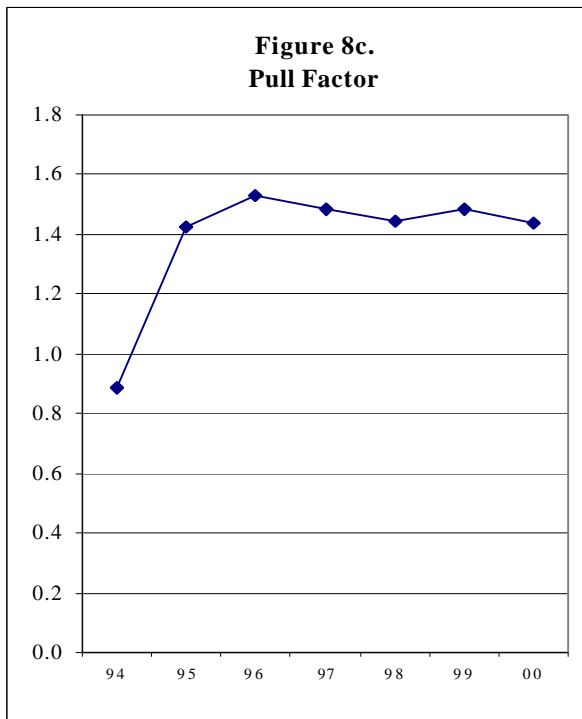
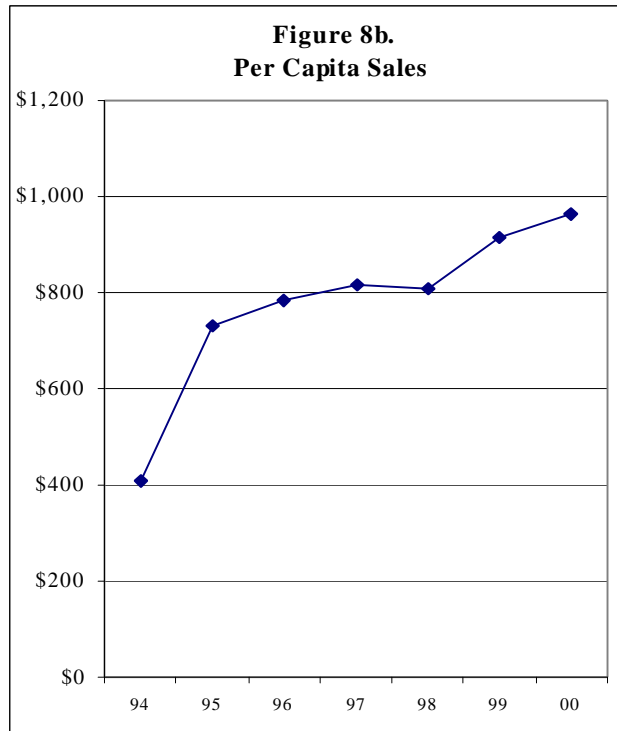
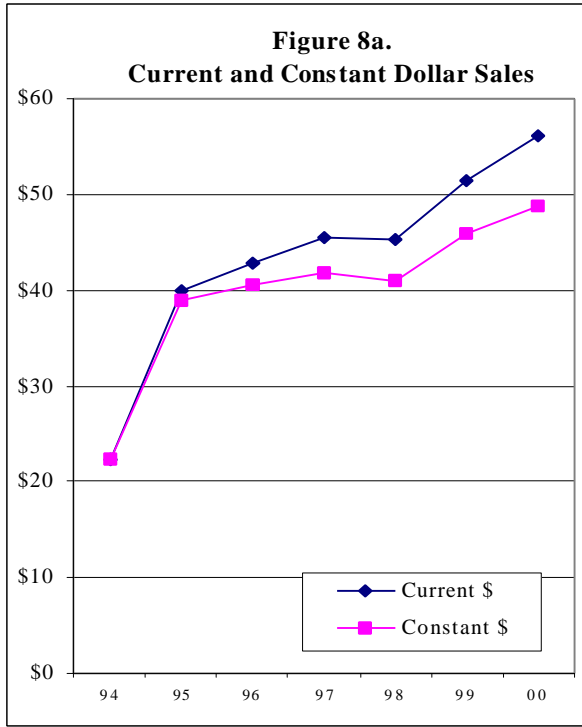
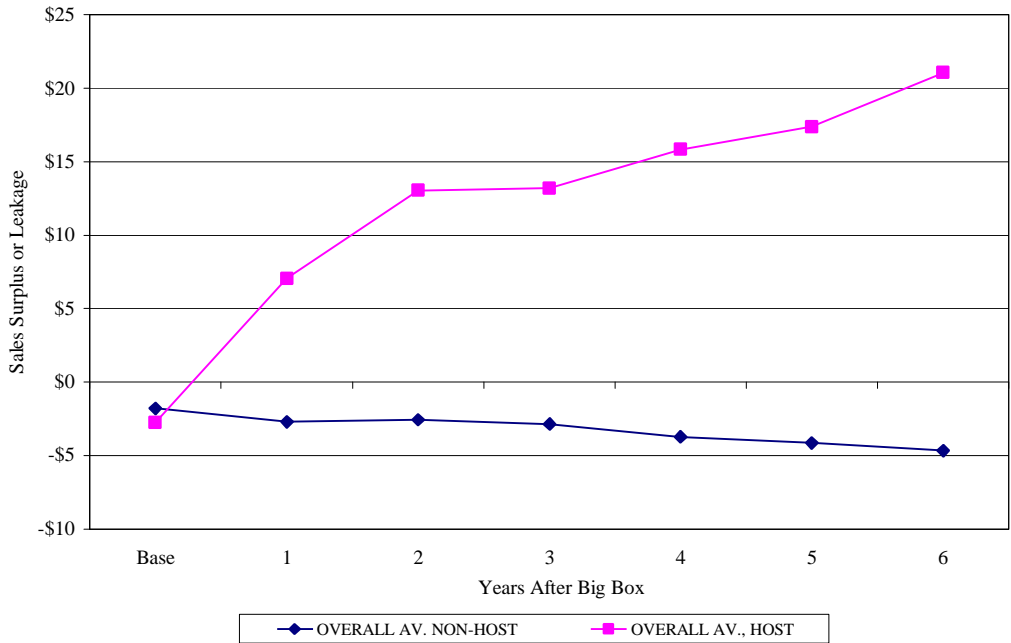


