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Interstate Freeways Attract New Office Sites

By Murray Frost and Armin K. Ludwig

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Introduction

COMPLETION OF THE INTERSTATE highway network in American metropolitan areas has opened a wide variety of locational options for urban land uses. New office sites have been salient among these developments. The purpose of this study is to compare Interstate radial freeway corridors with other spatial units in Omaha and six other metropolitan areas to determine their differential attraction for new office sites in the period 1970-1976. The seven metropolitan areas studied were Atlanta, Dallas, Denver, Louisville, Minneapolis-St. Paul, Omaha, and San Jose.

Definitions

For this study an office site is one in which the prime functions of the units which occupy it are the creation, storage, and dissemination of information regarding services performed, goods held or transferred, and personnel employed. A site may comprise a single office building, an office park of several buildings, or a complex of buildings built by the same developer within a limited time period. A service may be performed at the same location; e.g., physicians see patients and insurance agents sell policies, but rarely are the goods for which the records are surrogates present at the office location. No steel ingots, for example, are found in the U. S. Steel headquarters building.

The study included office sites which were both renter-occupied and owner-occupied. It excluded all office sites that were wholly occupied by Federal, state and local government agencies whether these buildings were leased from the private sector or not. This was done because most government office location decision makers were assumed to operate under a different set of constraints from those in the private sector. The study also excluded corporate headquarters located at the site of production facilities. Buildings with less than 25,000 square feet of gross floor area were excluded from the study. This allowed the establishment of a manageable universe of sites within each city's metropolitan area. It also permitted the study to make maximum use of some existing public and private agency inventories which provided relevant data only on office sites in their cities that contained at least 25,000 square feet of gross floor area.

An Interstate radial is defined as a federally funded Interstate highway anchored at or near the central business district (CBD) of that metropolitan area. It extends outward from the CBD like a spoke of a wheel and, in most cases, intersects the Interstate circumferential highway. A non-Interstate radial has the same geographic pattern as the Interstate radial, but it is not necessarily a limited access route. A radial corridor is defined as that area which lies within one mile on either side of a radial highway and extends from the CBD to a point four miles beyond the Interstate circumferential. A corridor two miles wide is also developed along the Interstate circumferential in each metropolitan area.

Between 1970 and 1976 the largest proportion of office site growth in seven metropolitan areas occurred in Interstate radial freeway corridors.

Each of the metropolitan areas under study contains a cluster of downtown office sites that are roughly coincident with the CBD. In no case, however does this cluster extend more than 1.4 miles linearly, and in most is it less than one mile. Consequently the downtown cluster in every metropolitan area can be enclosed with a circle whose radius is .7 mile. The CBD as defined in the Census of Retail Trade might be used as the base for some metropolitan areas, but in others it is not spatially coincident with the cluster of downtown office sites. In this study the term core rather than CBD will be used to designate the downtown office area.

The non-corridor area comprises all space inside a line four miles from the Interstate circumferential, space not included in one of the types of spatial units described above. The number and types of the spatial units described above and the square miles they contain in each metropolitan area are shown in Table 1. They also appear individually on Maps 1 through 7.
The period from 1970 to 1976 was selected for study because, for most of the metropolitan areas, it marks both the completion of the Interstate system and a sharp increase in office site development (Table 1).

**Selection of Metropolitan Areas**

The seven metropolitan areas studied were selected among 60 SMSA's (Standard Metropolitan Statistical Areas) that met the following criteria: (a) a central city with at least one Interstate radial that was predominantly devoted to office use from 1970 to 1976, (b) more than a 50 percent increase in office sites during the 1970-1976 period, and (c) the existence of a comprehensive and accurate office site inventory. An attempt was made to provide a good regional distribution as possible. Selection from diverse geographical areas allowed for the inclusion of metropolitan areas of different ages with differing regional functions and sizes. The distribution represents the major regions of the country, which are San Jose and Los Angeles; the Northeast, where most of the cities are old and well built up with little space for further development; the Southwest; and the circumferential, is not represented.

