

An Example of Consumer Control of Location: Service Stations

DENNIS R. CROWE and JAMES R. NORWINE, Indiana State University

Introduction

Geographers have long recognized the dynamic nature of man's physical and cultural environments. Lay observation has often substantiated the descriptions of change within the urban environment as stated by urban geographers. This paper deals specifically with the change in location and distribution of automotive service stations over a twenty year period within the 1965 corporate limits of Terre Haute, Indiana, as an example of consumer control of location.

The study was initiated in the Spring of 1965 with a field survey of locations of service stations within Terre Haute. A sample of the total number of stations was used which corresponded to those stations located along certain subjectively chosen main highways and through-routes. In addition to the field data acquired in 1965, city telephone directories were consulted for locations of service stations along the same routes for the years 1945 and 1955. Thus, a distributional-change trend can be shown for service station locations over the twenty year period of 1945 to 1965.

The Sample

An assumption was made that a great percentage of the total number of service stations would be located along highways and major through-routes, simply because of the greater traffic flow past points located along these routes. Twelve streets oriented both north-south and east-west were selected after field observation indicated an apparent service station gravitation toward these routes. All service stations located along these twelve streets were included in the sample. The validity of the assumption and hence the reliability of the sample were substantiated by the following observations: in both 1945 and 1955 approximately 98 per cent of the city service stations were along these twelve routes, while in 1965 more than 90 per cent of the stations were along these selected routes.

Results of the Study

Numbers of service stations: 1945-1965

As would be expected, the number of service stations in Terre Haute did not remain constant during the twenty year period between 1945 and 1965. The study results indicate that during this period there has existed a general trend toward increasing numbers of service stations. Specifically, in 1945 there were 44 stations within the city limits, while in 1955 the number had increased to 85—an increase of approximately 96 per cent. Between 1955 and 1965 the number of stations increased to 108, for an increase of about 27 per cent in this ten year period. Obviously, although there was a sizeable increase in numbers in this last ten year period, the rate of increase was much reduced from the

rate for the period 1945-1955. Perhaps this decreasing rate is a reflection of the approach of a service station "saturation level" with the existing economic and land-use factors within the city after a post-war boom. It will be noted, however, that regardless of the rate of increase, there did occur an approximate 246 per cent increase in the numbers of stations between 1945 and 1965, most of which occurred in the post war period in the first ten years of this study.

Service Station Distribution: 1945-1965

Just as the total number of service stations did not remain constant in the twenty year study period, there also was variation in numbers of stations located along the sample routes. The distribution of stations varied in two ways: 1. the actual numbers of stations along each route increased or decreased and 2. the proportion of stations on each sample street of the total sample fluctuated.

TABLE 1
Service Stations Along 12 Selected Routes
in 1945, 1955, and 1965*

	1945		1955		1965	
	n	%	n	%	n	%
Ft. Harrison Road	0	0	2	2	2	1
Lafayette	11	18	16	14	17	13
Wabash	14	23	23	20	27	20
Ohio	3	5	8	7	4	3
Poplar	5	8	12	10	10	8
Third	2	3	9	8	22	17
Seventh	16	26	21	19	14	10
Thirteenth	3	5	7	6	11	8
Twenty-fifth	2	3	6	5	14	10
Fruitridge	0	0	1	1	3	1
Hulman	4	6	3	2	7	5
Margaret Avenue	0	0	2	2	3	1

* Percentages do not total 100 % because of "rounding-off."

Table 1 presents the number of stations and their proportionate values for each of the sample routes. The table shows the change in station distribution by route for the three year sample years of the twenty year period.