Figure 9.

AVERAGE CHANGE IN RETAIL SURPLUS OR LEAKAGE FOR COUNTIES WITH AND WITHOUT BIG-BOX BUILDING MATERIALS STORES



Cities With Shared Adjacent Counties

Iowa City

The 2000 population for Iowa City was 62,220. Figure 10a shows that in the year before the Menard’s opened, building material sales were \$18 million in current dollars. It can also be seen that constant dollar sales also increased. Figure 10b shows per capita sales increased from \$300 in 1994 to \$950 in 2000. Figure 10c shows that Iowa City’s building material pull factor rose from 0.65 to 1.4 during this period. Figure 10d shows that Johnson County (home of Iowa City) building materials went from a \$6 million leakage in 1994 to an \$8 million surplus in 1999 before dropping to a \$2.5 million leakage in 2000. The drop in trade in 2000 was probably brought about by a new big box

building material store in Muscatine in 1999. It can be seen in figure 10d that Muscatine's trade situation improved after the opening of its store.

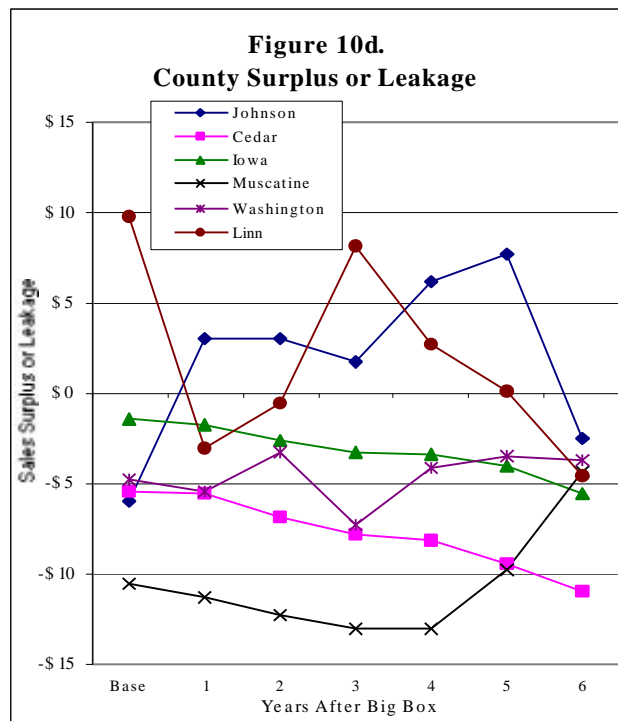
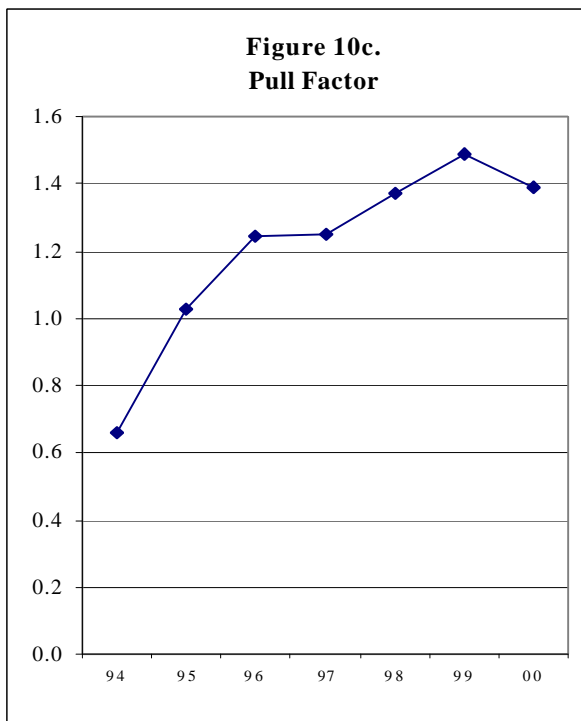
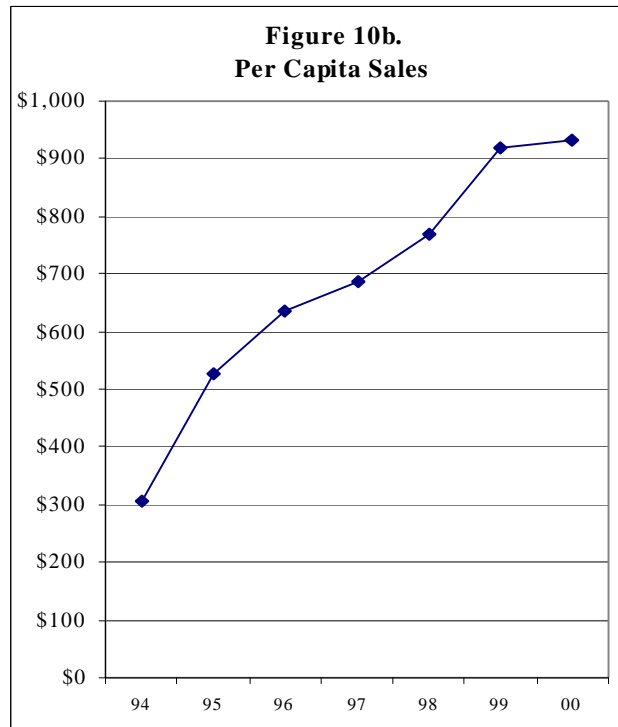
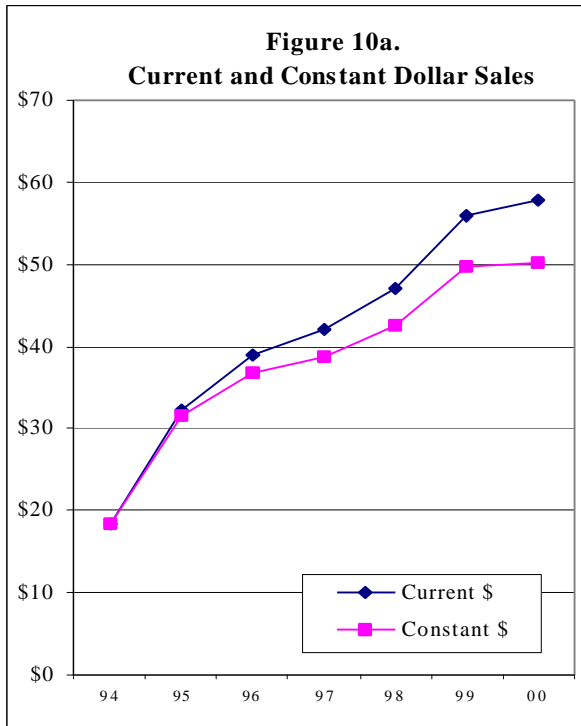
Ankeny