**Increase and Centrifugal Movement of Office Sites and Gross Area**

The 1970 pattern of office sites in the seven metropolitan areas is a product of seven years of growth that might well be referred to as an office "boom" in some areas. The 480 sites developed during the period increases over 10 percent increase over the number of sites developed prior to 1970. (Maps 1 through 7 and Tables 2 and 3). More than 12.5 million gross square feet of space were put in place in this period, increasing the pre-1970 footage by 85 percent. By 1976, San Jose, Denver, and Louisville had more than doubled the number of their pre-1970 office sites and Atlanta nearly did so. A similar pattern held across the seven metropolitan areas for increases in gross square footage. The growth rate differentials between number of sites and gross square footage resulted from the fact that non-core sites tended to be smaller than those in the cores. Two areas with strong and active urban redevelopment programs, San Jose and Louisville, managed even these two areas exceeded 100 percent in the number of sites and in gross square footage. In both areas, non-core growth in these two areas exceeded 200 percent. In three metropolitan areas, the number of sites in the non-core area more than doubled in the period. This was the single most important growth rate in the metropolitan area, for, regardless of the square footage involved, this new sites represented an aggregate of individualized location decisions.

**Channelling of the Centrifugal Movement**

Office site growth outside the core was never, however, evenly distributed among the non-core areas. The largest proportion of growth in the seven metropolitan areas in the 1970-1976 period occurred in Interstate radial freeway corridors (Table 5). In Atlanta, Dallas, Denver, and Louisville Interstate radial corridors ranked first among all non-core spatial units in office site growth. In San Jose the Interstate radial corridors ranked second, but the proportions of the metropolitan increase were unusually well distributed among the three non-core spatial units. This was not the situation in Omaha where the Non-Intermediate radial (Dodge Street) absorbed the bulk of the increase, and the Intermediate radial corridor was thus a distant second. Nor was it the case in Minneapolis-St. Paul where the Intermediate circumferential ranked first in non-core growth and the Intermediate radial corridors second. On the basis of the increase in gross square footage, Interstate radial corridors in Atlanta, Dallas, Denver, and Louisville recapitulated the site rankings and led all non-core spatial units in these metropolitan areas (Table 6). The largest share of office sites in the San Jose Intermediate radial corridors contributed to raising the spatial units to first ranking. Intermediate radial corridors in Omaha and Minneapolis continued to lag behind the non-Intermediate radial corridors and the Intermediate circumferential, respectively, in their proportion of the total gross growth in gross square footage in the 1970-1976 period.
Role of Accessibility Factors

The role of the Interstate freeway as an attractive force encouraging office development is evident. This factor includes such factors as the location and number and location of highways and parking facilities. This factor is almost totally controllable by the developer of the office space and is unrelated to the location of nearby office centers. Indeed, this factor may enter the decision-making of a potential office space renter or user because the speed and ease of entry to and exit from the freeway are important factors in the economic attractiveness of the specific development. This in turn may contribute to the broader pattern of office development location because the speed at which a development is occupied influences other investors and developers who may not adequately assess the reasons for success or failure.

Accessibility for White Collar Workers

Accessibility of office developments to residences of white collar office workers is highly related to the attractiveness of a freeway corridor for office development. In general, office development occurs in the order of the proportion of the residences of white collar workers in the metropolitan Louisville area occur in the eastern portions near I-64. Similarly, in the Dallas area, the white collar population is concentrated in the eastern portion of recent office development. This factor becomes especially important in the decision of the prospective location of office developments after 1970, since the lifestyles of white collar workers in several cities, such as Louisville, have changed greatly in the last decade. Dallas also exhibits similar trends. In the Dallas metropolitan area, the white collar population is more likely to live northeast of the CBD, where approximately 76 percent of the white collar office workers are located, and it has been highly concentrated in the central business district (CBD) and in the core area of the city. This area is close to the CBD and is highly accessible to a large portion of the white collar population.

