

The Impact of Wal-Mart Stores on Downtown Health in Michigan Cities: A cross-sectional analysis between 1986 and 1992

Introduction

In the past few years, the downtowns of cities across Michigan have been impacted by the opening of new Wal-Mart discount stores. These all-inclusive discount stores have found relatively easy market opportunities in smaller urban areas, where they have specifically targeted new store locations. Using a “down-home” retailing approach which presents an image of providing everyday goods at discount prices, Wal-Mart has appealed most to lower middle-class households (40 percent of its customers have household incomes of \$20,000 or less¹) and has been so successful it has become the nation’s leading retailer in just a few years. The advantages for Wal-Mart of small town locations have been numerous—there is virtually no competition for selection or price among small local retailers; municipalities had few regulations over land development (lot sizes range from five to 25 acres), and were generally very receptive to the increased tax base created by a large retailer; and access from surrounding communities has been relatively convenient via the interstate highway system, which now criss-crosses much of the rural countryside.

However, the long-term impact of this recent retailing phenomenon is still unclear. Some downtown businesses in cities where Wal-Marts have located have benefited from the greater draw of customers. Others have been devastated by the overwhelming new competition for their customers’ dollars. In a study of the impact of 14 Wal-Marts in Iowa, Kenneth Stone found that towns within a 20-mile radius of the Wal-Mart stores saw total retail sales drop 25 percent after five years.² The study clearly showed both the positive impact in towns where Wal-Mart had located and the negative impact on other similar towns in the surrounding area.

¹ John Gruidl and Steven Kline. "What Happens When a Large Discount Store Comes to Town?." *Small Town*. March-April 1992. pp. 20-23.

² Edward O. Welles. “When Wal-Mart Comes to Town.” INC. July 1993.. p. 78.

The purpose of this study is to evaluate the impact new Wal•Mart stores have had on the retail environment of smaller cities in Michigan. The impact will be evaluated by comparing sales tax and retail sales data from 1987 (prior to the opening of the first store in Michigan) and 1992 (when 12 new stores had been opened, primarily in smaller cities). This study looks at whether there is a significant correlation between the economic status of the study cities and the proximity of the new Wal•Mart stores to their downtowns. Changes in sales tax and retail sales data between 1986 and 1992 will represent changes to the economic environment. In addition, the changing health of the study downtowns will be evaluated using the author's "Downtown Health Index," developed as part of an ongoing study of Michigan downtowns.³ The Index is used to assess changes to overall downtown health during that time period.

Sixteen small and medium-sized cities will be used as a representative sample of communities. The cities, ranging in population from 5,000 to 16,000, are part of a continuing research project looking at the changing health of Michigan downtowns, and considerable information is available on the relative health of each of the study city downtowns, derived from a survey of downtown merchants and business owners conducted in 1986 and a follow-up survey conducted in 1992. Seven of the cities now have Wal•Mart stores located in the community, and feel direct competition from them, while nine do not have Wal•Mart stores within the community.

History of Wal•Mart in Michigan

Large discount stores have made important inroads into the market areas of small and medium sized cities. Initially located in larger urban areas, these all-inclusive stores have found relatively easy market opportunities in smaller urban areas. The discount chain that has taken most advantage of this more rural market is Wal•Mart, whose founder, Sam Walton, specifically targeted small cities for his store locations. Wal•Mart has been able to locate in cities with populations of

³ Tyler, Norman R. 1987. *An Evaluation of the Health of the Downtowns in Eight Michigan Cities*. University of Michigan.

20,000 or less and thrive. In fact, these locations often have become retail battlegrounds for discounters competing for this new and largely untapped market.

Maps indicating the locations of large discount department stores in Michigan show that in 1987 there were no Wal•Mart stores in the state. K•Mart and Meijers were the two largest discount retailers, and the locations of their stores specifically targeted larger urban centers for the majority of their store locations.

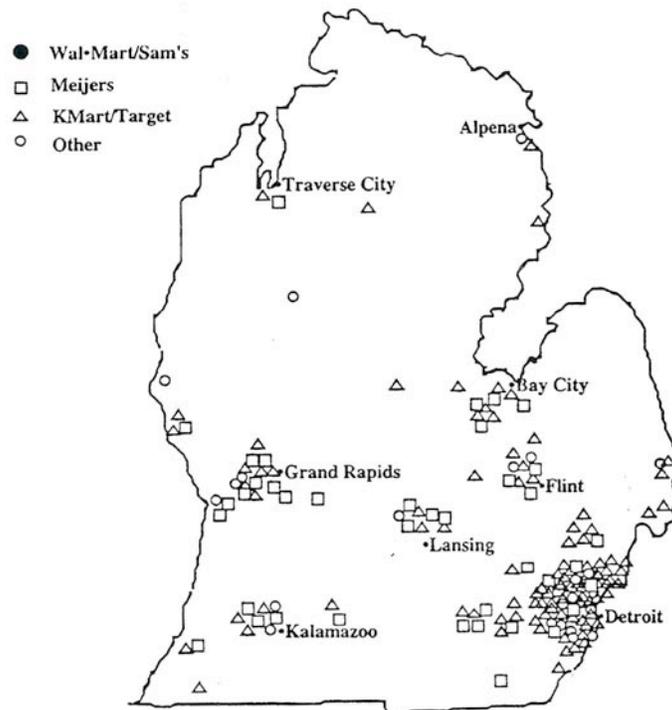


Figure 1
Locations of Discount Department Stores, 1986⁴

Five years later, the first twelve Wal•Mart stores were opened at strategic locations across the state, generally in smaller cities that didn't have direct competition from Meijers and K•Mart and where they could easily establish retail dominance in a region.

⁴ Store locations taken from *Directory of Discount Stores*, published by Business Guides, Inc.

