

THE IMPACT OF INDUSTRIALIZATION UPON
REAL ESTATE IN PARSONS, KANSAS

by

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**THIS BOOK
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Chapter 1

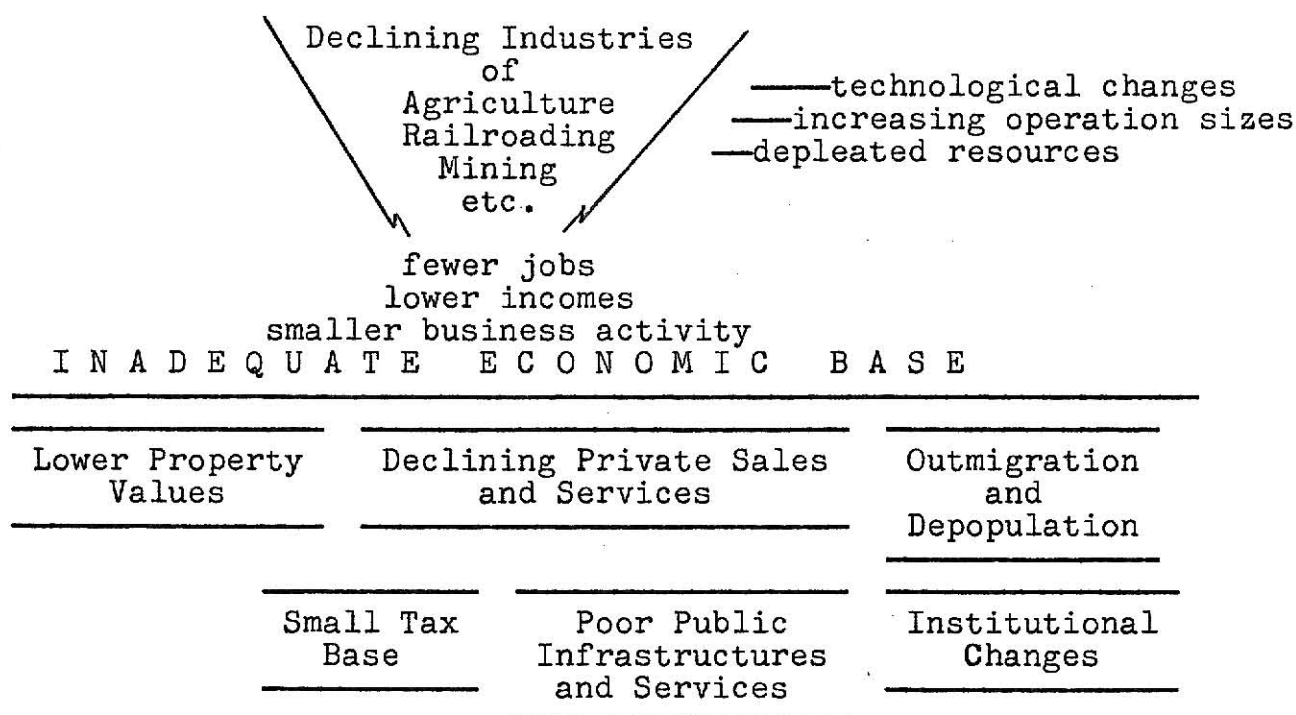
INTRODUCTION

Many rural communities today face deterioration as their economic base dwindles, young people leave, and the quality of their services declines. Often changes in agriculture and other industries common to rural areas have been indirectly responsible for these community problems. Vast technological advances in agricultural production (and other primary industries) have made possible the substitution of capital for labor. This substitution has reduced the number of people required in commercial agriculture and increased the size of the farm. As a result, there are now fewer farmers to support community businessmen, institutions, and services. Many rural communities today are experiencing such a small volume of business activity that the maintenance of an adequate economic base is being jeopardized.

Figure 1 is presented to illustrate some of the important relationships involved in the deterioration of small communities. In addition to losses of jobs, there is often outmigration by the younger, better educated, and professional people. This reduction in population in turn has contributed to deterioration

Figure 1

Summary of the Problems Facing Small
Rural Communities



in the quality and quantity of public and private services available in these rural communities.¹

The loss of people and services has forced additional hardship on local institutions, such as schools and churches, which have difficulty operating with few members. A loss of power and support of the local political structure may also occur. Poor, inadequate, or even unused commercial, residential, industrial, and public properties may result from the shortage

¹Calvin L. Beale, "Demographic Trends of the U.S. Rural Population," The Development of Rural America, ed. George L. Brinkman (to be published by the University Press of Kansas, Lawrence).

of business activity and employment opportunities, and from the outmigration of community residents. Soon the attitudes of the permanent residents may become pessimistic and resistant to improvement. These conditions continue in a circular flow such that they tend to cause further deterioration of each condition, thus reinforcing the original causes of the deterioration.

Presently many rural communities are actively involved or considering involvement in attracting industry to reverse their deterioration or prevent it from getting started. By attracting industry, they hope to provide new jobs and income, so that more people will stay to support businesses, services, and institutions. With more people, the value of local properties may increase and provide new sources of tax revenue for government functions in these communities.

The Problem

Decision makers in rural communities often have difficulty in measuring the value of their industrialization efforts because industrialization causes a great variety of benefits and costs to individuals and to the community as a whole. These industrialization effects range from changes in employment, income, and property values, to added burdens from the requirements for more public services. Consideration should be given to measuring the value of each effect in providing an overall evaluation of the industrialization efforts.

Numerous studies have been undertaken to determine the effects of industrialization (both benefits and costs) to the private and public sectors of a community. Most of these studies have focused on the flows of income and employment that occur annually, but very few have looked at changes in the stock of property.² The few studies that have considered changes in property have generally looked at the effect of the new buildings of the industrial firm and the new homes of the employees of that firm. Unfortunately, the new workers and their payrolls causing induced property changes among community businessmen and on the overall price level of property within the community has been largely ignored.

Additional and more accurate information about the present trend and predicted changes in local property valuations would be advantageous in evaluating small community industrialization. First, industrialization may increase property values. Increased property values would increase the equity of the property-owners and provide a possibility of greater sources of capital in borrowing and liquidation. Capital gains may be realized upon the sale of property and liquidation of housing debts may be easier.

Increased property values may also increase the community tax base. The adequacy of the local tax base serves both as an

²Refer to Chapter 2, "Review of Literature," for further discussion of case studies about industrialization effects.

indicator of the prevailing economic situation and as a means to provide the necessary public goods and services demanded in a community. In Kansas, ad valorem taxation is the major source of local tax revenue. With a better understanding of the impact of industrialization upon real estate values, sources of changes in the local property tax revenues could be identified, and repercussions from changes in the tax burden could be anticipated better. Perhaps sources of increased sales and a potential tax base from property transactions also could be identified. In short, tax programs and policies for the financing of industrialization efforts and needed public goods and services would be more successful in small communities.

Objectives

The objectives of this study are to:

(1) measure the inventory changes in valuations of the stock of local property in Parsons, Kansas during a period of industrialization from 1960 to 1970

(2) develop a model for estimating the residential property value changes caused by industrialization in non-metropolitan communities

(3) measure the effect which industrialization has caused upon residential property values in Parsons, Kansas from 1960 to 1970.

Conceptual Framework

Industrialization efforts in small communities are undertaken to prevent or to reverse the economic contraction that has been caused in many small communities by the declining industries of agriculture, mining and railroading. The location of industry will create effects on various systems and individuals within the community, including real estate properties. Real estate is a commodity, and like other commodities, its value is a function of the interaction of the quantity available and the quantity demanded by the consumers.

Operation of new industries will create direct employment, income and output within the community. New plant employees require local goods and services for themselves and their families, housing and a place of work. These required goods and services will be provided for (at least in part) by the local business and government sectors, and paid for out of the employee's income. The output of the industry will also be handled and shipped by local business and government sectors. Consequently, local provision of the additional goods and services demanded as a result of direct industrial employment, income and output may necessitate additional workers, more working hours, higher income, and increased output on the part of the local business and public sectors. Thus an indirect--multiplier--effect of employment, income and output occurs. These indirect factors will generate additional economic activity,

similar to those which the primary factors have caused within the community.

The greater numbers of people, more income and higher output will impose demands for increased utilization of the available resources of land and buildings. The value of the real estate commodity will now depend upon this new demand and its equilibrium with the developed supply. The use of the property will traditionally determine its value regardless if a monetary return is being derived (as in a business enterprise) or not (as in permanent residential consumption). As a piece of property, and similar properties throughout the community are being put into a more intensive use of the original type, or into a more intensive use of a substitute type, an increase in the total property valuation may occur. New construction and renovative developments may also add to the total supply of property.

Private real estate values will increase when improvements are made upon them and as the demand for such property increases. The same argument should be true of publicly owned municipal property, especially when alternative uses of the property and the site are considered.

In areas of deteriorating communities, some degree of excess capacity of both private and public goods and services exist and a higher rate of manpower underemployment and even unemployment are common. Under these conditions, instead of

creating spontaneous growth, new industry may cause more intensive utilization of existing buildings, equipment and of the civilian work force. If most employees of the new industrial firms and most indirect employees are previous residents and not new residents of the community, industrialization may not expand the demand for real estate. If the community has been experiencing population decline, the greatest impact of industrialization may be to slow the decline rather than cause growth. Thus with the location of new industries in small communities, importance lies not in just the actual changes in the property valuations over the years, but what the valuations of properties would have been without the effects of industrialization in the small community.

Chapter 2

REVIEW OF LITERATURE

The review of literature is divided into two parts. The first section reviews some of the most recent case studies and views concerned with the impacts caused by new industries. The second section summarizes studies of the supply and demand for housing.

Studies of Industrialization and Property

A great amount of research has been done during the last several decades studying the effects which new industry has caused. Most of these studies were not concerned with changes in property. However in achieving a more comprehensive understanding of the industrialization effects, a few researchers began recognizing the changes in property values and incorporating them in their impact studies.

Studies not recognizing the real estate effects. Most of the earlier studies were concerned with only single effects caused by industrialization, such as only employment, income, or socialization, etc. Within the last decade, several researchers have attempted to analyze multiple effects to

determine the total impact of new industries upon an area.¹
 The effects which these studies frequently emphasized were combined, for example, in Charles Garrison's thesis.²

Garrison studied nine new industrial plants in five Kentucky towns. He used economic base studies of the counties involved and analyzed them relative to other economic base studies of control counties. Estimated changes in major public revenues and expenditures which were caused by the new plants, new residents and school children were determined. Garrison

¹Some of the most recent studies and views on industrial effects which have not looked at the real estate effects are: Wade H. Andrews and Ward W. Bauder, The Effects of Industrialization on a Rural County: Comparison of Social Change in Monroe and Noble Counties of Ohio, Department Series A.E. 407 (Wooster: Ohio Agricultural Research and Development Center, May, 1968); John C. Crecink, Rural Industrialization: Case Study of a Tissue Paper Mill in Pickens, Mississippi, Agricultural Economics Report No. 189 (Washington: Government Printing Office, Economic Development Division, Economic Research Service, U.S. Department of Agriculture, September, 1970); Max F. Jordan, Rural Industrialization in the Ozarks: Case Study of a New Shirt Plant at Gassville, Arkansas, Agricultural Economics Report No. 123 (Washington: Government Printing Office, Economic Development Division, Economic Research Service, U.S. Department of Agriculture, November, 1967); Jackson V. McElveen, Rural Industrialization in the Southeast Coastal Plain: Case Study of a New Brick Factory in Summerville, South Carolina, Agricultural Economics Report No. 174 (Washington: Government Printing Office, Economic Development Division, Economic Research Service, U.S. Department of Agriculture, February, 1970); and H. A. Wadsworth and J. M. Conrad, Impact of New Industry on a Rural Community, Agricultural Experiment Station, Research Bulletin No. 811 (Lafayette: Purdue University, July, 1966).