This factor also becomes important in the decision of office location because the white collar population is more likely to live northeast of the CBD, where approximately 76 percent of the white collar office workers are located, and it has been highly concentrated in the central business district (CBD) and in the core area of the city. This area is close to the CBD and is highly accessible to a large portion of the white collar population.

Accessibility for Executives

Even more important than accessibility for secretaries and clerks is accessibility for their bosses, who are the decision makers on office locations. The importance of accessibility of office developments to the residences of these decision makers has been demonstrated in a number of studies. For example, Quante concluded, "The most important consideration in the relocation of a company is the availability of office space. Without access, the probability of relocationHeight away from the core may still enjoy excellent access to it because of improvements in the communication system or the availability of office space. The desire for accessibility of office developments to the residences of white collar workers, especially top executives, is an important factor in the decision of office location. Quante argues that corporations which place a high value on the well-being of their senior executives are making a rational economic decision. Munnern observed, "The reasons for the growth of office space in downtown Chicago are difficult to understand. A Dallas leasing agent explained on an "intercept theory" explaining, "This factor becomes especially important in the decision of office location because the white collar population is more likely to live northeast of the CBD, where approximately 76 percent of the white collar office workers are located, and it has been highly concentrated in the core area of the city. This area is close to the CBD and is highly accessible to a large portion of the white collar population. Regardless of dollar costs, generally it is more important to the developer to locate near a freeway system. The speed and ease of entry to and exit from the freeway system are important factors in the economic attractiveness of the specific development. This factor becomes especially important in the decision of office location because the white collar population is more likely to live northeast of the CBD, where approximately 76 percent of the white collar office workers are located, and it has been highly concentrated in the core area of the city. This area is close to the CBD and is highly accessible to a large portion of the white collar population.
added that differences in the “sophisti-
cation” of criteria in the development
process may be more important; a city
such as Denver may be better prepared
than some of the satellite communities
to aid a developer by cutting time delays
in granting permits, thus reducing the
developer’s front-end costs.

Any evaluation of the impact of tax
(or other cost) differentials upon office
development patterns should include the
fact that office occupancy rates are more
sensitive to quality considerations than
cost considerations. Buildings with low
rental rates are often those with high
vacancy rates because the building is not
considered prime space.

**Price of Land**

The relationship of the price of land to
attractiveness for office development
is not a simple one. At a minimum, as
the land becomes more attractive (e.g.,
when accessibility is improved through
improvements to the transportation net-
work), its price increases.

The price of land may not be a
critical factor for development because
the higher price of a land parcel can be
compensated for through more intensive
development. When high-rise develop-
ment is substituted for garden-type
development, the core in the study cities is still
considered prime space.

A viable site for office development,
even though land costs in the core are
as high as $25 to $75 per square foot.
However, the lower price for land
farther away from the core enables the
development of larger parcels that can
provide ample space for free parking.
This is an important inducement for
firms currently located in the CBD. One
observer sees it as the equivalent of a
$30 per month salary increase.

The use of larger parcels of land also
permits the use of cheaper garden-type
development or more expensive construc-
tion. Less expensive land and less expensive
construction combine to contribute to
cheaper office space than can be found
in buildings of comparable age in the
core.

In summary, if all other factors are
equal, cheaper land will attract office
development, but all other factors are
rarely equal. Therefore, one must conclude
that within limits, the price of land is
not a determinant of where offices are
developed.

**Availability of Land**

Another variable that may be con-
sidered a “necessary” condition before
development can occur is the supply of
available land. An analysis of the impact
of freeways upon the location of office
development should examine this variable.
Freeways play an important role in
making land available for development
by providing access to it for potential
users. For instance, one freeway can pass
through vacant land that, when combined
with improved accessibility, attracts new
development to the area, while another
freeway is routed through an already developed
area that may serve to inhibit new devel-

gement despite the added accessibility.
This is one explanation offered for the
high price of a land parcel can be
within limits, the price of land is
or setbacks) will vary with the ease with