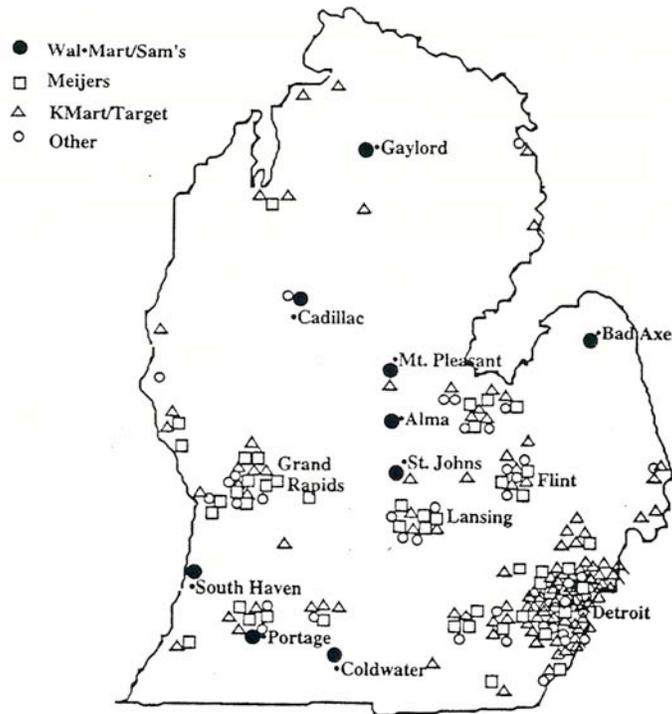


Figure 2
Locations of Discount Department Stores, 1992

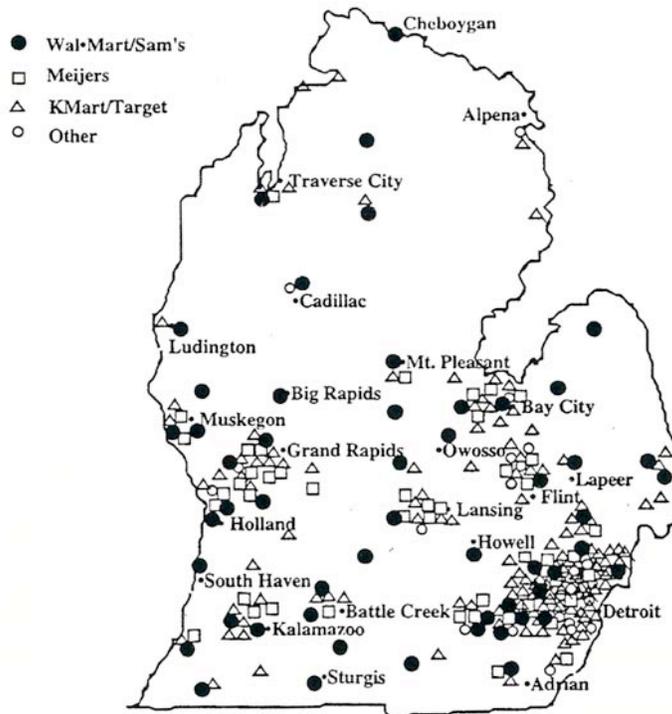


Figure 3
Locations of Discount Department Stores, 1993

A year later, a total of 38 Wal•Mart stores had been opened in the state, including a large number in the larger metropolitan areas where they competed head to head with Meijers and KMart. This is especially significant growth over such a short time span because both Meijers and KMart had the distinct advantage of having their national headquarters located in Michigan, Meijers in Grand Rapids and KMart in Troy, while Wal•Mart had its corporate decision-making done in distant Bentonville, Arkansas.

A study by Gruidl and Kline (1992) of Illinois towns indicated that the infusion of a large discounter store in a community dramatically increased the retail market area and draw for that particular town. As shown in the graph below, which uses two years before the opening of Wal•Mart stores as a base period, for the year prior to the opening there is minimal growth in retail sales, but after the large store opens the retail base increases 14 to 15 percent almost immediately.

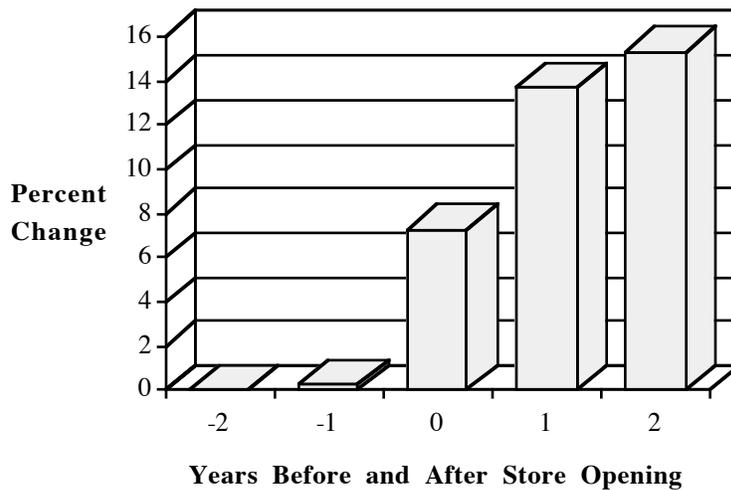


Figure 4
Changes in Total Retail Sales in Illinois Towns
Before and After Opening of a Wal•Mart Store⁵

Kenneth Stone of Iowa State University studied 14 Iowa towns where Wal•Mart opened stores during the late 1980s. The chart below shows the impact on the

⁵ John Gruidl and Steven Kline. “What Happens When a Large Discount Store Comes to Town?” *SMALL TOWN*. March-April, 1992. p. 22.

host town and illustrates that the gain in sales of general merchandise is divided unevenly between the gain for Wal•Mart and the loss for other host city businesses.

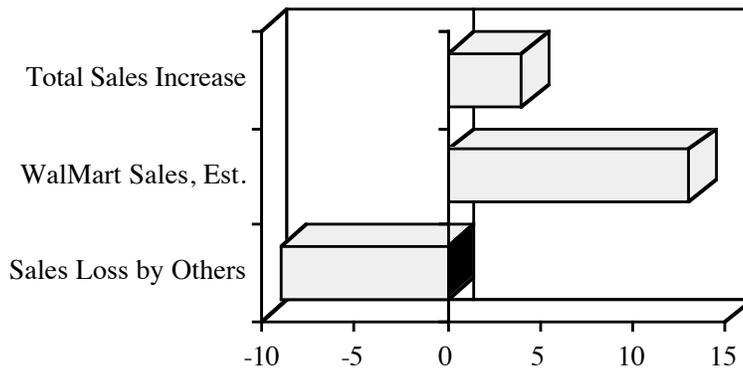


Figure 5
Average New Sales Change After 3 Years
In Wal•Mart Host Town⁶

Its impact on traditional downtown retail was startling. “As Wal•Mart rolled out its franchises, it sucked commerce off Main Streets, destroying traditional retailers that had served their communities for generations. But in the face of the abundance Wal•Mart produced in the form of more jobs, consumer savings, and expanded trade, the loss of Main Street life seemed an incidental price to pay.”⁷

Stone also found that surrounding towns within a 20-mile radius of the 14 Wal•Mart stores studied saw total retail sales drop 25 percent after five years.⁸ The study clearly showed the positive impact in towns where Wal•Mart has located and the almost universal negative impact (except for food stores, a market for which Wal•Mart doesn’t compete) on other similar towns in the surrounding area. As shown in the following illustration, only the towns where Wal•Mart stores located were able to benefit from the regional draw of the large discounter.

⁶ Kenneth E. Stone. “The Impact of Wal-Mart Stores on Retail Trade Areas in Iowa: Executive Summary.” Published by author. 1990. p. 2.

⁷ Edward O. Welles. “When Wal-Mart Comes to Town.” INC. July 1993. p. 78.

⁸ Welles. p. 78.

Business Type	Wal-Mart Towns			Same Size Other Towns		
	After years			After years		
	1	3	5	1	3	5
Building Materials	-6.3	-6.5	-5.1	-4.7	-7.1	-10.4
General Merchandise	29.1	39.5	58.8	-0.6	-4.2	-1.9
Food	-4.7	-4.1	-12.1	1.6	5.5	7.8
Apparel	-2.7	-6.2	-5.1	-3.5	-5.8	-11.5
Home Furnishings	2.9	5.2	4.2	-5.1	-12.2	-18.9
Eating & Drinking	0.8	-0.8	2.4	-0.7	-1.5	-0.8
Specialty	-5.7	-12.1	-19.7	0.1	-5.4	-9.9
Services	-5.6	-7.9	-6.8	-3.5	-9.5	-14.2
TOTAL SALES	2.3	3.1	8.1	-0.7	-3.5	-4.9

= Gainers

Figure 6
Sales Change in Wal-Mart Towns vs.
Other Same Size Towns (in percent)⁹

From his study Stone developed two primary conclusions.

- Businesses that sell goods or services other than what Wal-Mart sells tend to experience high sales because of the spillover effect. The additional traffic attracted to town by Wal-Mart will shop at these stores.
- Businesses that sell the same goods as Wal-Mart tend to experience reductions in sales after Wal-Mart opens.

Characteristics of the Study Cities

This study looks at the impact of Wal-Mart stores on smaller cities in Michigan. The 16 cities used in the study were selected in an informal stratified sampling procedure to represent a variety of characteristics, the first being geographic representation. A number were selected from the southern tier of counties in Michigan, the center of the state, as well as a representation of northern cities. Two cities which were in close proximity, but which had very different images,

⁹ Kenneth E. Stone. "The Impact of Wal-Mart Stores on Retail Trade Areas in Iowa: Executive Summary." Published by author. 1990. p. 2.

one a blue-collar, working-class city, the other a more sophisticated historic residential city, were selected (Albion and Marshall, respectively). Three cities located along the Great Lakes shore were included, two on the west side and one on the eastern shore. The study's 16 cities were selected as representative cities. All the cities that fit the study criteria were not included simply because of the cost of administering the survey to a larger grouping.