Of the twelve routes, only the following four sustained notable station losses or gains (relative to the total number of stations in Terre Haute) during the twenty year period. 1. Seventh Street, the primary north-south access route in Terre Haute in 1945 ("Old Highway 41"), had 26 per cent of the entire sample at that time. This dropped to 19 per cent by 1955, and to 10 per cent by 1965. This seems to be a reflection of the shift in traffic flow from "Old Highway 41" to "New Highway 41" (Third Street) and to other routes. 2. In accordance with this hypothe-

sis there has also been a slow decrease in the percentage of stations located along Lafayette ("Old Highway 41" north of Wabash Avenue). Service stations located along Lafayette accounted for 18 per cent of the sample in 1945, 14 per cent in 1955, and 13 per cent in 1965. Furthermore, field interviews indicated that many of the stations still located along Lafayette exist mainly because of what might be termed "capital inertia," and should expire in the near future. 3. As might be expected, Third Street ("New Highway 41"), the present major north-south throughway in Terre Haute, has become a focus of station location. Third Street percentages rose drastically from 3 per cent in 1945, to 19 per cent in 1955, and dropped slightly to 17 per cent by 1965. 4. Twenty-fifth Street has also sustained rather significant gains in numbers of stations, having 3 per cent of the total in 1945, 5 per cent in 1955, and 10 per cent of the total sample by 1965. This seems to be a reflection of the expansion of suburban population and industrialization in Terre Haute. Interestingly, all four of these "dynamic routes" are north-south streets. None of the east-west through-routes in Terre Haute has been the scene of major station-location changes. This phenomenon seems to be a result of there having been no major route changes in east-west streets during this period.

Directional-Access Orientation of Stations: 1945-1965

A third distributional characteristic of service stations which this study investigated was the directional orientation of stations. In other words, an examination of the proportion of north-south and east-west street access of the stations in 1945, 1955, and 1965. Table 2 shows the total number of stations oriented in each direction for each sample street.

TABLE 2
Number of Stations by Primary Street Access:
North-South and East-West

Route	1945		1955		1965	
	N-S	E-W	N-S	E-W	N-S	E-W
Ft. Harrison	0	0	2	2	2	2
Lafayette*	11	0	16	0	17	0
Wabash	1	14	1	23	6	27
Ohio	2	3	4	8	3	4
Poplar	5	5	3	12	6	10
3rd	2	0	9	2	22	8
7th	16	8	21	5	14	6
13th	4	1	7	0	11	2
25th	2	1	6	1	14	6
Fruitridge	0	0	1	1	3	3
Hulman	0	4	3	3	7	7
Margaret	0	0	2	2	3	3
	43	36	75	59	108	78

* Considered N-S, although NE-SW.

As the table indicates, little shift in service station directional access occurred in the period 1945 to 1965. As the numbers of stations increased in Terre Haute, the numbers having north-south and east-west access increased, but with the same directional orientation being dominant in each sample year. A moderate general trend can be observed, however, toward increasing proportionate dominance of north-south street-access. Table 3 indicates the percentages of stations oriented in each direction for each sample year.

TABLE 3
Percentages of Total Stations Having North-South
and East-West Access

1945		1955		1965	
N-S	72%	N-S	68%	N-S	80%
E-W	60%	E-W	53%	E-W	59%

Thus, though basically there has been little change in total directional orientation, there has been a slowly widening gap between the proportion of stations oriented east-west and north-south, with north-south-oriented stations increasing in importance more rapidly than stations having primary access to east-west streets.

Conclusions

1. The absolute number of service stations increased greatly in the post-war period of 1945-1955 and then became more nearly stable from 1955 to 1965. Over the 20-year study period the number of stations in Terre Haute increased by $2\frac{1}{2}$ times.
2. Only four of the 12 routes sustained notable station losses or gains—all of which were north-south extending streets. These changes seemed to be direct results of changes in traffic flow through Terre Haute (i.e., "consumer control").
3. There has been little change in directional orientation or street access of the stations, though north-south access has been and continues to be of prime importance (a reflection, in this view, of the greater traffic flow along this axis).
4. This paper is not definitive—further work remains to be done on the subject—but the results as stated above seem to indicate a distinct cause-effect relationship between consumer control (in this case traffic flow) and service station location and distribution in Terre Haute, Indiana.