An examination of vacant land in the
seven cities studied leads to the con-
clusion that available land may be a
necessary condition but is not sufficient
to attract development. For example,
large tracts of vacant land are found
along the southern terminus of I-35 in
Dallas, and yet the new development
is along the portion of I-35 north of the
CBD (Stemmens Freeway). Similarly,
less expensive land and less expensive
construction combine to contribute to
cheaper garden-type development if the cost of purchasing and clearing
land is devoted to another
use (e.g., much of San Jose’s
office development is in former fruit
orchards). If land is devoted to another
use—whether it be agricultural, residen-
tial, or commercial—it may still be
considered available for office develop-
ment except if the cost of purchasing and clearing
it is no higher than the price of “vacant
land elsewhere and if zoning and other
land use restrictions permit it. The avail-
ability of land, therefore, is a function of
price and zoning and not of current
land use. It may also be a function of
the size of the parcel outlying land is
more likely to be available in large
parcels, whereas already developed land
may be divided into smaller parcels spread
over broader ownership, which makes the
aggregation of a sufficiently large land
package in a difficult process.

The importance of zoning and other
land use restrictions (e.g., building height
or setbacks) will vary with the ease with
which they may be amended in any city.
increased citizen participation have
made variances more difficult to acquire,
especially if residential land is affected.

1 In some of the metropolitan areas the
circumferential is not composed entirely of
interstate routes. The short segments of state
routes used to close the circumferential are
included as part of the interstate circumfer-
ential.

2 Pre-1970 sites include only those that
were developed before 1970 and that were
still in place in 1976.

3 Regina Belz Armstrong, The Office In-
dustry: Patterns of Growth and Location

4 Wolfgang C. Manners, The Evolu-
tion of Corporate Headquarters from New York City (New York:
Prager, 1975).

5 Gerald Manners, “The Office in Metropoli-

tain: An Opportunity for Shaping Metropolitan
America,” Economic Geography, Vol. 51, No. 2
(April, 1974).

7 Dallas Chamber of Commerce, 1974-75 Guide to Dallas Office Buildings (Dallas, 1974).

8 According to data supplied by the Dallas Association of Building Owners and Managers in September, 1976, the variation in cleaning service costs was more than 50 cents per square foot even when the most extreme rate at each end of the cost range is ignored.

9 Although tax differentials are usually relatively small, two of the metropolitan areas studied in this report (Minneapolis-St. Paul and Atlanta) had tax rates two to three times higher in the central city than in some of the outlying suburbs. Developers in Minneapolis-St. Paul were especially strong in their claims that higher taxes in the two central cities were an important factor in the suburbanization of office space in that metropolitan area, despite the provision of the Metropolitan Development Act of 1971 which redistributes a small portion of commercial property taxes to all cities in the metropolitan area.

10 This is not to say that adjacent land use is unimportant. The lack of development along much of I-80 in Omaha is attributable to the attraction of industrial and warehousing land uses to this area because of the Union Pacific railroad tracks which are adjacent to and parallel with the freeway. Similarly, the pattern of office development locations shown on Maps 1-7, indicates some agglomeration of similar units, as it is rare for an office site to be isolated from other office developments.

**STAFF ACTIVITIES**

- The CAUR staff is assisting the City of Norfolk with a pre-application to the Department of Housing and Urban Development for housing and community development block grant funds.
- Ethel Hill Williams is helping the North Omaha Community Development Corporation in planning a Midwest regional convention on neighborhood issues to be held in October, 1980.
- Murray Frost and Peggy Hein are conducting a survey of the public's knowledge of poison control procedures for the Poison Control Center at Children's Memorial Hospital.
- Jack Ruff presented a report on builders' and lenders' attitudes toward the Nebraska Mortgage Finance Fund at a meeting of the NMFF board of directors in Lincoln on October 12.

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**DEPPE GOES TO WASHINGTON**

Don Deppe has resigned as director of the Center for Applied Urban Research to accept a position as program officer in the Office of Regional Programs of the U. S. Commission on Civil Rights in Washington, D.C.

He will be working with regional program directors and their staffs throughout the United States in developing and evaluating civil rights programs.

Jack Ruff, housing coordinator at CAUR, has been named acting director while a search for a new director is instituted.