The 16 study cities are shown below:

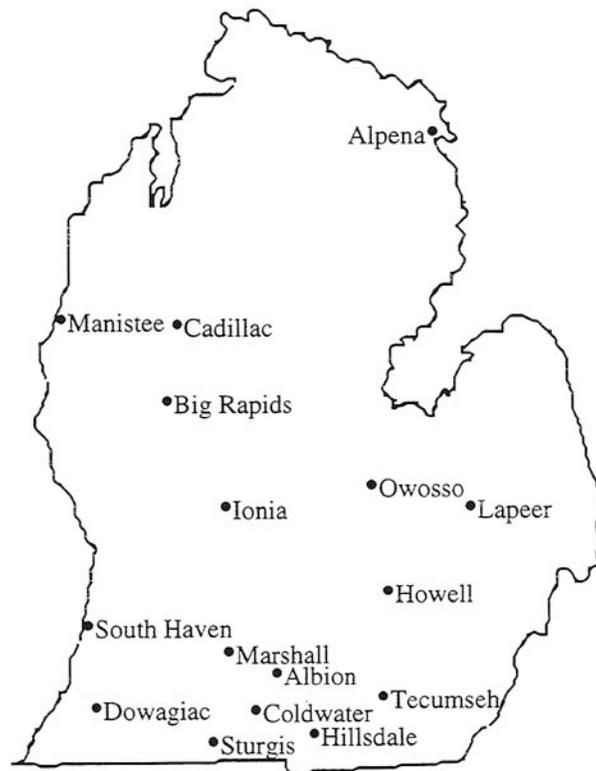


Figure 7
16 Study Cities

The population range of 5,000 and 16,000 includes cities that are large enough to be able to provide a full retail business mix, yet small enough so merchants and business owners in those cities know generally all aspects of what is happening in their downtowns. Cities closely associated with large urban centers were excluded, since they would be impacted heavily by the growth and development of the nearby larger cities, and the characteristics of the smaller city could not be

sufficiently separated from the larger to provide for a meaningful analysis. Therefore, cities like Birmingham, East Grand Rapids and Muskegon Heights, while falling within the population size range, were not considered for study.

Research Methodology

Correlation analysis is used throughout this analysis. Correlation analysis tests whether two items are associated in a way that is statistically significant. It not only establishes whether a relationship exists, but also derives the strength of that relationship. It is important to note, however, that even a strong correlation does not automatically imply causation. For example, it is expected that a larger population size is correlated with higher retail sales. But does population size lead to greater retail sales, or does a successful retail environment lead to a growth in population. Such cause-effect relationships can be determined with confidence only if other factors are used with the intent of specifically looking for them. What can be concluded through correlation analysis, however, with some degree of confidence, is that one is somehow related to the other.

Downtown Health As Shown Through Local Economic Indicators

The most commonly used indicators of downtown health and vitality are standard economic indicators. Two standard data sources were used to compare the economic vitality of the 16 study cities—sales tax distribution figures from the State and retail sales figures from the U.S. Census of Retail Trade.¹⁰ Sales tax revenue figures for 1987 and 1992 were obtained from the Michigan Database, administered by the Michigan State University Institute for Public Policy and Social Research. The Census of Retail Trade is published every five years by the U.S. Department of Commerce. Its Geographic Area Series includes summary statistics for counties and for places with 2,500 inhabitants or more. Included in that information is annual retail sales. Although both the sales tax and retail sales

¹⁰ United States Department of Commerce. 1987, 1992. *Census of Retail Trade*. Washington, D.C.

figures are available for each of the cities, they are not specific to the downtowns in those cities. However, they represent the only consistently collected economic data available, and must be used to represent the economic vitality of the study city downtowns.

	Population				Sales Tax			Retail Sales (in \$Mil.)		
	1990	1987 (adj)	1992 (adj)	Change	1987	1992	Change	1987	1992	Change
Owosso	16,322	\$601,184	\$727,840	\$126,657	\$173	\$239	\$66			
BigRapids	12,603	\$524,570	\$556,665	\$32,095	\$108	\$164	\$56			
Alpena	11,354	\$446,020	\$491,574	\$45,555	\$123	\$173	\$50			
Sturgis	10,130				\$124	\$150	\$26			
Cadillac	10,104	\$372,329	\$449,387	\$77,059	\$148	\$176	\$28			
Albion	10,066	\$396,929	\$433,538	\$36,610	\$69	\$75	\$6			
Coldwater	9,607	\$345,000	\$425,203	\$80,204	\$114	\$164	\$50			
Howell	8,184	\$253,845	\$384,200	\$130,355	\$88	\$161	\$73			
Hillsdale	8,170		\$375,787		\$97	\$117	\$21			
Lapeer	7,759	\$219,575	\$349,457	\$129,882	\$229	\$255	\$26			
Tecumseh	7,462	\$267,437	\$336,071	\$68,634	\$60	\$69	\$9			
Marshall	6,891	\$261,335	\$243,183	\$18,152	\$66	\$98	\$32			
Manistee	6,734	\$279,895	\$281,463	\$1,569	\$78	\$93	\$15			
Dowagiac	6,409		\$278,312		\$63	\$94	\$31			
Ionia	5,935	\$208,045	\$261,649	\$53,604	\$63	\$103	\$39			
SouthHaven	5,563	\$217,128	\$257,394	\$40,267	\$74					

Figure 8
Sales Tax and Retail Sales
for Study Cities, 1987 and 1992

The sales tax and retail trade figures were compared over a five year period¹¹ and the 16 cities ranked according to the relative improvement in the economic status of each downtown. The percentage change between 1987 and 1992 for both sales tax and retail sales are shown , along with a “Combined” figure which represents the mean of the two.

¹¹ Although it was originally intended that 1987 and 1992 sales tax figures be used, significant discrepancies were seen in the Michigan data files for some cities from 1986 to 1987 and 1992 to 1993. Therefore, the mean of 1986 and 1987 figures and 1992 and 1993 sales tax figures were used to more accurately represent the general economic health during that time period, and they are shown simply as 1987 and 1992 (adjusted).

	Estim. Pop. 87	Estim. Pop. 92	Estim. Ch. Pop. 87-92	% Ch. Tax 87-92 (adj)	% Ch. Sales 87-92	% Changed Combined
Albion	10,364	9,867	-5%	9%	8%	9%
Alpena	11,612	11,182	-4%	10%	41%	26%
Big Rapids	13,130	12,251	-7%	6%	52%	29%
Cadillac	10,133	10,085	0%	21%	19%	20%
Coldwater	9,563	9,636	1%	23%	44%	34%
Dowagiac	6,378	6,429	1%		50%	50%
Hillsdale	7,949	8,318	5%		22%	22%
Howell	7,822	8,426	8%	51%	83%	67%
Ionia	5,931	5,938	0%	26%	62%	44%
Lapeer	7,291	8,071	11%	59%	11%	35%
Manistee	6,984	6,568	-6%	1%	19%	10%
Marshall	6,984	6,829	-2%	-7%	49%	21%
Owosso	16,362	16,295	0%	21%	38%	30%
South Haven	5,677	5,487	-3%	19%		19%
Sturgis	9,931	10,262	3%		21%	21%
Tecumseh	7,419	7,490	1%	26%	15%	20%

Figure 9
Ranking of Study Cities
by Change in Economic Indicators, 1987–1992¹²

As shown, the change in the Combined economic indicators varies widely for the study cities, from a 67 percent increase over the five year period in Howell to only a 9 percent increase in Albion, which is less than the normal increase due to inflation, and thus is effectively negative growth.

Correlation analysis was used to examine each of the following hypotheses:

- **Population, 1990:** Did cities with greater population growth have greater growth in economic indicators?
- **Percent change in Sales Tax and Retail Sales, 1987–1992:** Did growth in Sales Tax correlate with growth in Retail Sales?