²Charles B. Garrison, "Economic Impact of New Industry on Small Towns" (unpublished Doctor's thesis, University of Kentucky, 1967).

incorporated both the direct and indirect effects. With these effects he derived a net fiscal impact of the new plants on the school district and on the city and county governments. The major finding was that the use of industrial location incentives were crucial to the net impact on the school districts because of tax exemptions.

Garrison's study and similar ones have not recognized the relationships of changes in the property tax base resulting from changes in the income and employment caused by the new industries. Generally they only recognize buildings and improvements made directly by the new plants and perhaps by the new residents directly employed by the industries.

Studies recognizing real estate effects. This section gives a brief summary of the evolution of recognition of the changes in real estate properties caused by new industry. Isard and Coughlin studied the municipal and school impacts caused by new industry.³ Using engineering data and scales of economies with changes in population and business volumes, they measured capital and non-capital costs and revenues for public services. Changes in the residential property were recognized as the result of only the direct new residents building homes. Changes in industrial and commercial property values, levels of

³Robert Coughlin and Walter Isard, Municipal Costs and Revenues Resulting from Community Growth (West Trenton: Chandler-Davis, 1957).

public services provided, and all possibilities of underutilization of public services were also incorporated.

Ruth Mace recognized direct and indirect changes in property which created benefits of increased municipal revenues.⁴ She noted that increased tax revenues were generated from direct new business firms and new employees. She also observed revenues coming from old businesses related to the new industries, due to increased business activity. Increased household activities and real property value increases generated an increased tax base and tax revenues. She did not explain how the changes in property values could be determined.

Hirsch describes changes in property values from both direct and indirect effects of industrialization.⁵ He presented a "regional local government net fiscal resources model." In an attempt to express functional relationships in the model, mathematical equations were developed which incorporated direct and indirect industrial effects. Personal income, employment, population, and output were used to derive changes in the assessed valuation of residential, commercial, and industrial properties. Input-output transactions matrix coefficients were used to determine by how much each of the variables would affect the

⁴Ruth L. Mace, Municipal Cost-Revenue Research in the United States (Chapel Hill: University of North Carolina Press, 1961).

⁵Werner Z. Hirsch, "Regional Fiscal Impact of Local Industrial Development," Papers and Proceedings of the Regional Science Association, Vol. 7, 1961, pp. 119-132.

assessed valuations. Unfortunately, property valuation changes were overshadowed because the emphasis was in deriving a regional fiscal-impact model.

Ralph Gray, in his view of municipal subsidies to industry describes the chain of events resulting from small community industrialization.⁶ (1) The new plants offer increased local employment. (2) The average income in an area will increase due to the increased employment and wages. (3) The local population increases because of in-migration of workers looking for and receiving jobs. (4) The increased economic activity and population leads to higher property values and tax values. (5) The increased tax base will improve the communities ability to pay for expanded public service requirements either through bond or tax revenues. In essence, first the community experiences the benefits of increased economic activity which has resulted from the new plant and then there is an increased demand for public services. Although Gray recognizes changes in property values, he fails to explain how increases in the economic base and the increases in population relate to higher property values.

Stevens and Wallace studied the impact of industrial development in a rural Indiana county.⁷ They examined revenues

⁶Ralph Gray, "An Economic View of Municipal Subsidies to Industry," Municipal Finance, Vol. 36, May, 1964, pp. 153-160.

⁷J. B. Stevens and L. T. Wallace, Impact of Industrial Development on Howard County, Indiana, 1947-1960, Research Bulletin 784 (Lafayette: Agricultural Experiment Station, August, 1964).

and expenditures to the school, city, and county governments from an increased tax base and changes in tax rates. The major finding was that local income increased faster than the state income had increased. Because they compared county empirical data before the location of the industry with respective data after the location of the industries, they failed to isolate the industrialization effects. Stevens and Wallace did not relate the changes in school and government costs to changes in income and public revenues caused by the industries.

Hagerman and Braschler examined the industrial development program costs in a small Missouri town where three firms had located within the county.⁸ A private impact was determined by changes in housing, employment, income, population, banking and financial ability. They found an increased economic activity. A public impact was determined by changes in county and municipal revenues and expenditures and capital improvements of public facilities. Hagerman and Braschler found an increased ability to pay for city and school services. Because they also compared empirical data from before the location of the new industries with respective data after industrialization, the results did not solely represent the effects of the industries under study.

⁸Dale L. Hagerman and Curtis H. Braschler, An Analysis of the Impact of Industrialization on a Small Town Economy. A Case Study of Ava, Missouri, Parts I and II, Research Bulletin 910 (Columbia: University of Missouri, College of Agriculture, July, 1966).

Ronald Shaffer studied the economic impact of twelve industrial plants which had located in rural communities of eastern Oklahoma.⁹ Net gains to the communities were measured and derived through a three part model of the private sector, municipal government sector and the school district sector. Shaffer found from a national perspective that rural industrialization was beneficial in the short and intermediate run, but had adverse effects in the long-run because the employees in industrial plants could have earned higher incomes in larger cities. The study also indicated that rural industrialization was beneficial to the local community studied.

The additions to the ad valorem tax base were assumed to be only the value of the new construction and equipment of the industries and the value of the homes built by the new workers. Shaffer did not include indirect and induced appreciation of properties which occurred from shifting the properties into a higher use nor from better maintenance of the properties.

Summary. Recently, changes in property have been obvious to researchers studying industrial effects. A number of researchers have taken this opportunity to determine what effects the property changes have generated in the way of school and municipal revenues. However, better understanding of the

⁹Ronald E. Shaffer, "The Net Economic Impact of New Industry on Rural Communities in Eastern Oklahoma," (unpublished Doctor's thesis, Oklahoma State University, May, 1972).

direct, indirect and induced industrial effects which have caused changes in property values, and how to measure them would be helpful.

Studies on the Supply and Demand for Housing

This section summarizes some works which have studied changes in the housing market. These studies provide estimates for the price and income elasticities which will be used later in the supply and demand analysis of housing and industrialization.

Muth used cross-sectional analysis of values per unit of detached single-family houses.¹⁰ Income, construction cost, and population per residential unit were related to the demand for owner-occupied housing. An elasticity of demand with respect to income was found to be in the neighborhood of 1.68.

Chapter 6 of Reid's study on "Interplace Comparisons" analyzed average house expenditures in relation to the mean incomes for cities.¹¹ Data was based on the 1950 Census of Housing and surveys of consumer expenditures. For 30 cities with Census data, using contract rent as the dependent variable, she found the income elasticity of demand to be about 1.0; using

¹⁰R. Muth, "The Demand for Nonfarm Housing," in Harberger (ed.), The Demand for Durable Goods (Chicago: University of Chicago Press, 1960), pp. 29-96.

¹¹M. Reid, Housing and Income (Chicago: University of Chicago Press, 1962).

ten percent of the owner-occupied housing market value as the dependent variable, 1.7 was the income elasticity of demand. Using actual housing expenses from the survey for 43 cities, the elasticity of demand with respect to income was 0.8 for renter-occupied housing and 1.55 for owner-occupied housing.

Lee studied housing and permanent income.¹² Cross-sectional data based on individual spending units reinterviewed over a three-year period were used. Income, rental expenditure, and house value data were examined. Lee found elasticities of demand with respect to income in the neighborhood of 0.65 for renter-occupied housing and 0.8 for owner-occupied housing. A disadvantage of this study was the small sample size due to omission of households which moved during the three year survey period.

Winger studied income and the demand for housing during 1962 and 1964.¹³ Cross-sectional data on metropolitan cities were used with average income and house values which were insured through FHA. An income elasticity of demand for owner-occupied housing was found to be about 1.03 for both old and new houses. A small sample size was a draw-back in this study also because of the limited number of houses under the FHA program at that time.

¹²T. H. Lee, "Housing and Permanent Income: Tests Based on a Three-Year Reinterview Survey," The Review of Economics and Statistics, L (1968), pp. 480-490.

¹³A. R. Winger, "Housing and Income," Western Economic Journal, June, 1968, pp. 226-232.

The cross-sectional evidence of the demand for housing was reviewed by de Leeuw.¹⁴ Median house expenses, median income and price levels from the 1960 Census of Housing and from Bureau of Labor Statistics surveys were investigated for 19 metropolitan areas. For rental housing, an income elasticity of demand was found to be around 0.99 and a price elasticity of demand to be near -1.1. An elasticity of demand with respect to income was approximately 1.1 for owner-occupied housing.

de Leeuw and Ekanem were concerned about the critical lack of understanding about the elasticities of the supply of housing.¹⁵ A Bureau of Labor Statistics survey from 1967 provided rental costs of housing units in 39 metropolitan areas. The analysis of the supply of housing services expressed long-run relationships. Three estimates of the supply of housing services with respect to rent prices were found to be in the neighborhood of 0.50.

Maisel, Burnham and Austin studied the demand for owner-occupied housing.¹⁶ Housing expenses and owner income data were taken from information on 2,900 new homes which were

¹⁴F. de Leeuw, "The Demand for Housing: A Review of Cross-Section Evidence," The Review of Economics and Statistics, LIII (February, 1971), pp. 1-10.

¹⁵F. de Leeuw and N. F. Ekanem, "The Supply of Rental Housing," American Economics Review, LXI (December, 1971), pp. 806-817.

¹⁶S. J. Maisel, J. B. Burnham and J. S. Austin, "The Demand for Housing: A Comment," The Review of Economics and Statistics, November, 1971, pp. 410-413.

purchased through insured mortgages by the FHA. Regression results indicated a price elasticity of demand between -1.03 and -0.81 and an adjusted income elasticity of demand of 0.97.

Summary. Basic demand and supply factors have been implemented in a number of studies. The writers of these studies and others note that knowledge about the demand for housing is not complete, and that there is even a greater lack of understanding about the elasticity of supply in the housing market. The more recent studies have recognized inconsistencies in the manner for deriving these estimates. With correction factor adjustments, these estimates become rather uniform.

The studies reviewed will provide estimates for the elasticities to be used later in this thesis. For the owner-occupied housing market, Maisel and others provide the price and income elasticities of demand as approximately -0.90 and 0.97 respectively. de Leeuw's emphasis on the rental housing market found demand elasticities of -1.10 with respect to price and 1.10 with respect to income. de Leeuw and Ekanem's 0.50 estimate of the elasticity of supply with respect to price is the only estimate available for the supply of housing. This estimate will be used for both the owner and renter-occupied housing supply.