Figure 11a shows Ankeny's current dollar building material sales going from \$10 million in 1994 (the year before Menard's opened) to \$50 million in 2000. Constant dollar sales also increased during this period. Figure 11b shows per capita sales rising from \$500 in 1994 to over \$1,800 in 2000. Figure 11c shows the pull factor rising from 1.0 in 1994 to 3.2 in 1998, before dropping to 2.8 in 2000. Figure 11d shows that building materials surplus for Polk County (home of Ankeny as well as Des Moines and West Des Moines) went from over \$60 million in 1994 to nearly \$80 million in the first year after Menard's opening Polk County's building materials surplus held relatively steady until 2000 when it jumped to \$150 million after the opening of a new Lowe's, a new Home Depot, and a new Menard's in the Des Moines area.

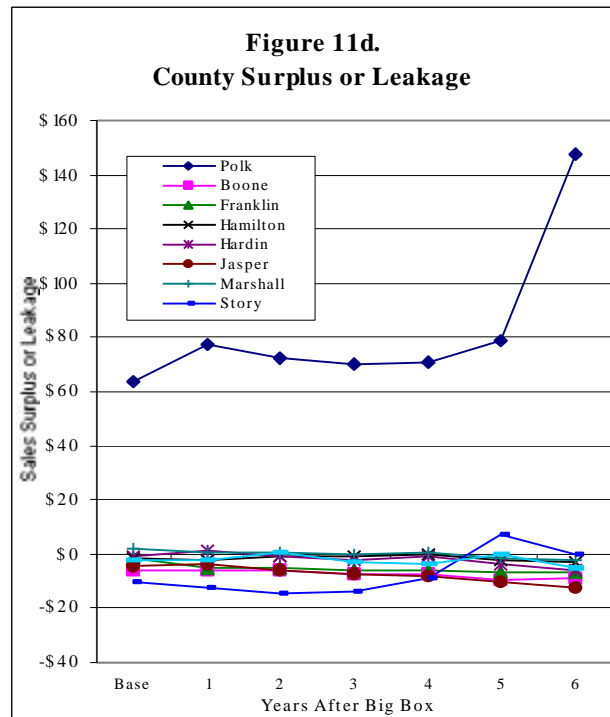
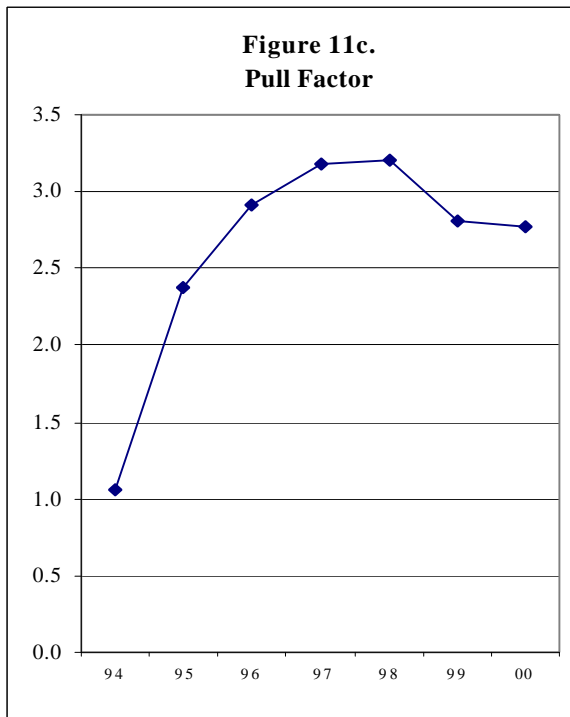
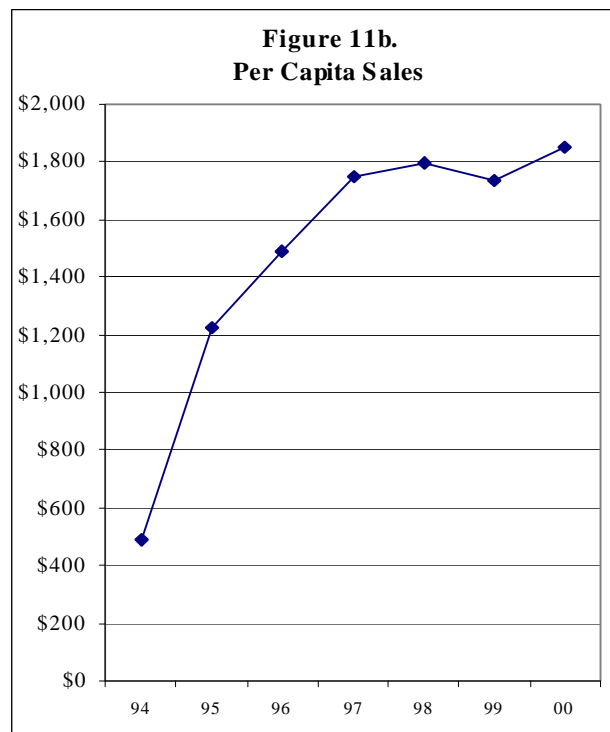
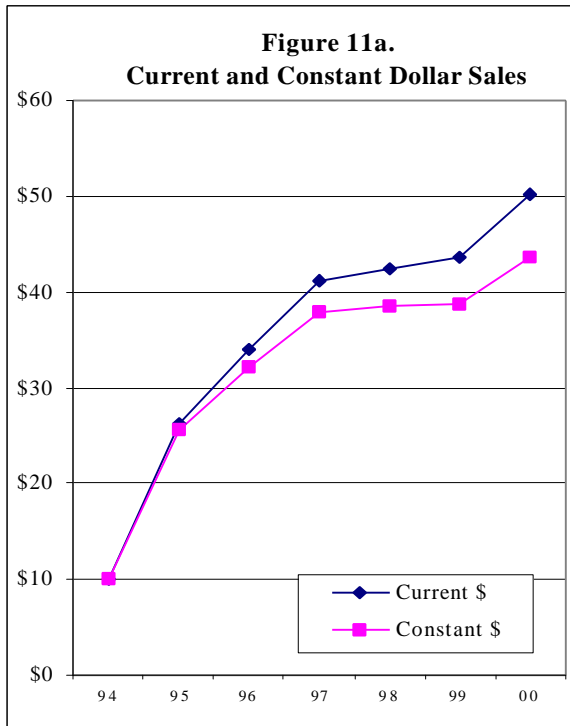
West Des Moines