¹² Notes: Sales tax figures were not available for 1992 for Marshall and South Haven and 1993 figures were substituted; sales tax figures were not available for Dowagiac, Hillsdale and Sturgis and no figures were available to be substituted. For cities where either sales tax or retail sales figures were not available, combined figures were derived from either sales tax or retail sales figures only.

The correlation coefficients are shown on the following chart:

	<i>Pop 87</i>	<i>Pop 92</i>	<i>% Ch. Pop.</i>	<i>% Ch. Tax</i>	<i>% Ch. Sales</i>	<i>Combined</i>
<i>Pop 87</i>	1.00					
<i>Pop 92</i>	0.99	1.00				
<i>% Ch. Pop.</i>	-0.25	-0.12	1.00			
<i>% Ch. Tax</i>	-0.17	-0.05	0.92	1.00		
<i>% Ch. Sales</i>	-0.05	-0.05	0.05	0.11	1.00	
<i>Combined</i>	-0.14	-0.08	0.55	0.68	0.80	1.00

Figure 10
Correlation Coefficients for
Population and Change in Sales Tax and Retail Sales

When Sales Tax and Retail Sales are compared against population growth, the change in Sales Tax has a very high correlation with Population Growth ($r=0.92$), while the coefficient for Retail Sales is inconsequential (0.05). These discrepancies strongly suggest that Retail Sales data (collected by the federal census) and Sales Tax data (collected by the state) are not interchangeable variables, and represent very different perspectives on the economic condition of cities.

Figure 11 also shows there is virtually no correlation between city size and economic growth. In other words, larger cities did not benefit from greater economic growth during the period when Wal-Mart came to the state of Michigan, and smaller cities were at no relative disadvantage overall.

The above chart also shows no significant correlation between changes in Sales Tax and Retail Sales ($r=0.11$), which indicates these two economic indicators are not interchangeable. This leads to the difficulty of deciding which is the more reliable indicator of economic health, which cannot be determined based on the information presented to this point.

The question then becomes—Which of these variables is more reliable? Because retail sales data is based directly on sales, and sales tax data is one step removed, being based on the tax collected on sales, retail sales data is assumed to be the more accurate of the two economic indicators. It also benefits from having more complete data available for the study cities for the years being studied. The

Combined variable should not be considered reliable because of the large discrepancies between the Sales Tax and Retail Sales data on which it is based. For these reasons, Retail Sales will be used as the indicator of economic health in the rest of this analysis.

Correlation of Economic Indicators to "Health Perception Index (HPI)"

Thus far the health and vitality of the study downtowns has been analyzed using the commonly available economic indicators of Sales Tax Distribution and Retail Sales figures. However, downtown health can and should be defined in a more comprehensive sense, and include, in addition to economic factors, an evaluation of the physical and functional condition of downtowns. Downtown health may be seen in terms of physical factors, such as streetscape improvements, restored facades, one-way streets, and improved parking. Functional factors can be more wide-ranging, and may include the ability of a downtown to serve as a focus of the community, the activities of organizations connected with the downtown (e.g., merchants association, chamber of commerce), or even issues of changing lifestyles and shopping patterns. Even economic factors can be more inclusive than sales tax and retail sales data, and may include such things as public expenditures in the downtown or the level of employment in the overall community.

A more comprehensive look at the 16 study cities and their downtowns was included as part of a continuing research project begun in 1985 by the author. The project, titled "An Evaluation of the Health of the Downtowns in Michigan Cities," has included surveys of merchants and property owners in the study city downtowns in both 1986 and 1992. The purpose of the survey was to establish a model for evaluating downtown health based on the perceptions of the people who knew those downtowns best. Through use of the survey, respondents were asked their opinions about a variety of factors relating to each of their downtowns, in an attempt to evaluate which factors they felt had the most impact on their downtown's overall health.

A system for comparing these responses in a consistent way was established through the development of a Health Perception Index (HPI). The Index was derived by combining responses from four different questions in the surveys and blending them into a single value¹³. The four questions used to derive the Health Perception Index were:

1. Question 1—Downtown Health Compared

The first survey question simply asked respondents to indicate how they felt about the overall health of their downtown compared with the health of other cities of similar size. Question 1, as it was presented in the questionnaire, is shown below:

How would you compare the overall health of your downtown with those of other cities similar in size?

(Note: A number of questions ask about the overall “health” of downtown. Its health can include economic, social and physical characteristics.)

How do you feel it compares — is it ...

- Much more healthy
- Somewhat more healthy
- About average for this size town
- Somewhat less healthy
- Much less healthy

Figure 11
Downtown Health Comparison Question

This question was placed first on the questionnaire because it was intended to elicit a general initial impression from respondents, before they knew about the line of questioning which followed. This minimized bias for this critical question. It also encouraged respondents to begin with a relatively simple question, helping to overcome their initial resistance to filling out a questionnaire.

¹³ For a description on the derivation of the Health Perception Index values, see Appendix A.

2. Historical Look at Downtown Health

The Health Perception Index (HPI) was derived from the responses to four survey questions, including Question 1 described above. The second of the questions making up the Index related to perceptions on how the health of a respondent's downtown had changed over time, giving a historical perspective to the evaluation. It served not only as a cross-check on how a respondent felt about his/her downtown's current status, but indicated a dynamic aspect of how they thought it was changing, and whether it is getting better or worse over time. The question was stated as follows:

1900	1920	1940	1960	70	80	90	92	
								Very good
								Good
								Fair
								Poor

FIGURE 12

HISTORIC HEALTH QUESTION FROM SURVEY

An example illustrates the significance of this question. Shown below are composite graphs for Dowagiac for both the 1992 survey and a similar survey conducted in 1986. Each line shown represents the answer from one respondent.