Chapter 3

DESCRIPTION OF THE AREA AND THE INDUSTRIES STUDIED

The Parsons community was the area studied to measure the economic effect which industrialization has caused upon real estate properties. Parsons was selected because it has supported industrialization efforts for nearly two decades and was successful in locating eight new industrial firms between 1960 and 1970.

History of the Economic Structure

Parsons is a city of approximately 13,000 population and it is the major urban area in the north portion of Labette County in Southeast Kansas. The city is approximately 156 miles south of Kansas City and 132 miles southeast of Wichita, Kansas. The initial development of Parsons began in 1871 with the connection of branches of the Missouri-Kansas and Texas Railroad Company (M-K-T).

As the railroad industry grew, Parsons grew with the M-K-T Railroad, the major industrial employer in the city. The railroad brought farmers to the area who were eventually cultivating nearly 250,000 acres of land for a diversity of crops and livestock. Coal in Southeast Kansas and zinc in Northeast Oklahoma were major natural resources in the area.

In 1939 there were 490 mines, employing some 7,006 miners, and producing 3,007,349 tons of coal. Much of the coal and zinc mining activity was directed in and through Parsons. Parsons became a central trade area for the agricultural produce, mineral transportation, supplies and equipment, and for social activities.

The population of Parsons reached its peak in 1920 with over 16,000 people. Since then, the population has continued to decline except for small temporary increases during war-time periods.¹ By 1970 the Parsons population had decreased by 3,013 people, or by 18.8 percent, with a 6.6 percent decrease during the 1960 to 1970 decade.

The long trend of decreasing population implies that the Parsons economy is following the general decrease in economic activity from railroading, mining and agriculture. Table 1 shows the changing employment picture in Labette County for employment categories. The three basic industries of agriculture, mining and railroading experienced a total decline in employment of 36 percent while manufacturing employment increased by 62 percent. However the increase in manufacturing employees was not great enough to overcome the decrease in employment of the

¹U.S. Department of Commerce, Bureau of Census, 1920 and 1970.

²The temporary population increases were mainly due to the activity at the Kansas Army Ammunition Plant located just four miles southeast of the city.

Table 1

Labette County Employment of Workers Over Age 16 by
Selected Categories, 1960 and 1970*

Category	1960	1970	10 Yr. % Change
Agriculture	1,239	711	-43%
Mining	44	35	-20
Railroading (and other transportation)	731	533	-27
Manufacturing	1,486	2,412	+62
Construction	493	570	+16
Communications	133	103	-23
Utilities and Sanitary Services	194	180	-07
Wholesale Trade	202	280	+39
Services and Retail Trade	2,304	1,878	-18
Financial Insurance and Real Estate	236	349	+48
Hospitals, Education, Welfare, Religious	1,106	1,610	+46
Other Professional	188	138	-27
Public Administration	770	319	-59
Total	9,347	9,118	-02

*Source: U.S. Bureau of Census, Census of Population, Kansas
1920 and 1970.

other basic industries and of the supportive businesses and institutions in the county. A decrease of two percent was experienced in the total county employed work force between 1960 and 1970.

The declining mineral extraction, railroading and changes in agriculture have caused unusually high unemployment rates in Parsons, frequently near 8.4 percent as in 1958 and 1961.³ The high unemployment rates have been accompanied by low average incomes in Parsons which have lagged far behind the averages for the Nation, the State, and the nine county, Southeast Kansas area. For these reasons, local organizations were established to promote economic development.

Industrialization Promotion

In Parsons, local committees, development corporations, public programs, and a Southeast Kansas area-wide organization were established to help improve the economic climate of the area.

The Parsons Chamber of Commerce has two local committees that function as economic expansion groups. The Manufacturing Development Committee is responsible for researching prospective firms. Industrial Promotion Fund Trustees are concerned with the construction of industrial buildings and land development.

³Research and Information Department, Employment Security Division, Topeka, Kansas.

The activities of these committees are non-profit and are financed through donations from local businesses, public-private utilities, industry, and private individuals.

Parsons Industries, Incorporated, is a private, profit-oriented corporation which also participates in local industrial development and has funds available for fixed capital loans.

The City of Parsons has assigned a permanent one mill levy to be used for industrial promotion purposes. The mill levy provides financing of utility extensions to industrial sites, road and access improvement to industrial sites, and other industrially oriented activities.

Parsons also participates in the activities of Mid-America, Incorporated, a nine county Southeastern Kansas economic development organization formed in 1957.⁴ This organization was organized (a) to develop cooperation among local participating organizations throughout Southeast Kansas, (b) to seek new industry interested in locating in the area, and (c) then to work with the prospective industries and the local communities in negotiating location of the industries. The organization has its offices in Parsons. Mid-America, Incorporated, is non-profit and financed

⁴Delmar D. Hartley, Economic Development in Southeastern Kansas, Center for Research in Business, The University of Lawrence, Lawrence, Kansas, April 1963, p. 117.

by businesses, private-public utilities, and industry membership fees from the nine county area.

Characteristics of the Eight Firms and Their Employees

The Parsons community was successful in locating eight new industrial firms between 1960 and 1970. The new industries were light equipment industries producing plastic products, fabricated metal products, equipment and instruments, and transportation equipment. Total employment of the eight firms was estimated at 434 in 1970. Each firm employed between nine to nearly 200 workers in 1970 with total payrolls between \$45,000 and \$550,000.

The average age of the industrial worker was 30.4 years. Men occupied 63.5 percent of the jobs (62.2 percent were full-time male) and 34.5 percent of the jobs were filled by women (32.4 percent were fulltime female). The average size of a household was 3.18 people with .38 school children per every industrial worker. The workers incomes ranged around \$3,000 to nearly \$20,000 per year with a mean income of \$5,838 for fulltime workers. The workers saved approximately 10.5 percent of their income and spent 82.7 percent in Parsons. Fifty-two and seven-tenths percent of the employees owned the houses in which they lived and 47.3 percent rented. Thirteen and fifty-one hundredths percent of the workers indicated that they purchased a newly constructed home while employed by one of the eight industries.

The average value of the new houses was \$16,160. Sixty and three-tenths percent of the workers resided in Parsons, 30.3 percent resided outside of Parsons but in Labette County, and 9.4 percent reside outside of Labette County.

Chapter 4

METHODOLOGY

The methodology is divided into two parts. The first part includes an inventory of property values in the community during the industrialization period. The second part includes a supply and demand analysis to study the separate effects of industrialization within Parsons. A subsection for the supply and demand analysis also derives necessary background information from questionnaire results.

The inventory survey is used to measure the total change in value of all private and public property in Parsons between 1960 and 1970. The inventory of property value incorporates the nonresidential impacts on property as well as the industrial impacts from both (a) the eight industries which have located in Parsons since 1960, and (b) long run impacts from earlier existing firms. The inventory valuations for property also reflect effects resulting from industrial and nonindustrial events from outside of the community of Parsons which have affected the Parsons property values.

A supply and demand analysis of property is used to isolate and determine only the effects of the eight industrial firms which have located in Parsons between 1960 and 1970. Data limitations restrict the supply and demand analysis to residential property. Residential property accounts for approximately

three fourths of all the property measured in the inventory survey, and analysis of it should provide a good indication of industrialization effects upon the total property in the community.¹

Inventory of Property Values

Property in Parsons to be inventoried was broken into four groups: (a) private real estate, (b) industrial park land, (c) public buildings, and (d) recreational land. The first two groups are private property while the last two represent public property. The total "fair market value" was the means of measurement for the dollar valuations. For each group of property, the estimated fair market value was derived from city budgets, insurance records, county assessment abstracts and from estimates of hired city and county officials (when necessary).

Changes in the fair market values of all the properties which existed in both 1960 and 1970 were analyzed. The inventory was used to determine both monetary value changes and real value changes (adjusted for inflation and expressed in 1970 dollars) of property in Parsons between 1960 and 1970 by the following procedures:

1. Monetary value changes were derived by first determining the total value of property in 1960 and 1970. Next the

¹The three-fourths figure was derived from county records and census data which provided different estimates for residential property values. Although this figure is only a rough estimate, it is large enough to justify the emphasis on residential property.

dollar values of additions to property (construction, annexations and remodeling) during 1960 to 1970 were subtracted from the total property valuation for 1970. The 1960 valuation of the same property also was then subtracted from the 1970 value to determine the monetary valuation changes which have occurred over the ten year study period.

2. The real value changes were derived in a similar manner except that the 1960 valuation of property and all the additions which had occurred between 1960 and 1970 were expressed in 1970 dollars, adjusting for inflation. The difference between the inflated property valuation and the actual market value in 1960 represents the changes in real valuation over the ten year period. The indices for adjusting for inflation using 1970 as the base year were (a) the implicit price deflator for total private fixed investments (used for private real estate), (b) the agricultural price index for land values in the six southeast Kansan counties (used for industrial park land and recreational land), and (c) the implicit price deflator for state and local government purchases of goods and services (used for public buildings).²

The determination of monetary and real value changes for the four property categories are discussed in the following

²The indices were readjusted to express 1970 as the base year. Indices (a) and (c) are found in The Economic Report of the President, 1971, Transmitted to the Congress, February 1971, (Washington: Government Printing Office), pp. 200-201 and index (b) is found in Trends in Land Values in Kansas, Agricultural Experiment Station, K.S.U. of Agriculture and Applied Sciences, Manhattan, Kansas, Bulletin 521, January 1969, p. 2b.

paragraphs. The equations for the four land categories were used for determining both the monetary and real value changes.

Private property. All residential, commercial, industrial and agricultural land, buildings and improvements which were taxed by the city of Parsons were defined as private real estate.³ For measuring private real estate values, the following equation was used:

$$\Delta V = T_{1970} \frac{1}{r_{1970}} - \sum_{i=1960}^{10} (C + A + R) - T_{1960} \frac{1}{r_{1960}}$$

where ΔV = change in valuation

T = taxable assessed valuation

r = urban assessed to sales ratio

$\sum_{i=1960}^{10}$ = summation beginning in 1960 through 1969 of

C = new construction valuation

A = city annexations valuations

R = remodeling valuation

The taxable assessed value of property, taken from the Labette County Abstract of Assessment, measures approximately 30 percent of the total market value of private real estate in Parsons. The assessed to sales ratio shows the relationship of

³Private real estate could not be broken down into smaller classes of properties because historical data of this type was not available until 1969 in the "Labette County Abstract of Assessment".

the assessed value to the sale price of real estate, and is necessary to convert the assessed value to fair market values. A three year moving average of this ratio was used to calculate the 100 percent fair market value of the property within the Parsons urban area.⁴ The new additions to the inventory stock were subtracted from the property existing in 1970 so that the impact on property existing during the entire study (since 1960) could be measured. It was also assumed that new additions in private real estate were reflected in the immediately following tax recorded year.