Figure 12a shows current dollar sales for West Des Moines increasing from \$10 million in 1995 to \$78 million in 2000. A new Home Depot opened in 1996 and a new Lowe's opened in 1997. West Des Moines' per capita sales rose from \$300 in 1995 to over \$1,600 in 2000, as shown in figure 12b. Figure 12c shows the pull factor increasing from 0.5 to 2.5 during this period. As was seen in Figure 11d, Polk County's building materials surplus increased from \$70 million in 1998 to \$150 million in 2000.

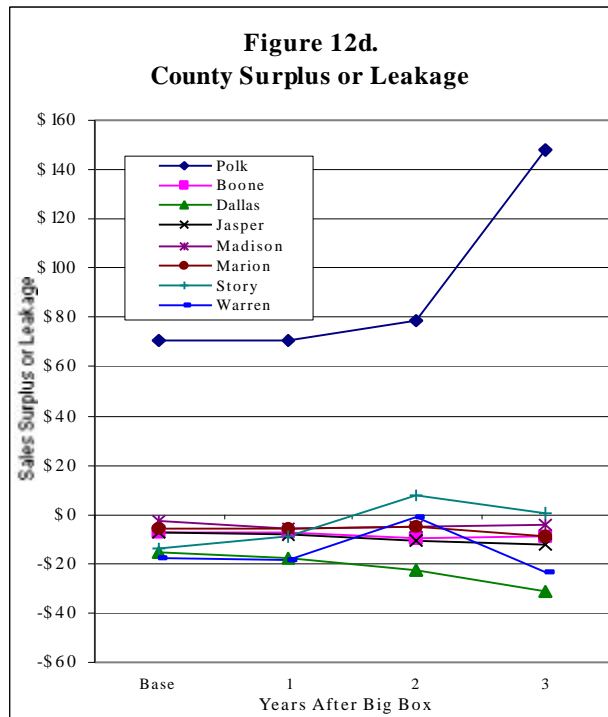
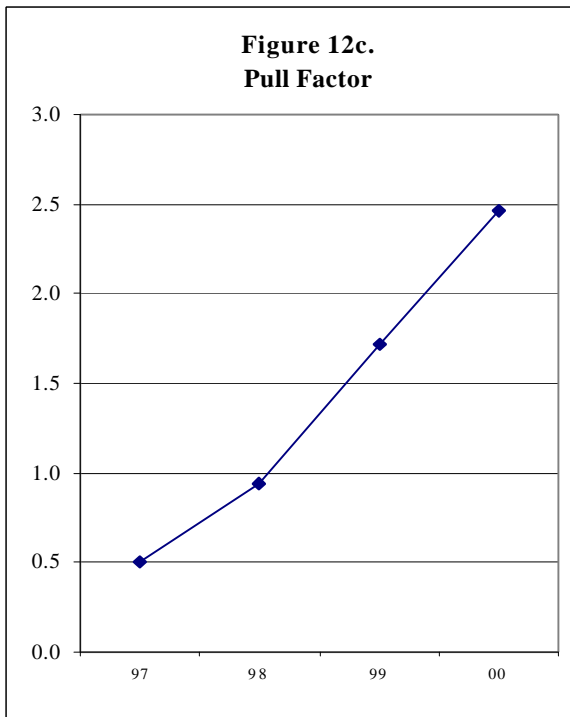
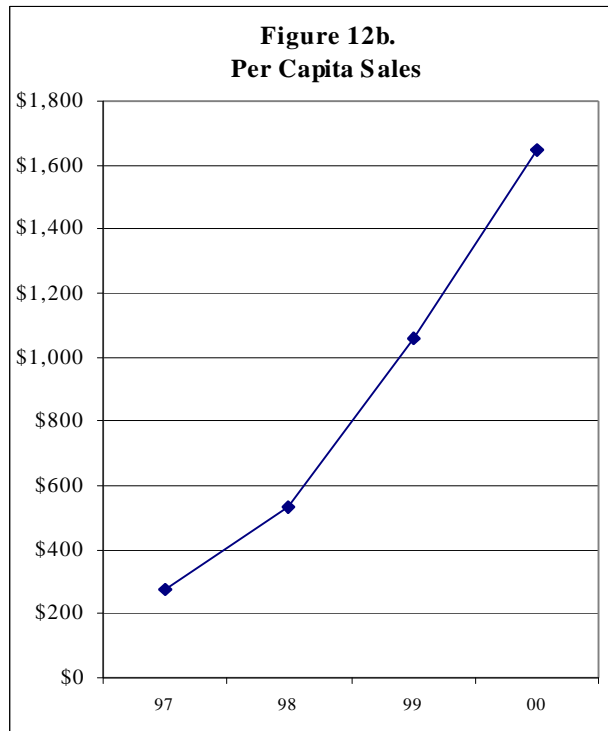
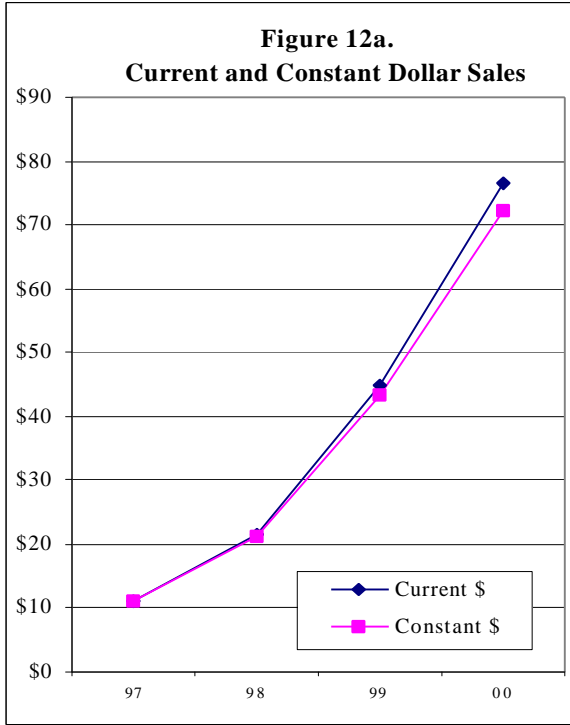
Economic Impacts of Big Box Store in Iowa City, Iowa