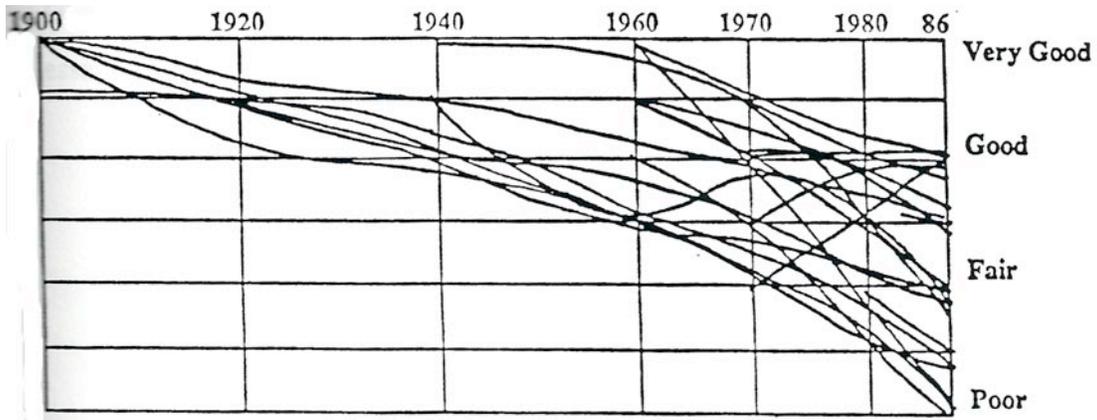


FIGURE 13
DOWAGIAC HISTORICAL HEALTH CHART — 1986 SURVEY

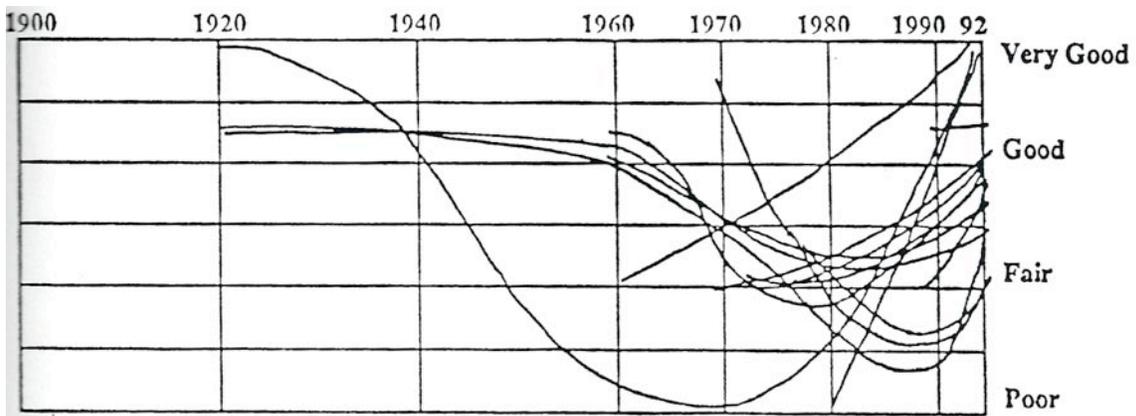


FIGURE 14
DOWAGIAC HISTORICAL HEALTH CHART — CURRENT STUDY

When the two charts are compared it becomes graphically clear that there was a poor opinion of Dowagiac's downtown health in 1986, showing a generally downward trend with little or no indication of optimism. When the 1992 chart is compared, however, it is seen that there has been a significant and consistent upshift in the attitudes of respondents. Virtually every line ends on an upswing, as opposed to the long decline evident in 1986. Clearly there has been something happening in Dowagiac that has significantly changed the opinion of merchants and business owners regarding their downtown's health.

3. Optimism/Pessimism About the Future of Downtown

The third question used to derive the Health Perception Index related to the attitudes of respondents about the future of their downtown. The questionnaire asked whether they generally saw the future of their downtown with optimism or pessimism. This provided another insight on the time element by asking how respondents saw the present downtown condition projected into the future. The question was phrased in the following way:

Now we would like your opinion on your downtown's future.

What is your opinion of the future of your downtown?
Does it look good or poor?

Good
 Poor

Why do you feel this way?

ILLUSTRATION 15
“FUTURE OF DOWNTOWN” QUESTION

4. Evaluation of Individual Downtown Characteristics

As the fourth and final question making up the Health Perception Index, respondents were asked to evaluate a list of characteristics generally associated with downtown health, such as retail sales, condition of buildings, level of cooperation from the city, and so on, as shown below. This question was included because the evaluation of such individual characteristics gave more detail on how respondents rated their downtown's health and revealed important information about the factors that have contributed most to a downtown's current condition. The 16 characteristics included were:

1. General condition of buildings downtown
2. Streetscape—sidewalks, benches, trees, etc.
3. Mix of stores and businesses
4. Parking in downtown
5. Your impression of overall retail sales downtown
6. No. of shoppers for “browsing” shopping
7. No. of shoppers for “quick-stop” shopping
8. Merchants association
9. Cooperation of banks
10. Cooperation of city government
11. Local political situation
12. Downtown as a community cultural center
13. No. of tourists coming to downtown
14. Employment in the local area
15. Historic character of downtown
16. Safety and security downtown

Development of the Health Perception Index

The respondents’ evaluations from the survey were tabulated and grouped by city. They were then converted from their raw score evaluations to a “normalized” scale of 0 to 100, which would allow comparisons of dissimilar rating values. For all the questions, a rating of 50 was established as the mean.¹⁴ The final HPI rating for each city is shown below:

¹⁴ For a description of this normalization procedure, see Appendix A.

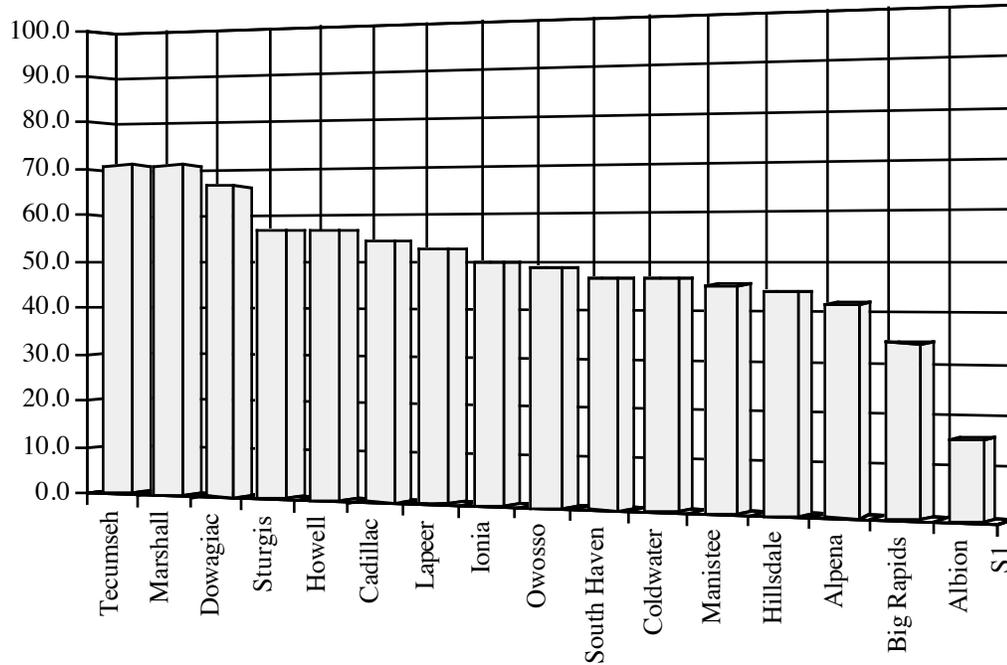


Figure 16
 Ranking of Study Cities
 According to Health Perception Index (HPI)

Correlation of the Health Perception Index and the economic indicator

The HPI values for each of the cities was compared with the Retail Sales economic indicator, with the correlations shown below:

	HPI	% Ch. Pop.	% Ch. Sales
HPI	1.00		
% Ch. Pop.	0.40	1.00	
% Ch. Sales	0.21	0.05	1.00

Figure 17
 Correlation Coefficients of HPI
 to Population and Economic Indicators

The chart indicates no significant relationship between the Health Perception Index and changes in Retail Sales. Since a minimum coefficient of 0.50 is needed to indicate a statistically significant correlation, the $r=0.21$ represents simply an insignificant “tendency” toward correlation, but not sufficient to be considered as reliable.

This analysis indicates it remains unclear whether the health of a downtown can best be depicted through standard economic indicators or through the more perceptual and broader based Health Perception Index. Therefore, both will be used for the remainder of the analysis, which looks at the impact of the opening of new Wal•Mart stores on the health of Michigan downtowns.

Impact of WalMart stores on study cities and their downtowns

To study the impact of the rapid infusion of Wal•Mart stores on smaller cities in Michigan, the 16 study cities were used as a representative sampling. By 1993, seven of the cities had new Wal•Mart stores located in the community; the nine other cities had access to Wal•Mart stores only from varying distances.

To look at the impact on cities of having Wal•Mart stores located there, the changes in economic indicators and the Health Index were grouped for Wal•Mart versus non-Wal•Mart cities, as shown in Figure 18. A comparison of the mean values for the two groups indicates clearly that Wal•Mart cities had higher growth in Sales Taxes, Retail Sales and the Combined Economic Indicators. This growth had nothing to do with population growth, since neither group had an increase in population.

It may be assumed that the Wal•Mart company consciously looked for sites where there was already economic growth, but it is much more likely that locating a new Wal•Mart store in a community created the economic growth shown. What is also seen is that there is no significant difference in the downtown Health Index ratings for Wal•Mart versus non-Wal•Mart cities, with the non-Wal•Mart cities even having a slightly higher Index rating. This can possibly be explained by the fact that although a new discount store brings in more retail sales overall, the increased sales is typically in direct competition with downtown businesses, and merchants don't perceive any overall improvement in general downtown health, even though sales and tax figures are higher.