Industrial park land. Private real estate also included a separately measured property of industrial park land. Industrial park land was separated from other private real estate because this land was located outside the corporate city limits and was not taxed by the city. The conversion of agricultural land to industrial use also caused a sizable inventory value change that was considerably different from the other private real estate. The change in the valuation of the industrial park land was found by:

$$\Delta V = A(P_{1970} - P_{1960})$$

⁴A three year moving average was used rather than a single year ratio to minimize error in the total valuation calculated, due to distorted sales agreements and a small representative number of sales transactions from a single year.

where ΔV = change in valuation

A = acreage

P = price per acre

This equation was used to measure the change in value of the total acreage of land that eventually was included in industrial parks by 1970. Changes in valuation were recorded as land was put into a different type of use or into different degrees of utilization over the study period of industrialization.⁵

Public buildings. All buildings and structures owned by the municipality and local school district were defined as public buildings.⁶ For measurement of the cash inventory valuation change of the public buildings

$$\Delta V = V_{1970} - \sum_{i=1965}^5 (C + R) - V_{1965}$$

where ΔV = change in valuation

V = total "fair market value" of all buildings and structures

$\sum_{i=1965}^5$ = summation beginning in 1965 through 1969

⁵Buildings and improvements on industrial park land were tax exempt due to conditions of depreciations, revenue bond financing, ownership and tax incentives. Estimates for the value of these industrial buildings were unavailable.

⁶The values of the land under the public buildings were not analyzed because a number of different means of determining the values existed. The city officials did not come to agreement on which was more accurate and could be used.

C = major new construction

R = major remodeling

Analysis of public buildings in this case was possible only for the last half of the study period due to incomplete data from insurance records, which were the primary source of valuation data. Construction and remodelings of public buildings were included in the survey only when notice of the improvement project was indicated by a recorded financial bond or other financial records.

Recreational land. Recreational land included land located in the lake and park of Lake Parsons plus land used for the city and neighborhood parks located within the city.⁷ The accrued inventory change in valuation of recreational land was found by

$$\Delta V = A_L (P_L 1970 - P_L 1960) + A_C (P_C 1970 - P_C 1960)$$

where ΔV = change in valuation

A = acreage

P = price per acre

subscript L = within the Lake Parsons grounds

C = within the city

This equation measures the change in value as the recreational land was put into a more intensive recreational use over the industrialization period of study.

⁷The buildings, structures and improvements on this land are assumed to be included in the public buildings.

Supply and Demand Analysis

The supply and demand analysis for residential real estate was undertaken to show only the effects of the eight industrial firms on the valuation of property in Parsons.

The three major results of industrialization are income, employment and finished product output. Income and employment are the two important variables which affect the supply and demand for housing. People (households) have a basic physical need for a place to live. The peoples' income will determine the level (quantity and quality) of housing services which they can purchase. When household members decide that their total income has increased and they are confident of their income, a higher level of housing services may be preferred.

The supply of housing (size of the total housing inventory) generally changes slower than demand. If the general levels of housing market values as compared with building costs allow contractors to operate at a profit, construction of additional houses may occur. Housing construction is active when the demand for assembled houses is enough to justify contractors to assemble them.

Supply is slower to adjust to changes in the housing market than is demand because new housing construction often takes several months, and excess housing generally is left vacant rather than being destroyed or taken off the market. The supply of housing consists of all standing housing units. Since

houses often last for many years with reasonable maintenance, annual losses and additions are a very small fraction of the total inventory of available houses.

Adjustments of the supply of housing to changes in demand takes time to correct in either direction. This is especially true in a declining housing market, which is common to many rural areas facing economic contraction. First, demand decreases by a greater degree than supply. Vacancy rates then become excessively large, causing prices per unit to drop as well as a reduction in the quantity of housing. The average price times quantity then may give a lower total value for residential property. Consequently, efforts to attract industry may strengthen the demand for housing, and reverse the loss of property values associated with community deterioration and population decline.

Basic supply and demand model. The supply and demand analysis is used to compare (1) the actual 1970 valuation (price x quantity) of residential property which included the impact of the eight industrial firms in Parsons with (2) the predicted 1970 valuation of residential property without the presence of the eight industrial firms in Parsons. In the absence of industry, the demand curve for housing should shift to the left and decrease (compared with the conditions of industrialization) due to reductions in income and in employment from both (1) direct industrial effects and (2) indirect industrial effects.

The supply of housing also should shift to the left in the absences of industry (decrease) due to lower new construction to meet the needs of the directly and indirectly industrially affected residents of Parsons. Supply will also shift to the left (decrease) because houses will drop from the housing inventory as deterioration of some houses occurs. Deterioration should occur because a higher vacancy rate in the absence of the former residents supported by the industrial firms will make maintaining the physical conditions of the older housed more difficult.

Residential property was divided between two housing markets: (1) renter-occupied housing, and (2) owner-occupied housing. Five alternative sets of assumptions about the income and population changes affected by the eight industrial firms were undertaken to generate shifts in the supply and demand functions. The five sets of assumptions are discussed later in the chapter.

Derivation of the supply and demand functions. A straight line functional relationship was assumed for both the supply and demand relationships. Functional slope coefficients were derived through the use of supply and demand price elasticities found in earlier empirical studies analyzing the real estate market system and reported below:

Owner-occupied housing market price elasticities

$$\text{Demand} = -0.9^8$$

$$\text{Supply} = 0.5^9$$

Renter-occupied housing market price elasticities

$$\text{Demand} = -1.1^{10}$$

$$\text{Supply} = 0.5^{11}$$

In the demand function, price can be stated as a function of the quantity demanded; the price elasticity of demand is equal to the percentage change in quantity associated with a percentage change in price. The same is true of the elasticity of supply. The following notations will be used:

P = annual average price per house

a = the point where the function intersects the price axis

b = the slope of the function

Q = total number of housing units

E = elasticity

d = derivative or change

where

$P = a + bQ$ = straight line function

$$E = dQ/dP \times P/Q \quad (4.1)$$

therefore

$$b = P/EQ \quad (4.2)$$

⁸Maisel, op. cit., p. 412. ⁹de Leeuw, op. cit., p. 814.

¹⁰Ibid., p. 7-9. ¹¹Ibid., p. 814.

The average valuation per house and the number of owner-occupied houses were taken from the "Block Statistics" of the U.S. Bureau of Census and were used as the equilibrium price and quantity coordinates for the 1970 owner-occupied housing market in Parsons. The number of renter-occupied housing units also were taken from the block statistics. Average monthly rental price data were given instead of an average valuation per house. Average monthly rental price therefore was converted to an average valuation per house by computing comparable values for renter and owner-occupied housing in each block of the block statistics.¹²

Slopes for the actual demand and supply functions are calculated using equation (4.2), $b = P/EQ$. With the derived slopes and the equilibrium price and quantity, an actual supply and demand relationship can be illustrated.¹³

Shifts in the supply and demand. Changes in the determinants of either demand or supply can cause the demand and supply schedules (curves) to shift. Variations in consumer tastes, incomes, the prices of related goods, consumer expectations, and the number of buyers in the market all will account for shifts in demand. Changes in any of those factors which

¹²For information on the rental price to valuation conversion, see Appendix B.

¹³The supply and demand relationships are illustrated in Figures 2 and 3, Chapter 5.

affect production costs will cause supply to shift.¹⁴ Although any of the factors can cause the supply or demand curves to shift, this study is primarily concerned with changes in income and employment affecting the supply and demand relationships for housing in Parsons. In the absence of the eight industrial firms in Parsons, a decrease in the average household income and a decrease in the number of households in the real estate market are expected to decrease the quantity of housing demanded. Decreases in the income and the number of households will impose complex market repercussions, affecting the assembled cost of newly constructed houses relative to the cost of older houses and causing a decrease in the quantity supplied.

The responsiveness of consumers (households) to changes in their incomes is measured by the income elasticity of demand (the percentage change in quantity that is associated with a one percent change in income). The same notations are used as for equation (4.1) in $E = dQ/dY$ except that $Y = \text{income}$.

therefore

$$dQ = E \times dY \quad (4.3)$$

The income elasticities used in this study are .97 for demand in the owner-occupied housing market and 1.1 in the renter-occupied housing market.¹⁵

¹⁴Campbell R. McConnell, Economics, Principles, Problems, and Policies (3d ed.; New York: McGraw Hill Book Co., 1966), pp. 410-411.

¹⁵Maisel and others; de Leeuw and Ekanem, p. 1.

This equation derives a component of the shift in quantity demanded due to a percentage change in income. A second component shift in quantity demanded is equal to the percentage change in the number of households demanding houses in the Parsons community.

The supply schedule is shifted by a percentage change in the housing inventory. This shift is caused by new homes constructed by the households who are residing in Parsons because of the presence of the industrial firms.

The intersection of the predicted supply and demand relationships which would exist without the presence of the industrial firms in Parsons yields an equilibrium price and quantity that is different from the relationships with respect to the presence of the industry. Price times quantity gives the total valuation of residential property. The difference in the predicted (without industry) and actual value (with industry) measures the impact of industry upon residential real estate in Parsons between 1960 and 1970.

Questionnaired determinants of property values. Two questionnaires were constructed to provide estimates for changes in the determinant factors causing shifts in the supply and demand functions, resulting from the industrialization. One questionnaire was completed by the manager of each of the eight industrial firms to reveal production characteristics and the total number of jobs created by the firms. The other question-

naire was completed by workers of the industrial firms. The worker questionnaires provided characteristics of the employees and their household consumption patterns, including income, property ownership, place of residence, family size, and alternative employment in the absence of industry. A 17.05 percent sample was received of the total workers. A summary of the results from the worker questionnaire is given in Table 2.

Table 2

Results of the Worker Questionnaire for Employees of
the Eight Industrial Firms Locating in Parsons from 1960-1970

Item	Sampled Response Results	Total Implied Results
Total Work Force (Residents and Non-residents)	74	434
Male	47	276
Female	27	158
Female Head of Household	3	18
Mean Income (full time)	\$ 5,838	\$ 5,838
No. of Home-Owners	39	229
Houses Constructed Since 1959	10	59
Mean Value	\$16,160	\$16,160
Residents of Parsons Only	42	246
No. of Home-Owners	21	123
No. of Homes Constructed Since 1959	5	30
No. of Home-Renters	21	123
Residents who would leave Parsons without the presence of industry	32	188

Estimating the determinants affecting demand. To estimate the percentage changes in income and numbers of households which will affect the demand for housing, the following notations are used:

Industry = the eight industrial firms studied in this thesis which have located in Parsons from 1960 to 1970

J = jobs created by industry = 434

E = employment of Parsons residents

H = households in Parsons

Y = income from employment

\bar{Y} = mean average income

In conjunction with these symbols, the following subscripts are used:

d = direct

i = indirect

t = total

o-o = owner-occupied

r-o = renter-occupied

The following constants are given:

C_1 = ratio of direct employment of Parsons residents/
total jobs created by industry = .5676¹⁶

¹⁶ Constants 1, 3 and 4 were derived from the worker questionnaire results.