Economic Impacts of Big Box Store in Ankeny, Iowa



Economic Impacts of Big Box Store in West Des Moines, Iowa



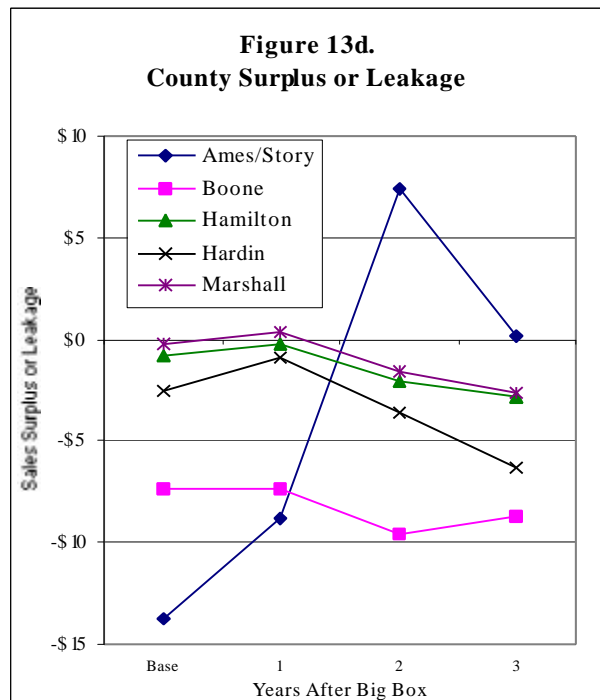
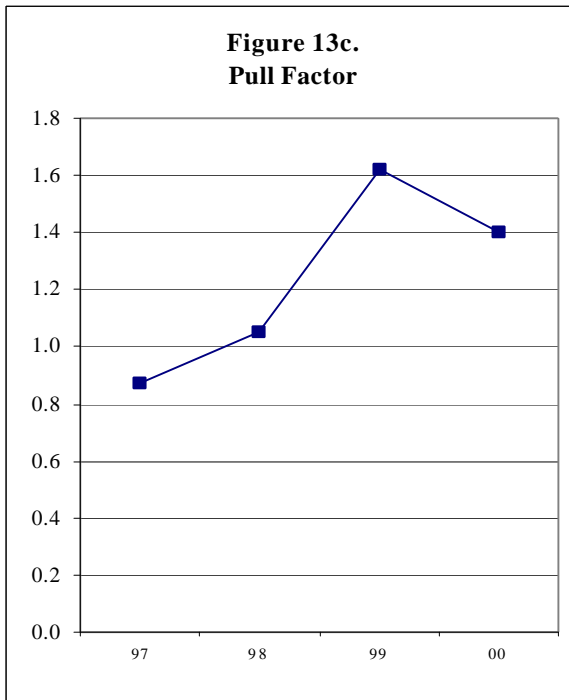
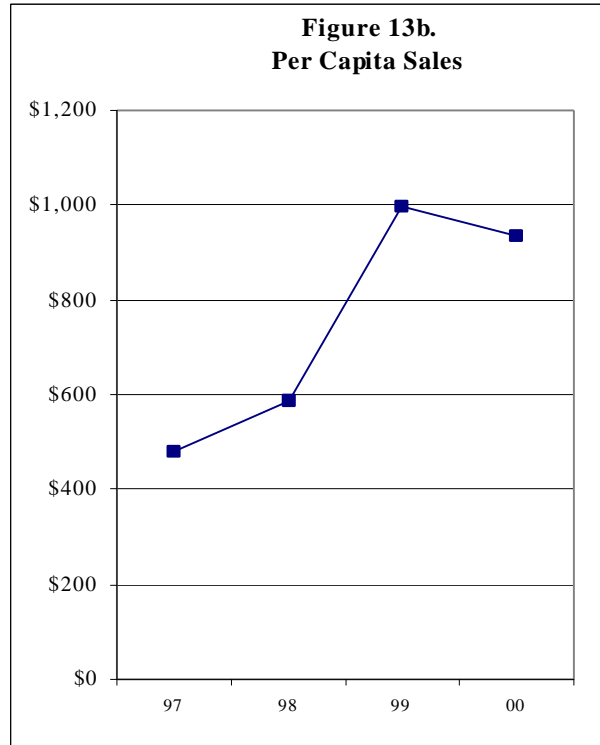
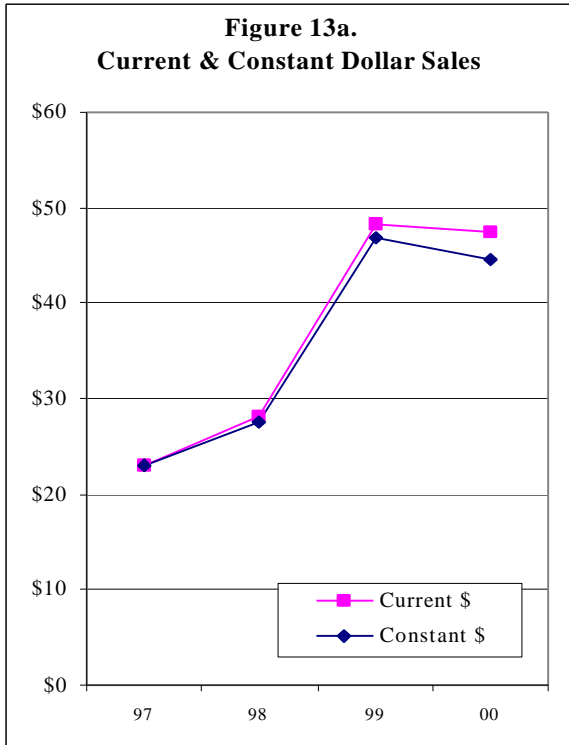
Ames