		% Change	% Change	% Change	% Change
	HPI	Pop. 87-92	Tax 87-92(ad)	Sales 87-92	Comb.Econ
WalMart Cities					
Howell	56.5	8%	51%	83%	67%
BigRapids	34.3	-7%	6%	52%	29%
Cadillac	54.2	0%	21%	19%	20%
Coldwater	46.5	1%	23%	44%	34%
Owosso	49.1	0%	21%	38%	30%
SouthHaven	46.6	-3%	19%		19%
Sturgis	56.8	3%		21%	21%
Mean for Group	49.1	0%	24%	43%	31%
Non-WalMart Cities					
Tecumseh	70.8	1%	26%	15%	20%
Marshall	70.6	-2%	-7%	49%	21%
Albion	15.9	-5%	9%	8%	9%
Hillsdale	44.1	5%		22%	22%
Lapeer	52.8	11%	59%	11%	35%
Ionia	49.8	0%	26%	62%	44%
Dowagiac	66.0	1%		50%	50%
Manistee	45.4	-6%	1%	19%	10%
Alpena	41.8	-4%	10%	41%	26%
Mean for Group	51	0%	18%	31%	26%

Figure 18
Comparison of Wal-Mart vs. non-Wal-Mart Cities

The impact of distance

To test the impact of distance on downtown health, using both economic and perceptual indicators, a correlation was done of distance to Wal-Mart and downtown health and how it had changed in the five years since the first Wal-Marts opened. The data is shown in the table below, and the correlation coefficients below it.

	HPI	Estim.Ch Pop.87-92	% Ch.Sale Sal87-92	Distance to WMart	WMart Size (in 1000 S
Albion	15.9	-5%	8%	17	120
Alpena	41.8	-4%	41%	72	80
BigRapids	34.3	-7%	52%	3	93
Cadillac	54.2	0%	19%	3	80
Coldwater	46.5	1%	44%	3	80
Dowagiac	66.0	1%	50%	40	100
Hillsdale	44.1	5%	22%	20	80
Howell	56.5	8%	83%	3	119
Ionia	49.8	0%	62%	33	100
Lapeer	52.8	11%	11%	25	100
Manistee	45.4	-6%	19%	49	80
Marshall	70.6	-2%	49%	14	135
Owosso	49.1	0%	38%	3	93
SouthHaven	46.6	-3%		3	80
Sturgis	56.8	3%	21%	3	98
Tecumseh	70.8	1%	15%	12	127

Figure 19
Distance to Wal•Mart (in miles)

A distance of three miles was given to Wal•Mart stores that were within a given community. This represented an assumed average distance for residents in the surrounding area to drive to the store.

	HPI	% Ch. Pop.	% Ch. Sales	Distnnce	Size
HPI	1.00				
% Ch. Pop.	0.40	1.00			
% Ch. Sales	0.21	0.05	1.00		
Distance	-0.07	-0.20	-0.04	1.00	
Size	0.33	0.16	0.15	-0.21	1.00

Figure 20
Correlation Coefficients for
Distance to Wal•Mart (in miles) and Size of Store

Using distance in miles as a variable, no correlation is shown to either the downtown Health Index (-0.07) or Retail Sales (-0.04). However, this analysis does not incorporate the study of Stone, described previously, who found that cities with a Wal•Mart benefited from its presence, but that cities in a 20 to 30 mile perimeter of Wal•Mart cities suffered the most from the competition. To study this effect for the 16 Michigan study cities, the distance variable was redefined. The sixteen cities were ranked from 1 to 16, with the lowest values given to the cities with the least negative competition. Since the seven cities with

Wal•Mart stores were seen as being impacted the least negatively, they were ranked from 1 to 7 based on how many other discount stores were located there, and how big they were. From that, the next lowest ranking was given to the city which was the furthest distance from a Wal•Mart location (Alpena at 72 miles), continuing on to the city closest to a Wal•Mart city (Tecumseh at 12 miles), where the competition was predicted to be greatest. The distances and rankings and their correlations to the Health Index and Economic Indicators are shown below.

	HPI	Estim.Ch Pop.87-92	% Ch.Sale % Sal87-92	Distance to WMart	WMart Siz (in 1000 SF)	Stone Ranking
Owosso	49.1	0%	38%	3	93	1
Cadillac	54.2	0%	19%	3	80	2
BigRapids	34.3	-7%	52%	3	93	3
Howell	56.5	8%	83%	3	119	4
Coldwater	46.5	1%	44%	3	80	5
Sturgis	56.8	3%	21%	3	98	6
SouthHaven	46.6	-3%		3	80	7
Alpena	41.8	-4%	41%	72	80	8
Manistee	45.4	-6%	19%	49	80	9
Dowagiac	66.0	1%	50%	40	100	10
Ionia	49.8	0%	62%	33	100	11
Lapeer	52.8	11%	11%	25	100	12
Hillsdale	44.1	5%	22%	20	80	13
Albion	15.9	-5%	8%	17	120	14
Marshall	70.6	-2%	49%	14	135	15
Tecumseh	70.8	1%	15%	12	127	16

Figure 21
Distance Ranking to Wal•Mart (according to Stone)

	Health Index	Sales Tax 87-92(adj)	Retail Sales 87-92	Comb.Econ.	Distance to WMart	Distance Ranking
Health Index	1.00					
Tax 87-92(adj)	0.20	1.00				
Sales 87-92	0.21	0.11	1.00			
Comb.Econ.	0.33	0.68	0.80	1.00		
Dist. to WMart	-0.07	-0.21	-0.05	-0.04	1.00	
Dist. Ranking	0.15	-0.12	-0.33	-0.25	0.35	1.00

Figure 22
Correlation Coefficients for Distance Ranking

The chart indicates there is no significant correlation between the distance factor as described by Stone and either economic growth or the Health Index. Instead, it indicates there may be a statistical “tendency” ($r=-0.33$) between the distance rankings and growth in retail sales which is counter to Stone; that is, the non-

Wal•Mart study cities closest to the 20 mile perimeter had greater growth than other study cities.

The Impact of All Competitor Discount Department Stores

Other major discount department stores were next included in the analysis to see if there was a significant impact on downtowns of all discounters, rather than just the more recent Wal•Mart stores. However, an analysis of Total Square Feet of All Discount Department Stores in each community to both Economic Indicators and the Health Index once again showed no significant correlation.

To give a more inclusive look at this factor, a gravity model was used to derive for each city a value based on the competitive draw of all discounters within a 30 mile radius of each study city. The 30 mile radius includes the area Stone had found was most impacted by new Wal•Mart stores, and was assumed to spatially represent most of the competitive draw from the study city downtowns. The gravity model used was simply:

$$\text{Competition for each city} = \sum \frac{\text{SF}}{d^2}$$

where SF = Square footage of a discounter within 30 mile radius

and d = distance to retailer

(Note: discounters located in the community are assumed to be at a distance of 3 miles)

Because of the potential for vast differences in competition ratings from squaring the distance factor, the formula was also calculated simply using distance (unsquared). Both the “d² Ratings” and “d Ratings” are shown.¹⁵

The values derived from the gravity models for for each of the study cities are as follows:¹⁶

¹⁵ If a large city within the 30 mile radius had more than one store of a certain discounter, only one store of that discounter was included, with the square footage of its largest store considered as the competitor store.