- C_2 = supportive to basic employment ratio = 1.2955^{17}
- C_3 = ratio of home-renters/direct employment of Parsons residents = $.5^{18}$
- C_4 = ratio of home-owners/direct employment of Parsons residents = $.5^{19}$
- C_5 = ratio of renter-occupied housing/total occupied houses in Parsons = $.706^{20}$
- C_6 = ratio of owner-occupied housing/total occupied houses in Parsons = $.294^{21}$
- K = mobility coefficient²²

The following assumptions will be made for deriving basic industrialization effects:

$$J_d = 434$$

¹⁷Constant 2 is a ratio of supportive retail goods and services employment to basic employment on a county basis for Labette County using 1970 data from the U.S. Census of Population: 1970, General Social and Economic Characteristics, Final Report PC (1)-C18 Kansas, p. 327. This ratio was derived during a research project conducted by Dr. George L. Brinkman and Jeffery D. Dawson, Kansas State University, Department of Agricultural Economics, Fall 1972.

¹⁸Constants 1, 3 and 4, loc. cit. ¹⁹Ibid.

²⁰Constants 5 and 6 were derived from total figures in the U.S. Bureau of the Census, Census of Housing: 1970, Block Statistics, Final Report HC (3)-93 Selected Areas in Kansas, p. 132.

²¹Ibid.

²²The mobility coefficient depends upon the percentage of workers who would leave Parsons or would never have come to Parsons except for the presence of the eight industrial firms. The mobility coefficient is determined in a following section by the set of assumptions leading to changes in the determinants.

$$E_{d,t} = J_d \times C_1 \quad (4.4)$$

$$E_{d,r-o} = E_d \times C_3 \quad (4.5)$$

$$E_{d,o-o} = E_d \times C_4 \quad (4.6)$$

$$E_{i,t} = J_d \times C_2 \quad (4.7)$$

$$E_{i,r-o} = E_i \times C_5 \quad (4.8)$$

$$E_{i,o-o} = E_i \times C_6 \quad (4.9)$$

$$H_{d,r-o} = E_{d,r-o} \times K \quad (4.10)$$

$$H_{d,o-o} = E_{d,o-o} \times K \quad (4.11)$$

$$H_{i,r-o} = E_{i,r-o} \times K \quad (4.12)$$

$$H_{i,o-o} = E_{i,o-o} \times K \quad (4.13)$$

$$Y_d = \bar{Y}_q \times E_{d,t} \quad (4.14)$$

$$Y_i = \bar{Y}_p \times E_{i,t} \quad (4.15)$$

On the basis of the above assumption, the following identities can be made for measuring the industrialization impact:

$$H_t = H_{d,r-o} + H_{d,o-o} + H_{i,r-o} + H_{i,o-o} \quad (4.16)$$

$$Y_t = Y_d + Y_i \quad (4.17)$$

With the earlier results, the percentage change in the average mean household income in Parsons

$$= \frac{\bar{Y} - \frac{A - Y_t}{B - H_t}}{\bar{Y}} \quad (4.18)$$

when

\bar{Y} = 1970 actual mean average household income = \$6,928²⁴

A = 1970 actual total personal income = \$33,115,840

B = 1970 actual total number of households = 4,780²⁵

The percentage change in the number of households in the owner-occupied housing market for Parsons

$$= \frac{H_{o-o}}{1970 \text{ actual number of households owning houses} = 3246} \quad (4.19)$$

²³The renter and owner-occupied results were combined because data doesn't exist in Parsons for separate incomes between households in the two markets.

²⁴General Social and Economic Characteristics, op. cit., p. 330.

²⁵Ibid.

²⁶Block Statistics, loc. cit.

The percentage change in the number of households in the renter-occupied housing market for Parsons

$$= \frac{H_{r-o}}{1970 \text{ actual number of households renting houses}=1352^{27}} (4.20)$$

Indirect effects of industrialization on employment and income. The indirect employment which was created from the increased industrial-economic activity was computed from equation 4.7 as the total number of new jobs (434) times the supportive to basic employment ratio (1.29). The total indirect employment was 562.

The computation of the industrialization impact on income (used to affect property values) is based on two assumptions:

(a) There are no unfilled jobs in Parsons (each new industrial job and each indirect job is a net gain of one job created in the community).²⁸

(b) Total personal income (including income used for out of town purchases) will determine the demand for housing services.

²⁷Ibid.

²⁸A high unemployment rate and a great amount of out-migration has existed in the Parsons area for the last several decades. The worker questionnaires did not indicate one unfilled job in Parsons. Secondary wage earners are generally known to drop out of the work force if their job and other jobs like it are eliminated.

Indirect income was computed using equation 4.15. The total personal income lost in the absence of industry would be \$5,329,684 (the sum of the direct income of \$3,893,536, plus all indirect income of \$1,436,148). The direct, indirect and total income and employment affect are shown in Table 3.

Table 3

The Estimated Impact of the Eight Industrial Firms Upon Employment and Income in Parsons by 1970

Industrial Impact	Jobs Created	Income Created
Total Direct Impact Created (Including Non-Residents of Parsons)	434	\$2,533,692
Direct Impact Created for Parsons Residents	246	1,436,148
Indirect Impact Created for Parsons Residents	562	3,893,536
Total Direct and Indirect Impact for Parsons Residents	808	5,329,684

Alternative sets of assumptions leading to changes in determinants. Five alternative sets of assumptions are used to measure changes in the variables of income and numbers of households which determine the supply and demand for housing. Each set of assumptions studies a different possibility of the size of the effect which will occur in the direct and indirect income and employment changes.

Alternative 1 and 2 consider only the impact of the primary industrial employees who live in Parsons. Alternative 1

assumes that each direct employee who resides in Parsons, and who indicated on his worker questionnaire that he would leave or would not have come to Parsons if the industries had not located there, would displace one household from residing in Parsons. This means that there would be 76.42 percent fewer direct employees or 188 fewer households in the city. The personal income lost is assumed to be only the income of these employees and would have been \$1,097,544.

Alternative 2 assumes that all the basic employees of the eight firms who live in Parsons will be displaced from jobs. Each job displaced represents an individual household (100 percent displacement). There would be 246 fewer households and \$1,436,148 less personal income under this assumption.

Alternatives 3, 4 and 5 consider both direct and indirect income and employment of the eight industrial firms. Alternatives 3, 4 and 5 each assume the loss of all direct and indirect income resulting from the industries (\$5,329,684). However, each of these three alternatives differ in the estimated rate by which a displaced job will displace a household from the community.

Alternative 3 assumes that one half of all primary and secondary employees affected by the industries would be mobile and would not reside in Parsons without the presence of the industries. The other half would be either unemployed, drop out of the work force, or be underemployed. Therefore 404

fewer households would exist in Parsons to affect the 1970 housing markets.

In Alternative 4, the number of households lost from Parsons without the presence of industry will be determined by the status of the displaced worker in his household. Alternative 4 assumes that all full-time married men, single men living away from his family, married women earning the primary wage in their households, and single women living away from their families would not be living in Parsons in the absence of industry. Married women earning the secondary wage in their households are defined as secondary wage earners and are assumed not to leave. The decision not to reside in Parsons in the absence of industry is measured by the equation

$$K = \frac{PWE}{N} + \frac{SWE}{N} \frac{1}{2}$$

where

PWE = the number of primary wage earners displaced

SWE = the number of secondary wage earners displaced

N = the total number of wage earners displaced

K = mobility coefficient

The mobility coefficient is 0.7619 for those households which rent their homes and 0.8095 for those households which own their homes. Thus, 640 households would not live in Parsons if it were not for the presence of industry; \$5,329,648 in income would not be present.

Alternative 5 assumes that all primary and secondary employees affected by industry would not find jobs in Parsons and each job displaced would result in one less household in Parsons. Thus, the mobility coefficient is equal to one and the total 808 employees displaced from their jobs would result in 808 households not living in Parsons. The same \$5,329,648 income would not exist in 1970 in Parsons.

Table 4 presents the calculations and coefficients used in determining the household and income estimates under the five alternatives. Table 5 summarizes the displacement of both owner-occupied and rental households under the five alternatives.

Table 4

Estimated Results for the Determinants Affecting
Demand for the Five Alternative Conditions
in the Parsons' Housing Market

Item	Alternative Conditions				
	1	2	3	4	5
$J_{d,t}$	434	434	434	434	434
$E_{d,t}$	246	246	246	246	246
$E_{d,r-o}$	123	123	123	123	123
$E_{d,o-o}$	123	123	123	123	123
$E_{i,t}$	NA*	NA	562	562	562
$E_{i,r-o}$	NA	NA	165	165	165
$E_{i,o-o}$	NA	NA	397	397	397
$H_{d,r-o}$	94	123	61.5	94	123
$H_{d,o-o}$	94	123	61.5	99	123
$H_{i,r-o}$	NA	NA	82.5	126	165
$H_{i,o-o}$	NA	NA	198.5	321	397
H_t	188	246	404	640	808
Y_d	\$1,097,544	\$1,436,148	\$1,436,148	\$1,436,148	\$1,436,148
Y_i	NA	NA	3,893,536	3,893,536	3,893,536
Y_t	1,097,544	1,436,148	5,329,648	5,329,648	5,329,648

*NA = not applicable

Table 5

The Reduction in Households Which Would Have Occurred in the
Absence of the Eight Industrial Firms in Parsons by 1970

	Alternative Conditions				
	1	2	3	4	5
Households Leaving Parsons Due to the Loss of Direct Employment	188	246	123	193	246
Families and Unrelated Individuals Owning their Homes	94	123	61.5	123	94
Families and Unrelated Individuals Renting their Homes	94	123	61.5	123	94
Households Leaving Parsons Due to the Loss of Indirect Employment	NA*	NA	281	562	447
Families and Unrelated Individuals Owning their Homes	NA	NA	198.5	397	321
Families and Unrelated Individuals Renting their Homes	NA	NA	82.5	165	126
Total Households Less in Parsons	188	246	404	808	640
Families and Unrelated Individuals Owning their Homes	94	123	260	520	420
Families and Unrelated Individuals Renting their Homes	94	123	144	288	220

*NA = not applicable

Chapter 5

EMPIRICAL RESULTS

This study performed an inventory analysis of community properties and a supply and demand analysis of residential property. The inventory showed monetary increases and aggregate real dollar decreases in the value of community properties during the ten year industrialization study period. The supply and demand analysis showed increased housing values caused by the income and population generated by the industries.

Inventory of Property

Valuation changes in absolute money terms. An increase in the money values of the fixed stock of private real estate, industrial park land, public buildings, and recreational land occurred during the study period.

A summary of the money value changes of the Parsons community property is given in Table 6. Community properties in Parsons increased in value by \$7,217,374 or by 18.20 percent in money dollar terms during the 1960 to 1970 period of industrialization.