Ames, a city of 50,731, opened its new Lowe's store in 1998. As shown in figure 13a, Ames building materials current dollar sales increased from \$22 million in 1997 to nearly \$50 million by 1999, but leveled off in 2000. Figure 13b shows per capita sales rising from \$450 to \$1,000 during this period. Figure 13c shows the pull factor increasing from 0.8 in 1997 to 1.6 in 1999 before declining to 1.4 in 2000. Figure 13d shows Story County's (home of Ames) going from a building materials leakage of \$14 million in 1997 to a \$7.5 million surplus in 1999 before declining to zero in 2000. There is little doubt that Ames' short-lived increases in building material surpluses were ended by the opening of two large big box stores in the Des Moines area in 1999.

Overall County Surplus or Leakage

From viewing the adjacent county surpluses or leakages of building material sales, it appears that in fact, when a new big box building materials store opens in a host town, the adjacent counties experience a decline in sales. To determine if the zero-sum game theory holds statewide, county surpluses and leakages for building materials were computed for all Iowa's 99 counties. The total surpluses nearly equal the total leakages. However, there is a discrepancy of 5.6 percent favoring the leakages. Iowans doing some shopping in adjacent states probably brought this about. This most likely most of this occurred in the western part of the state where Omaha, Nebraska and Sioux Falls, South Dakota are dominant trade centers.

Economic Impacts of Big Box Store in Ames, Iowa



The results of this study are important in reinforcing the zero-sum-game theory, but they are more important in helping local officials and business people to understand the magnitude of the changes and the strategic and policy implications. Existing small business owners must find adaptive strategies consisting of niche products and superior service. Local officials must realize the impact of potential big-box stores and make informed decisions regarding issuance of building permits and granting of subsidies to the big-box stores. In particular, there is a trend spreading across the country where officials of local jurisdictions are giving monetary grants (from tax money) to attract these types of big- box stores, on the premise that they will increase employment and tax base. This paper shows the negative impacts the big-box stores have on local businesses and provides lessons for local officials in their decision-making.

Conclusions

When big box building material stores open in a host city, building material sales typically increase by \$30 million to \$70 million over the next three to five years. City per capita sales at least doubled within a few years with a few cities experiencing a five or six fold increase over five or six years. In most cases pull factors at least doubled, with some tripling in the first few years.

Host counties went from leakages or slight surpluses to substantial surpluses in a few years in most cases. However, it is clear that host cities near major metro centers

such as Des Moines, are subject to quick sales reversals as more and more big box stores enter the bigger markets.

When comparing all counties for building materials surplus or leakage, the leakage counties have slightly more leakage than the surplus counties have surplus. This is probably explained by Iowans' outshopping across state lines.

State and local officials should be aware of these findings so that they can make informed decisions about the propriety of subsidizing new retail businesses. It is becoming more common for local officials to subsidize new big box stores through tax abatement, tax increment financing or through outright grants. The singular most important question to be asked by local officials concerning subsidies is; Is it fair to give taxpayer's money to big corporations that will then use it to help put existing firms out of business?