<u>Name of Store</u>	<u>Competitor City</u>	<u>Sq. Ft.</u>	<u>Dist.(mi.)</u>	<u>d² Rating</u>	<u>d Rating</u>
Albion					
KMart	Albion	55,000	3	6,111	18,333
Meijer	Jackson	225,000	17	779	13,235
Quality Farm and Fleet	Jackson	60,000	17	208	3,529
Sam's Club	Jackson	120,000	17	415	7,059
Target	Jackson	100,000	17	<u>346</u>	<u>5,882</u>
				7,859	48,038
Alpena					
KMart	Alpena	71,000	3	17,750	23,667
Big Rapids					
KMart	Big Rapids	50,000	3	5,556	16,667
Quality Farm and Fleet	Big Rapids	30,000	3	3,333	10,000
Wal•Mart	Big Rapids	93,000	3	<u>10,333</u>	<u>31,000</u>
				19,222	57,667
Cadillac					
KMart	Cadillac	68,000	3	7,556	22,667
Quality Farm and Fleet	Cadillac	75,000	3	8,333	25,000
Wal•Mart	Cadillac	80,000	3	8,889	2,963
Meijer	Traverse City	200,000	49 ¹⁷	<u>83</u>	<u>4,082</u>
				24,861	54,712
Coldwater					
KMart	Coldwater	40,000	3	4,444	13,333
Quality Farm and Fleet	Coldwater	20,000	3	2,222	6,667
Wal•Mart	Coldwater	80,000	3	<u>8,889</u>	<u>26,667</u>
				15,555	46,667
Dowagiac					
KMart	Niles	110,000	17	381	6,471
Meijer	Benton Harbor	200,000	22	413	9,091
N.A. ¹⁸	South Bend	100,000	25	<u>160</u>	<u>4,000</u>
				954	19,562
Hillsdale					
Ames Dept Store	Hillsdale	52,000	3	5,778	17,333
Fisher Big Wheel	Hillsdale	45,000	3	5,000	15,000
KMart	Coldwater	40,000	26	59	1,538
Quality Farm and Fleet	Coldwater	20,000	26	30	769
Wal•Mart	Coldwater	80,000	26	<u>118</u>	<u>3,077</u>
				10,985	37,717

¹⁶ Information taken from *Chain Store Guides*. 1994. Business Guides, Inc.

¹⁷ Although Traverse City is beyond the 30 mile radius, a number of survey respondents from Cadillac indicated they traveled regularly to Traverse City for shopping, so this competitor is included.

¹⁸ No information available for Indiana competitors, but according to surveys South Bend does attract Dowagiac shoppers, so assumption of size made.

Howell						
Quality Farm and Fleet	Howell	42,000	3	4,667	14,000	
Wal•Mart	Howell	119,000	3	13,222	39,666	
KMart	Brighton	71,000	8	1,109	8,875	
Meijers	Brighton	84,000	8	<u>1,312</u>	<u>10,500</u>	
				20,310	73,071	
Ionia						
County Post	Ionia	12,000	3	1,333	4,000	
KMart	Ionia	96,000	3	10,667	32,000	
Meijers	Ionia	90,000	3	10,000	30,000	
Target	Grand Rapids	100,000	30	111	3,333	
Sam's Club	Kentwood	100,000	30	<u>111</u>	<u>3,333</u>	
				22,222	72,667	
Lapeer						
KMart	Lapeer	72,000	3	8,000	24,000	
Meijer	Flint	190,000	17	657	11,176	
Sam's Club	Flint	100,000	22	207	4,545	
T.J. Maxx	Flint	27,000	17	93	1,588	
Target	Flint	100,000	17	<u>346</u>	<u>5,882</u>	
				9,303	47,191	
Manistee						
KMart	Manistee	80,000	3	8,889	26,667	
Quality Farm and Fleet	Ludington	30,000	26	<u>44</u>	<u>1,154</u>	
				8,933	27,821	
Marshall						
KMart	Marshall	80,000	3	8,889	26,667	
Meijer	Battle Creek	225,000	14	1,148	16,071	
Quality Farm and Fleet	Battle Creek	30,000	14	153	2,143	
Sam's Club	Battle Creek	135,000	14	689	9,643	
Target	Battle Creek	100,000	14	<u>510</u>	<u>7,143</u>	
				11,389	61,667	
Owosso						
Quality Farm and Fleet	Owosso	90,000	3	10,000	30,000	
Wal•Mart	Owosso	93,000	3	10,333	31,000	
KMart	Corunna	100,000	4	6,250	25,000	
Meijer	Corunna	190,000	4	11,875	47,500	
Target	Flint	100,000	28	<u>128</u>	<u>3,571</u>	
				38,586	137,071	
South Haven						
Wal•Mart	South Haven	80,000	3	8,889	26,667	
KMart	Holland	80,000	26	118	3,077	
Meijer	Holland	80,000	26	118	3,077	
Target	Holland	100,000	26	<u>148</u>	<u>3,846</u>	
				9,273	36,667	
Sturgis						
KMart	Sturgis	40,000	3	4,444	13,333	
Wal•Mart	Sturgis	98,000	3	<u>10,889</u>	<u>32,667</u>	
				15,333	46,000	

Tecumseh						
KMart	Adrian	86,000	12	597	7,167	
Meijer	Adrian	109,000	12	757	9,083	
Quality Farm and Fleet	Adrian	30,000	12	208	2,500	
Wal•Mart	Adrian	127,000	12	882	10,583	
Target	Ann Arbor	100,000	27	137	3,704	
				2,581	33,037	

The ratings from the gravity model calculations for each study city are shown in the following chart. As expected, the ratings using “d2” have extreme deviations from high to low, and the ratings using “d” suggest a better representation of the relative strength of competitor discount stores for each city.

	HPI	Estim. Ch. Pop. 87-92	% Ch. Sale 87-92	Stone Ranking	Gravity Model Rating (d2)	Gravity Model Rating (d)
Albion	15.9	-5%	8%	14	7,859	48,038
Alpena	41.8	-4%	41%	8	17,750	23,667
BigRapids	34.3	-7%	52%	3	19,222	57,667
Cadillac	54.2	0%	19%	2	24,861	54,712
Coldwater	46.8	1%	44%	5	15,555	46,667
Dowagiac	66.0	1%	50%	10	954	19,562
Hillsdale	44.1	5%	22%	13	10,985	37,717
Howell	56.8	8%	83%	4	20,310	73,071
Ionia	49.8	0%	62%	11	22,222	72,667
Lapeer	52.8	11%	11%	12	9,303	47,191
Manistee	45.4	-6%	19%	9	8,933	27,821
Marshall	70.6	-2%	49%	15	11,389	61,667
Owosso	49.1	0%	38%	1	38,586	137,071
SouthHaven	46.6	-3%		7	9,273	36,667
Sturgis	56.8	3%	21%	6	15,333	46,000
Tecumseh	70.8	1%	15%	16	2,581	33,037

Figure 23
Gravity Model Ratings

	HPI	% Ch. Pop.	% Ch. Sales	Ranking	Rating (d2)	Rating (d)
HPI	1.00					
% Ch. Pop.	0.40	1.00				
% Ch. Sales	0.21	0.05	1.00			
Ranking	0.15	0.08	-0.33	1.00		
Rating (d2)	-0.16	-0.02	0.32	-0.73	1.00	
Rating (d)	-0.03	0.10	0.30	-0.45	0.84	1.00

Figure 24
Correlation Coefficients for Gravity Model Ratings

Correlation analysis shows there is a strong correlation between the Gravity Model ratings and the Distance Rankings suggested by Stone (-0.73 and -0.45).

This gives credence to both techniques for evaluating the relative power of competition. In other words, distance to competitor stores and size of competitor stores is a good way to evaluate the level of competition as presented by Stone.

However, there is no significant correlation shown between these competitor evaluations and either the downtown Health Index ($r=-0.03$) or the Retail Sales Indicator ($r=0.30$), although the Retail Sales coefficient is much stronger than the HPI coefficient. Overall, this indicates that competition may not be a significant explanatory variable for evaluating downtown health, and there is no support for concluding that the level of competition directly impacts downtown health, even if evaluated in terms of either retail sales or the perceptions of downtowners.