The largest category of real estate in Parsons was private real estate. The taxable assessed value of all private real estate was estimated to be \$8,836,727 in 1960 and \$10,411,135

Table 6
Inventory Change in the Money Value of Community
Properties in Parsons, Kansas, 1960 to 1970

	1970 Value	Total Additions 1960-1970	1960 Value	1970-1960 Total Value Change	1970-1960 Percentage Change
Private Real Estate	\$45,265,802	\$7,707,690	\$32,728,616	\$4,829,496	14.76
Industrial Park Land	140,400	NA*	25,740	114,660	445.45
Public Buildings**	6,959,550	1,621,000	5,242,832	95,718	1.83
Recreational Land	3,835,000	NA	1,657,500	2,217,374	131.37
Total	56,200,752	9,328,690	39,654,688	7,217,374	18.20

* not applicable

** Due to data limitations, Public Buildings were inventoried only for the last half of the study period.

in 1970.¹ Three year moving averages of the assessed to sales ratios, 0.27 in 1960 and 0.23 in 1970, converted the assessed valuations to a one hundred percent "fair market value" of \$32,728,616 in 1960 and \$45,265,802 in 1970.² The additions of new construction, remodeling and annexations to this stock of property over the study period totaled \$7,707,690.³ The private real estate value increased by \$4,829,496, a 14.76 percent money value increase since 1960.

In Parsons industrial park number one, there are approximately 156 acres of land. The price per acre of this land was estimated at \$165 in 1960 and \$900 in 1970.⁴ The land in the industrial park increased in value by \$114,660 or by 445.45 percent.

The "fair market value" of public buildings totaled \$5,242,832 in the fiscal year of 1965 to 1966 and \$6,959,550

¹The 1960 value is an estimate and the 1970 value is an actual value of the sum of residential, commercial, agricultural and industrial property taxed in Parsons, Kansas. Source: Labette County Abstract of Assessments, County Clerk's Office, Oswego, Kansas.

²The assessed to sales ratios are determined and recorded annually in the Report of Real Estate Assessment Study, State of Kansas Property Valuation Department, State of Kansas, Kansas State University, Manhattan, Kansas.

³Construction and remodeling data are given in "Building Permits," Building Inspectors Office, Parsons, Kansas. Annexation values were found in the City Engineer's Office, Parsons, Kansas and are the estimated value of land and buildings of the annexed areas at the time of annexation.

⁴City Manager, Municipal Offices, Parsons, Kansas and by Chamber of Commerce President, Chamber of Commerce, Parsons, Ks.

in 1970 to 1971.⁵ The major capital additions to these buildings and structures were in the school system, recreational program, at the airport and totaled \$1,621,000.⁶ The value of the public buildings increased by \$95,718 or 1.83 percent between the fiscal years of 1965 to 1966 and 1970 to 1971.

Recreational land showed a sizeable increase in value. There are approximately 13,000 acres of land at the municipal Lake Parsons. This property was estimated at a value of \$125 in 1960 and at \$225 per acre in 1970. There are also approximately 130 total acres of land in all the Parsons' municipal public parks, which was estimated at a value of \$250 in 1960 and near \$700 per acre in 1970.⁷ The recreational land increased in value by \$2,217,374 or by 131.37 percent over the study period.

Real dollar values. The real value changes were derived with the same data and in the same manner except that the 1960 valuations of the properties and all the additions which occurred between 1960 and 1970 were first adjusted for implicit price trends and expressed in 1970 dollars.

⁵Statement of Values, local insurance estimates for municipally-owned buildings and structures, 1965-66 and 1970-71, Municipal Offices, Parsons, Kansas.

⁶"Estimated Expenditure Schedule," Annual Budget of the City of Parsons, Kansas, Parsons, Kansas, 1960 through 1970.

⁷City Manager, Municipal Offices, Parsons, Kansas.

Table 7

Inventory Change in the Real Dollar Value of Community
Properties in Parsons, Kansas, 1960 to 1970 (Base, 1970 = 100)

	1970 Value	Total Additions 1960-1970	1960 Value	Total Value Change 1970-1960	1960-1970 Percentage Change
Private Real Estate	\$45,265,802	\$ 9,355,450	\$44,589,395	\$ -8,679,043	-19.46
Industrial Park Land	140,400	NA*	50,471	89,929	+178.18
Public Buildings**	6,959,550	2,320,521	7,123,414	-2,484,385	-34.88
Recreational Land	3,835,000	NA	3,249,999	585,001	+18.00
Total	56,200,752	11,575,971	55,013,279	-10,488,498	-19.07

* not applicable

** Due to data limitations, Public Buildings were inventoried only for the last half of the study period.

Table 7 summarizes the inventory results of the real value changes for community properties in Parsons. In real dollar terms, private real estate decreased in valuation by \$8,679,043 or 19.46 percent. Industrial park land increased by \$89,929, or a 178.18 percent increase in value. Public buildings experienced a \$2,484,385 decrease in valuation in Parsons. A \$585,001 or 18 percent increase accrued to the recreational land of the Parsons community.

Supply and Demand for Housing

Owner-occupied market. The slopes for the actual 1970 housing market supply and demand schedules in Parsons were divided with the use of equation 4.2. In the owner-occupied housing market with an equilibrium price and quantity coordinate of 9200 = price and 3246 = quantity, the calculated slopes were -3.1492 for demand and 5.6685 for supply. This actual 1970 relationship is illustrated in Figure 2 as S_A and D_A .

Absence of the eight industries would decrease the total personal income in the community. However the mean average household income in Parsons increased under Alternatives 1, 2, and 3 as shown in Table 8. Displacement of low income households from the city in the absence of the industrial employment opportunities would raise the city average income. Increases in the average income occurred because the average income (\$5,831) of the direct industrial employee was \$1,090 lower

than the actual 1970 average household income (\$6,928) for the entire city.

Table 8 summarizes the deviation of the supply and demand shifts in the owner-occupied housing market in the absences of the industries. The percentage change in quantity demanded (a result of the percent change in average household income times the income elasticity of demand, 0.97), plus the percentage reduction in the number of households comprises the shift in the demand curve. The demand shifts under the conditions without industry range from -1.93 percent in Alternative 1 with the direct effects only, to -16.10 in Alternative 3. The percentage decrease in the housing inventory as a result of houses which would not have been constructed in the absence of the industries comprises the supply shift. The percentage supply shifts in the owner-occupied housing market range from -0.68 in Alternative 1 to -3.82 percent in Alternative 5. The projected supply and demand shifts for owner-occupied housing, without industrialization in Parsons, are illustrated in Figure 2 by $S_{1,2,\dots,5}$ and $D_{1,2,\dots,5}$ for each of the respective sets of assumptions.

A summary of the results for the value of owner-occupied housing in Parsons without the eight industries is given in Table 9. The intersection of the projected straight line function in Figure 2 provides the average 1970 price and quantity of owner-occupied housing in Parsons without the eight industries. Decreases in the total owner housing valuation were

Table 8

Summary of the Supply and Demand Shifts in the Owner-Occupied Housing Market in Parsons, Kansas, in the Absence of the Eight Industries between 1960 and 1970

Alternative	DEMAND				SUPPLY	
	% in Mean Household Income	% in Quantity from Income	% Reduction in Households	% Shift in Demand	Fewer Houses Constructed	% Shift in Supply
Direct Impact						
1	+1.00	+0.97	- 2.90	- 1.93	- 22	-0.68
2	+0.85	+0.82	- 3.79	- 2.97	- 29	-0.89
Direct and Indirect Impact						
3	-8.34	-8.09	- 8.01	-16.10	- 61	-1.88
4	-3.12	-3.03	-12.97	-16.00	-100	-3.08
5	+0.98	+0.95	-16.02	-15.07	-124	-3.82

Figure 2

Real Estate Market for
Owner-Occupied Housing

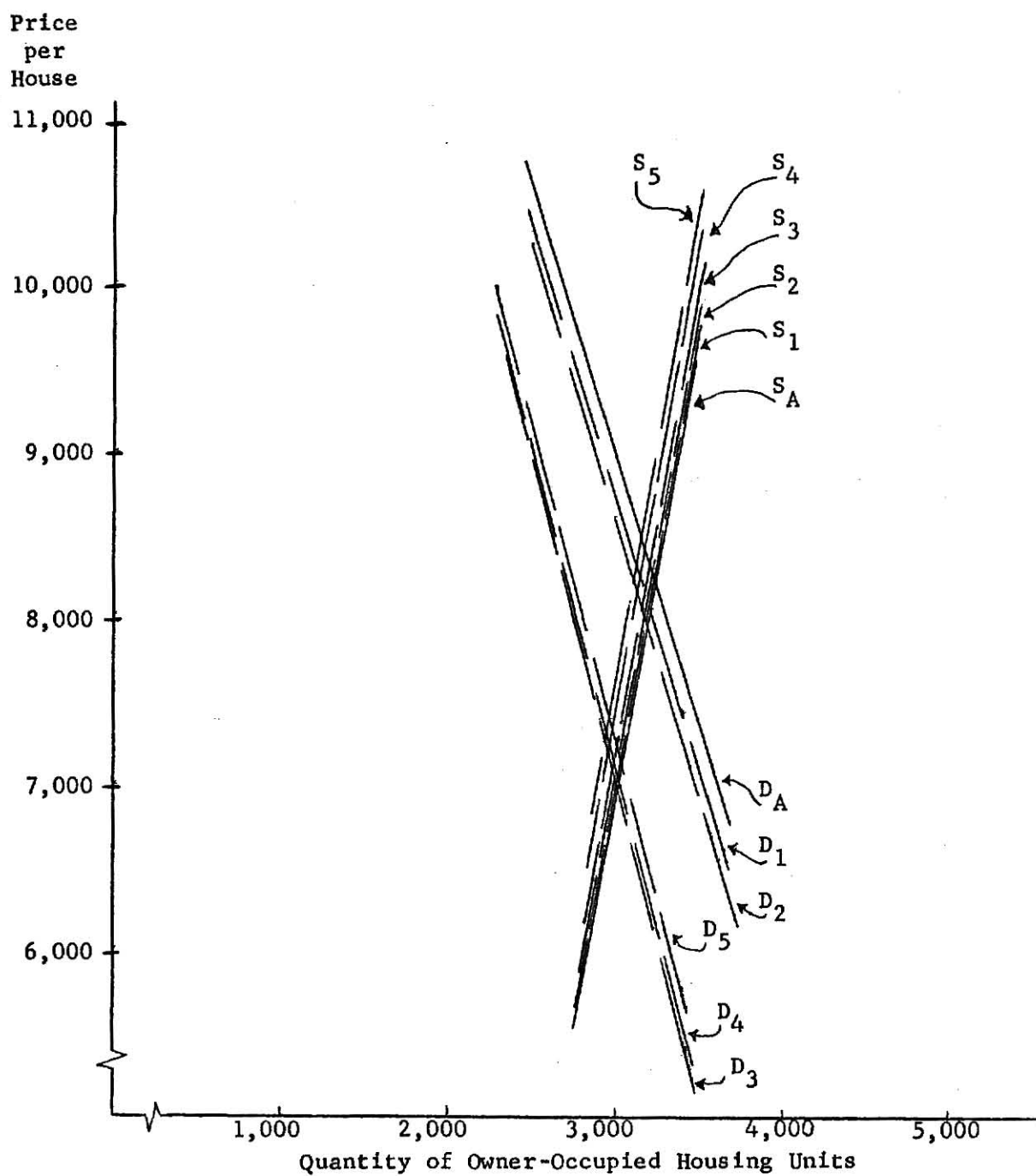


Table 9

Equilibrium Prices and Quantities and Valuation Decreases in the Owner-Occupied Housing Market Due to Predicted Supply and Demand Shifts in the Absence of the Eight Industries in Parsons, Kansas, 1960 to 1970

Alternative	Resulting Price	Resulting Quantity	P x Q = Total Valuation	Decrease in Valuation from Actual 1970	% Decrease in Total Valuation
Actual	\$9,200	3246	\$29,863,200	\$ -----	-----%
Direct Impact					
1	\$9,170	3200	29,344,000	519,200	1.74
2	9,075	3190	28,949,250	913,950	3.06
Direct and Indirect Impact					
3	8,150	2990	24,368,500	5,494,700	18.40
4	8,275	2960	24,494,000	5,369,200	17.98
5	8,440	2966	25,033,040	4,830,160	16.17

\$519,200 (1.74 percent) for Alternative 1 and \$913,950 (3.06 percent) for Alternative 2 which considered only the direct industrial effects. The direct and indirect effects were both considered in Alternatives 3, 4 and 5 and valuation decreases were all in the neighborhood of \$5 million with 18.40, 17.98 and 16.17 percent decreases in owner-occupied housing valuation respectively.

Renter-occupied market. In the renter-occupied housing market, the calculated slope for the actual 1970 supply was 12.0281 and the demand slope was -5.4673. The actual 1970 supply and demand relationships are illustrated in Figure 3 as S_A and D_A with an equilibrium price of \$8,131 and a quantity of 1,352.

Table 10 summarizes the supply and demand shifters for the rental housing market. The percentage variations in the mean household income are the same as in the owner-occupied housing market.⁸ The percentage changes in quantity due to the respect of changes in the mean income are greater than those in the owner housing market because the elasticity of demand with respect to income is more elastic at 1.1 in the rental housing market.

⁸ A total personal income change was determined with the owner and renter housing markets combined because other than the worker questionnaires, data were not available for the distinct household groups. Questionnaire results could not suffice because little confidence could be placed in the questionnaire statistics representing indirect households who earn \$1,090 more annual income.

Table 10

Summary of the Supply and Demand Shifts in the Renter-Occupied
Housing Market in Parsons, Kansas, in the Absence
of the Eight Industries between 1960 and 1970

Alternative	DEMAND				SUPPLY	
	% in Mean Household Income	% in Quantity from Income	% Reduction in Households	% Shift in Demand	Fewer Houses Constructed	% Shift in Supply
Direct Impact						
1	+1.00	+1.10	- 6.95	- 5.85	5	-0.37
2	+0.85	+0.94	- 9.10	- 8.16	6	-0.44
Direct and Indirect Impact						
3	-8.34	-9.17	-10.65	-19.82	13	-0.96
4	-3.12	-3.43	-16.20	-19.63	22	-1.63
5	+0.98	+1.08	-21.30	-20.22	27	-2.00

The percentage reduction in the number of households in the rental market is generally greater than those in the owner-occupied market because 50 percent of the direct industrial employees indicated in their questionnaires that they were renters rather than owners of their housing services. However, families who rent their housing services, occupy only 30 percent of the housing in Parsons.⁹

Without the eight industries in Parsons, the renter-occupied housing demand shifted from -5.85 percent in Alternative 1 to -20.22 in Alternative 5. Supply shifts were between -0.37 and -2.00 percent for rental housing. The projected supply and demand shifts for the renter-occupied housing are illustrated in Figure 4 by $S_{1,2,\dots,5}$ and $D_{1,2,\dots,5}$ for each of the sets of assumptions one through five respectively.

A summary of the results for the value of renter-occupied housing in Parsons without the eight industries is given in Table 11. Considering only direct effects, the total projected valuation of rental housing decreased from the actual 1970 valuation in Parsons by \$565,362 (5.14 percent) in Alternative 1 and by \$864,472 (7.86 percent) in Alternative 2. Incorporating both direct and indirect effects of industrialization caused the real estate value of rental housing to decrease slightly over \$2

⁹The "Block Statistics" described in the Methodology Chapter implies that 1,352 households out of 4,598 or 29.37 percent occupied rental housing during 1970 in Parsons.

Figure 3

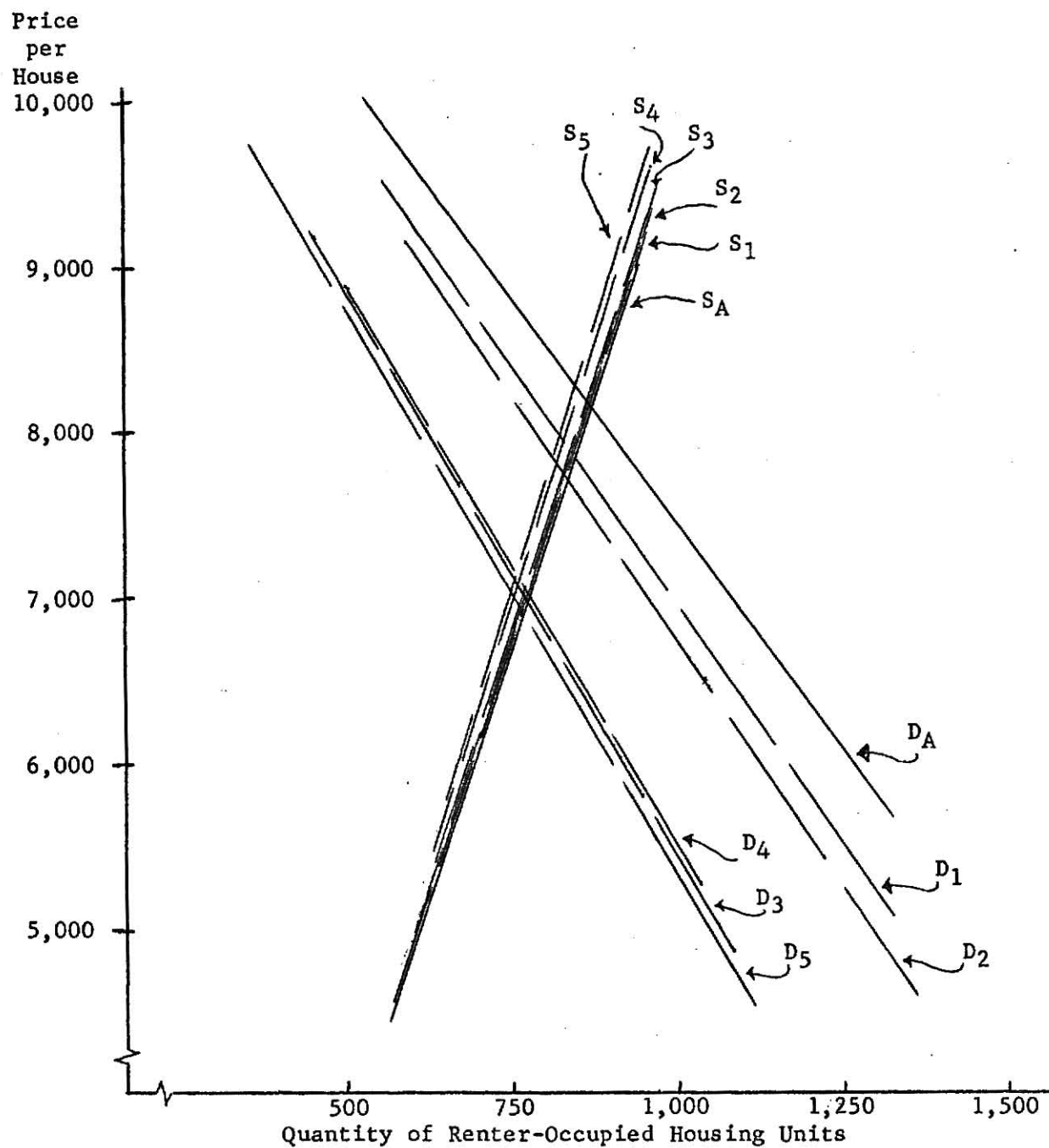
Real Estate Market for
Renter-Occupied Housing

Table 11

Equilibrium Prices and Quantities and Valuation Decreases in the Renter-Occupied Housing Market Due to Predicted Supply and Demand Shifts in the Absence of the Eight Industries in Parsons, Kansas, 1960 to 1970

Alternative	Resulting Price	Resulting Quantity	Total Valuation	Decrease in Valuation from Actual 1970	% Decrease in Total Valuation
Actual	\$8,131	1352	\$10,993,112	\$ -----	-----%
Direct Impact					
1	7,870	1325	10,427,750	565,362	5.14
2	7,720	1312	10,128,640	864,472	7.86
Direct and Indirect Impact					
3	7,020	1245	8,739,900	2,253,212	20.50
4	7,080	1240	8,779,200	2,213,912	20.14
5	7,035	1230	8,653,050	2,340,062	21.29

million in Alternatives 3, 4 and 5 with 20.50, 20.14, and 21.29 percent decreases in renter-occupied housing valuation respectively.

Total residential valuation without industry. Table 12 summarizes the total impact upon the value of residential real estate (both owner-occupied and renter housing) caused by the eight industries in Parsons. When only the direct income and employment effects of the industries were considered, Alternative 1 indicated \$1,084,562 (2.65 percent) and Alternative 2 indicated \$1,778,422 (4.35 percent) of the actual 1970 residential real estate valuation was caused by the eight industries.

Both direct and indirect effects were considered in the last three alternatives. Alternative 3 indicates that \$7,747,912 (18.96 percent) of the residential valuation is attributed to the presence of the eight industries. Alternative 4 projected \$7,583,112 (18.56 percent) and Alternative 5 indicated \$7,170,222 (17.55 percent) of the actual 1970 residential real estate valuation was caused by the eight industries.

Table 12

Total Impact of the Eight Industries Upon the
Value of Residential Real Estate in
Parsons, Kansas, 1960 through 1970

Alternative	Value Due to Industrialization	% of Total Actual Value*
Direct Impact		
1	\$1,084,562	2.65%
2	1,778,422	4.35
Direct and Indirect Impact		
3**	7,747,912	18.96
4**	7,583,112	18.56
5	7,170,222	17.55

*Total actual value of residential real estate in Parsons, 1970, was a total value of renter-occupied housing real estate plus total owner-occupied housing real estate = \$10,993,112 + \$29,863,200 = \$40,856,312.

**Conditions for these two alternatives are the most rational.

Chapter 6

SUMMARY AND CONCLUSIONS

This study examined the impact of eight new industrial plants on the value of real estate in Parsons, Kansas, between 1960 and 1970. An inventory of community properties was undertaken to determine the changes in value by 1970 of real estate which existed in 1960, without placing emphasis upon determining special effects of the industries. A supply and demand analysis of the local housing market was undertaken for owner-occupied and rental units to determine the specific impact of industrialization.

Methodology

The inventory analysis was an accounting procedure used to determine the aggregate value of four groups of property in Parsons: privately owned real estate, industrial park land, public buildings, and recreational land. The difference between the 1960 and 1970 market values of the property existing in 1960 (excluding properties additions during the study period) determined the money changes. The real value changes were determined by adjusting the 1960 market values and the additions to real 1970 dollar values by implicit price indices.