Summary

This study has looked at various techniques for modeling the health of downtowns. Economic indicators were compared over a five-year period, from 1987 to 1992, for 16 smaller Michigan cities, including changes in sales tax distribution and retail sales. Also, Tyler's downtown Health Perception Index, developed from surveys in the same cities, was used as a broader evaluation based on input from merchants and business owners. Finally, the strength of retail competition from large discount department stores was derived for each study city from use of a gravity model.

Correlation analysis was used to compare the relationships between the three techniques. The lack of correlation between the study's three primary variables—the downtown Health Index, Retail Sales, and the Competitors' Ratings—suggests there is no reliable way to establish a model for predicting downtown health. Each has a degree of validity within its own right, but each is left without the reinforcement of other techniques of analysis.

References

- Chain Store Guides. 1987, 1993, 1994. Business Guides, Inc.
- Ghosh, Avijit and Sara L. McLafferty. 1987. *Location Strategies for Retail and Service Firms*. Lexington, Massachusetts: Lexington Books.
- Gruidl, John and Steven Kline. "What Happens When a Large Discount Store Comes to Town?." *Small Town*. March-April 1992. pp. 20-23.
- Holden, John P. and Steven C. Deller. "Measuring Community Retail Markets: An Analysis of Reilly's Law." *Small Town*. September–October, 1994. pp. 16–21.
- "How America Shops and Buys: Downtown Vs. Competitive Sites." *Downtown Idea Exchange Newsletter*. 30:19. pp. 2-3.
- Huff, D.L. "A Probabilistic Analysis of Shopping Center Trade Areas." *Land Economics*. No. 39 (1963). pp. 81-90.
- Lalonde, B. "The Logistics of Retail Location." *Proceedings, American Marketing Association*. Chicago: American Marketing Association. 1961.
- McKay, David. "Shops Switch, Don't Fight Wal-Mart." *Detroit Free Press*. June 22, 1993. pp. 1B-3B.
- Melford, Michael. "It's Wake-up Time for Main Street When Wal-Mart Comes to Town." *Smithsonian*. October 1992. pp. 36-47.
- Parliament, Claudia and Liz Templin. "Downtowns and Discount Stores: What Can Communities Do?" *Minnesota Cities*. October 1991. pp. 6-8.
- Reed, B.J. and D. Paulsen. "Small Towns Lack Capacity for Successful Development Efforts." *Rural Development Perspective*. Volume 6, Issue 3. June-September 1990. p. 26.
- Reilly, W.J. *The Law of Retail Gravitation*. New York: Knickerbocker Press. 1931.
- Robinson, Kent. 1985. "Designing Downtown Redevelopment Policy: The Problem of Knowledge." *Journal of Architectural and Planning Research*. 2: 129–139.
- Saporito, Bill. "Is Wal-Mart Unstoppable?" *Fortune*. May 6, 1991.
- Stone, Kenneth E. "The Impact of Wal-Mart Stores on Retail Trade Areas in Iowa: Executive Summary." Published by author. 1990.
- Tyler, Norman R. 1987. *An Evaluation of the Health of the Downtowns in Eight Michigan Cities*. University of Michigan.
- United States Department of Commerce. 1987, 1992. *Census of Retail Trade*. Washington, D.C.
- Welles, Edward O. "When Wal-Mart Comes to Town." INC. July 1993.

Appendix A:

Description of the use of the Normative Scaling Technique

The responses to questions on the survey were converted to a 0–100 scale, with 100 representing the most positive response and 0 representing the most negative. In other words, if all respondents in a particular downtown had indicated their downtown was “Much more healthy,” the overall rating for that downtown for Question 1 would have been 100; if all had indicated their downtown was “About average...” the score would have been 50.

A similar 0–100 scale was applied to virtually all of the questions used in the questionnaire. This conversion was necessary to make it possible to compare responses from many questions and question formats. Although in some ways simplistic, there was no other way to enable such comparisons in a consistent and statistical format.

Using a 0–100 scale, one could initially assume the mean for each question, taken over a large enough sample, would be close to a value of 50 (representing for Question 1 the box labeled "About average"). However, survey researchers have recognized there is a normal bias in questions of this type, and respondents typically tend to rate their own city a little better than average, and thus tend to push the mean rating higher than 50. As an example, the mean response for Question 1 for all the respondents was 54.5, significantly higher than an expected mean value of 50. To adjust for this bias, a “normative scaling” technique was instituted and applied throughout the analysis. Normative scaling is a technique developed by the author to accommodate such a bias. Through a reiterative technique of adjustment, the initial values are “nudged” upward or downward sufficiently to derive a new mean with a “normalized” value of 50. Using the example from Question 1 described above, the values based on the responses were recalculated so the average for all respondents became 50, rather than 54.5. In other words, all the initial values were shifted proportionally downward. Using this procedure the values in the mid-range are shifted more, while values at the

higher and lower ends are shifted less (e.g., a value of 54.5 is shifted downward 4.5, a value of 27 would be shifted downward 2.2, a value of 0 would not be shifted at all).

The formulas used for normalizing the ratings for the sixteen study cities are:

- A. If the initial mean for all cities is above 50 and the initial mean for an individual city is above the initial mean:

$$\text{Normalized value} = \text{initial value} - \frac{100 - \text{initial value}}{100 - \text{mean}} * (\text{mean} - 50)$$

- B. If the initial mean for all cities is above 50 and the initial mean for an individual city is below the initial mean:

$$\text{Normalized value} = \text{initial value} - \frac{\text{initial value}}{\text{mean}} * (\text{mean} - 50)$$

- C. If the initial mean for all cities is below 50 and the initial mean for an individual city is above the initial mean:

$$\text{Normalized value} = \text{initial value} + \frac{100 - \text{initial value}}{100 - \text{mean}} * (50 - \text{mean})$$

- D. If the initial mean for all cities is below 50 and the initial mean for an individual city is below the initial mean:

$$\text{Normalized value} = \text{initial value} + \frac{\text{initial value}}{\text{mean}} * (50 - \text{mean})$$

Such normalization accomplishes two things—first, it minimizes data collection bias inherent in the questioning and answering and, second, it allows data collected through a variety of techniques to be put into a common format for more realistic comparisons.

Second, retail potential in each city will be explored using Lalonde's "Index of Retail Saturation," which compares the level of retail expenditures in a given area with the level of supply of retail selling space. The index is computed as follows:

$$IRS_i = \frac{POP_i \times EXP_i}{RSS_i}$$

IRS_i = index of retail saturation in area i

POP_i = population in area i

EXP_i = per capita retail expenditure in area i

RSS_i = retail selling space (in total square feet) in area i ¹⁹

The higher the value of the IRS figure the greater the attractiveness of an area for additional retail. A low retail saturation index represents a saturated commercial environment for a particular business type. Since the index is only useful when applied in a comparative manner, the relative attractiveness of various environments can be evaluated and ranked using the index.

¹⁹ Avijit Ghosh and Sara L. McLafferty (1987). *Location Strategies for Retail and Service Firms*. Lexington, Massachusetts: Lexington Books. p. 36. Retail selling space will be interpolated based on the number of stores

A major recognized problem of downtowns is that there is little systematic study of the trends which impact changes over time. No accepted model has yet been developed for determining the health of a downtown, either at a particular point in time or relative to other downtowns in other cities. Robertson (1985) recognized that "...we know virtually nothing about the trends exhibited by a bundle of centralized activities (or even a subset of that bundle) in a large national sample of CBDs from the mid-1950s to the present."²⁰

However, as stated by Robinson (1985) "...it is difficult, if not impossible, to uncover the data needed for the type of comparative research required to adequately address problems of the CBD²¹ and the city as a whole."²²

²⁰ Kent Robinson. 1985. "Designing Downtown Redevelopment Policy: The Problem of Knowledge." *Journal of Architectural and Planning Research*. 2: 135.

²¹ Central Business District.

²² Kent Robinson. 1985. "Designing Downtown Redevelopment Policy: The Problem of Knowledge." *Journal of Architectural and Planning Research*. 2: 137.