The supply and demand analysis first determined the actual supply and demand conditions in 1970 and then measured

the shifts in the supply and demand schedules that would have occurred in the absence of the eight industries. The supply and demand analysis was undertaken for both the owner-occupied and the renter-occupied housing markets. Both direct effects (the employment and income of the industrial workers) and indirect effects (additional employment and income caused throughout the community because of the industries) were incorporated. Five alternative sets of assumptions were utilized to examine differences between direct and indirect effects and among various rates in loss of households (workers and family mobility).

Results

The inventory analysis showed a monetary value increase of \$7,217,374 and a real value decrease of \$10,488,498 in the community properties. In the supply and demand analysis the direct effects of industrialization alone, caused an increase of about 1.1 to 1.8 million dollars in residential valuations. The direct and indirect effects together caused an increase of approximately 7.2 to 7.8 million dollars in total residential real estate valuations over the ten year study period.

Conclusions

The impact from industrialization on property values can be very sizable as shown in this study of real estate in Parsons, Kansas. Residential real estate value increases represent the minimum impact, and examination of other properties

may increase the total impact of industrialization even more. Industrial, commercial and some agricultural properties should also increase in valuations during industrialization. The value of public buildings and recreational land may also increase in valuation due to higher rates of utilization and substitute development alternatives.

Although industrialization may increase property values substantially, this increase may not be great enough by itself to prevent real value declines in the total stock of community properties. In the Parsons area for example, the income and employment effects of the eight industries were not great enough to overcome the declining economic activity in other basic industries of agriculture, mining, and railroading which experienced substantial decreases in the civilian work force.

This study also points out the importance of indirect effects upon property values, which in Parsons, contributed roughly a six million dollar increase. Writers of recent industrialization studies who have included only the new houses of the direct employees and the new plant construction in their analyses, may have overlooked the greatest impact on real estate.

Distribution of Valuation Benefits

The incidence of the benefits from increased property values may also be important. Increased property values provide possible benefits of increased equity to the owners of houses and business properties. A great source of fixed capital values

can be used as collateral in borrowing. Capital gains may also be realized, but only upon the sale of the properties. Increased property values also may decrease the real cost of mortgages and other loans.

In addition, increased property values provide possible fiscal benefits to the municipality and to the local school district by expanding the local tax base. Tax revenues to finance local public programs can be raised through increased valuations of properties and/or through increased mill levies. With the present five percent tax lid in Kansas the increased property values caused by industrialization should be welcomed. Social benefits could occur from industry if the plant and new population can more fully utilize underutilized public services without imposing additional public capital requirements. New private property construction and improvement (if taxed) also could distribute and ease the tax burden among greater numbers of people and businesses. Increased property valuations can support local public service programs as well as additional industrialization efforts. Individual residents, private businesses, the municipality and the school district can all benefit from the impact of industrialization upon community real estate.

Results of this study are subject to the limitations of the data, functional relationships and procedures. However, the study does provide guidelines for measuring sizable changes in community residential real estate valuations over those in

previous studies. Further research on the housing market and other segments introduced in the conceptual framework of how industry affects the demand for real estate is necessary. Sizable increases in real estate valuations do occur from industrialization. Knowledge of these increases would be advantageous in determining the total impact of industries in small communities.

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APPENDICES

Appendix A

A COPY OF THE QUESTIONNAIRES USED*

*The following questionnaires provided information not used in this study alone, but also for an additional study of industrialization in small communities.

DEPARTMENT OF ECONOMICS
KANSAS STATE UNIVERSITY

Confidential Questionnaire

Purpose of this questionnaire: We are trying to evaluate the benefits of new industry in Parsons. We would appreciate your help because the benefits of new industry are greatly affected by how and where the workers spend their earnings and what services they need from the community. Your answers should be very helpful to your community in evaluating its programs for attracting new industries and could assist in providing more jobs for workers like yourself in the future.

We would like to thank you for your participation.

1. Your age is _____ years. Sex: _____ male _____ female
2. Where do you presently live _____ inside Parsons city limits.
_____ in Labette County but outside Parsons.
_____ outside Labette County.
Name of place _____
3. How many people live in your household besides yourself?
_____ Total _____ Number of children, _____ other dependents.
4. When did you start work at this plant? _____ month
_____ year.
5. What are your estimated annual earnings (check the range):
(a) _____ \$0 - \$2,499 (e) _____ \$8,000 - \$9,999
(b) _____ \$2,500 - \$3,999 (f) _____ \$10,000 - \$14,999
(c) _____ \$4,000 - \$5,999 (g) _____ \$15,000 - \$20,000
(d) _____ \$6,000 - \$7,999 (h) _____ Over \$20,000
Do you work part time _____ or full time _____?
6. What amount of your total income is put into savings? \$ _____

7. What percent of your total expenditures (not including savings) are spent in Parsons. _____% (Consider expenditures for food, appliances, cars, gasoline, recreation, rent or house payments, clothing, medical services, etc.)
8. Do you own _____ or rent _____ the home in which you are living?
9. Did you build or purchase a newly constructed home between 1960-1971? _____ Yes _____ No. If yes: date _____
Value \$ _____
10. If the opportunity to work at this plant had not occurred, what would you have done?
- _____ Continued in old job
- _____ Gone on public welfare assistance
- _____ Become unemployed and receive unemployment compensation
- _____ Not worked at all
- _____ Commuted to another community to work
- _____ Moved to another community to work
- _____ Found another job in this community

In the following table, indicate your employment and residence history. (It won't take long to fill out if you use ditto marks (") for items that didn't change each year.)

Year	Name of firm where you worked (or indicate: a. unemployed b. self employed or c. not looking for work	Location of firm (town)	Town or rural area where you lived	If you changed jobs was your old job filled	Number of children in Parsons' schools
1971					
1970					
1969					
1968					
1967					
1966					
1965					
1964					
1963					
1962					
1961					
1960					

DEPARTMENT OF ECONOMICS
 Kansas State University
 Management Questionnaire
CONFIDENTIAL

1. Name of firm _____.
2. What does the firm produce? _____.
3. When did the firm locate in Parsons? _____.
4. Has there been any plant expansions? _____, date _____.
5. Estimate the total value of each item in the two tables below:

Initial Investment

Additional Investment

Item	Total Value	% spent in Parsons	Year	Value	% spent in Parsons
Land					
Buildings					
Equipment					

Year	Total Yearly Payroll	Average No. of Employees	Property Taxes		Monthly Water and Sewer Bill
			Personal	Real	
1960					
1961					
1962					
1963					
1964					
1965					
1966					
1967					
1968					
1969					
1970					
1971					

6. Employment 1971:
 - full time male employees _____
 - full time female employees _____
 - part time male employees _____
 - part time female employees _____

7. In the table below indicate what incentives were used in locating at your present site.

Item	Dollar Value Saved	Duration of Incentive From-To	Who offered this incentive: city, private individual, or specify organization
Buildings rent __purchase			
Land rent __purchase			
Employee Training Subsidies			
Taxes: Low Tax Rate Tax Exemptions			
Savings from Low Interest Financing			
Savings from sewer & water extensions			
Savings from gas & electric services and extensions			
Transportation Extensions (drives, parking lots, etc.)			
Other (specify)			

Appendix B

CONVERSION OF MONTHLY HOUSING RENTAL PRICE
TO REAL ESTATE VALUE

Rental-occupied housing market data were derived from the "Block Statistics," U.S. Bureau of Census. These data were expressed in monthly rental price per unit, thus it was necessary to convert the rent price to a fair market value for the real estate property. For each block (i) of houses in the city, the mean value (F) for all owner-occupied houses in that block was multiplied times the number (J) of renter-occupied houses on the same block. The total for all the blocks summed together and divided by the total number (N) of renter-occupied housing units provided the average real estate property valuation (\bar{V}) for renter-occupied houses in Parsons.

$$\bar{V} = \frac{\sum_{i=1}^{1431} F_i J_i}{N}, \$8,131 = \frac{\$10,994,053}{1,352}$$

The assumption underlying this calculation is that the average value of owner-occupied homes within a small area of space (a city block) is indicative of the average value of renter-occupied homes within that area. This assumption is reinforced by personal observations of housing in Parsons, zoning regulations, similar development periods of area of housing, the general preference to purchase and build a home fitting its

environment, and other influences to maintain a relatively homogeneous property valuation structure.

THE IMPACT OF INDUSTRIALIZATION UPON
REAL ESTATE IN PARSONS, KANSAS

by

LEROY J. DEBES

B.S., Kansas State University, 1971

AN ABSTRACT OF A MASTER'S THESIS

submitted in partial fulfillment of the

requirements for the degree

MASTER OF SCIENCE

Department of Economics

KANSAS STATE UNIVERSITY
Manhattan, Kansas

1973

ABSTRACT

This study examines the impact of eight new industrial firms on the value of real estate in Parsons, Kansas between 1960 and 1970. An inventory of the properties in the community were taken to show the total money and real dollar changes in property values over the study period. A supply and demand analysis was undertaken to study the separate impact of the eight new industrial firms upon private residential housing, the single largest component of the community's property. Changes in the value of owner-occupied and the renter-occupied housing were analyzed by examining the income and employment effects of the eight industrial firms. Management and worker questionnaires provided primary data for the supply and demand analysis to supplement secondary data.

The inventory analysis indicated an increase of \$7,217,374 or 18.20 percent in money dollars for all properties in Parsons between 1960 and 1970. In real 1970 dollar terms, community property values decreased by \$10,488,498 (-19.07 percent). In spite of the presence of the industrial firms, properties in the Parsons community have not kept up with the general trend of properties values. The demand and supply analysis showed, however, that community properties would have been worth even less without the presence of the industries.

Five alternative assumptions about the direct and indirect effects of the eight industrial firms and the rate of

displacement of households supported by these industries were used in the supply and demand analysis. The supply and demand schedules in the owner and renter-occupied housing markets shifted backward in the absence of the income and population generated in Parsons by the eight new industrial firms. Under the five sets of assumptions, the supply schedule for owner-occupied housing would have shifted backward between -0.68 percent and -3.82 percent without industry, and demand between -1.93 percent and -16.10 percent. For rental housing, the market supply would have shifted in the range of -0.37 percent to -2.00 percent and demand by -5.85 to -20.22 percent. The absence of the industrial firms decreased the demand for housing more than the supply, resulting in lower value per unit as well as fewer total units.

Industrialization increased residential property values by \$1,084,562 (considering only direct effects) to \$7,747,912 (both direct and indirect effects). Under the two most realistic assumptions (direct and indirect effects with 50 and 79 percent displacement of the affected households from the community), the eight industries increased residential property values by \$7,583,112 to \$7,747,912 or nearly 19 percent of the total value of residential property in Parsons.

Industry in Parsons has had a sizable impact upon property values and this sort of impact is worth considering when evaluating the impact of industries in other small rural communities.

Increased property values provide several benefits to a community such as a greater source of collateral in financial transactions and often capital gains when the properties are sold. Increased property values also provide a greater tax base which can be used to support local public services as well as additional industrialization efforts.