

The Three C's of Urban Transportation Planning

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The need for continuing, comprehensive, urban transportation planning on a cooperative basis among all levels of governmental units is emphasized by the growing importance of transportation as a major segment of our economy. Transport facilities have linked our nation together socially, economically, and politically. As our national population and economic activity increase in the future, so also will the demands for transport improvement, both in the need for the movement of goods and the need for travel.

Urban Development—Population

We are fast becoming an urban nation. Over 70 percent of our population live in urban areas. By the year 2000 the national population may double what it is today with well over 80 percent residing in urban areas. A good proportion of the population increase will continue to take place in the major metropolitan areas, such as New York, Chicago, Los Angeles, Philadelphia, Pittsburgh, Boston, and others. There will be also an increasing tendency to spread out into the suburbs and beyond, linking clusters of smaller cities. A well known example is the North Atlantic Seaboard area from north of Boston to Washington where almost the entire length of approximately 600 miles is urbanized.

There has been a noticeable decline in the residential density within the central city as the urban areas grew in size and extended to metropolitan areas. This pattern of population loss has generally occurred in the older developed portions of cities. However, there are strong indications that this trend is declining as the character of the central city undergoes changes brought about largely by urban redevelopment, both in residential and commercial.

A variety of factors appear to be influencing the population shifts: availability of the developable land for residential growth and expanding industrial development, expansion of major retail establishments from the central business district to branch outlets in suburban shopping centers, and the relative accessibility by motor vehicle. The desire for

more space and privacy, neighborhood environment with the emphasis on family living, improved educational and other cultural facilities and lower land costs, are among some of the social and economic forces contributing to the movement from congested city living to the suburbs.

Technological development in power, communications, and assembly line processes have made almost obsolete the multi-story factory building usually found in the older portion of the built-up city. Manufacturing establishments with large demand for space for more efficient horizontal rather than vertical assembly line processes are also finding the outlying areas more desirable for the distribution of finished products by truck. Similarly more efficient and economical methods in warehousing and wholesaling operation, brought about largely with the shift from rail to truck for goods distribution has made the old locations downtown less attractive. Such operations carried on outside the city limits where more space is available has increased the importance of highway transportation. The trend toward urbanization clearly points up the dimensions of the transportation problem that lies ahead.

Influence of Urban Development on Travel Patterns

Concomitant with the suburban residential growth and increasing suburban employment opportunity is the creation of different travel patterns, not only between the suburbs and "downtown" but also between suburbs.

As families move to the suburbs, and the neighborhood retail trade expands, the strength of the central business district for many types of shopping and retail employment decline. On the other hand, commercial businesses, institutional organizations, insurance, finance, and government offices, continue to find the downtown area a better location for their related activities and the availability of clerical, stenographic and professional employees.

While the central business district is still the single most important area of destination in all urban areas, its relative importance as a destination of total trips has declined as the city size increases and the many occupational activities are diffused throughout the urban area. Trips for business, professional, institutional, and government purposes appear to be increasing while those for shopping and recreational purposes are declining.

Along with these changes in trip purposes is the associated change in the time pattern of daily travel. The decline in trips to downtown for shopping and recreational purposes has reduced considerably the downtown travel during the off-peak hours, while travel during the peak hours—the home-to-work-to-home trips—have gained.

Changes in purposes and pattern of travel to the central business district as well as the diversity of travel demand and the diffusion of activity that takes place in the urban areas is confirmed by the results of transportation studies in many of the larger cities. Over 85 percent of all trips within urban areas are home based, that is, they have either beginning or ending or both at home. Of these approximately one third are for work trips, while trips for social and recreational purposes, for shopping, for school and others account for about two thirds of the trips originating from home. In addition, the non-home based trips, largely commercial, account for an increasing amount of travel within the urban areas.

Though public transit is ideally suited for the concentrated volume of home-to-work travel in the central business district, it cannot economically accommodate a much larger but more diffused travel demand throughout the urban area. Furthermore, the distribution of goods from manufacturer to wholesaler and retailer without the necessity for intermediate storage and warehousing facilities has resulted from the increasing use of truck transportation. Thus, the dispersed living, technological advances in manufacturing and commercial activity, permitting diversity of location and operation, and the opportunities for choices in the mode of transportation continues to favor the motor vehicle which today constitutes well over three quarters of the total urban travel.

The urban pattern of living will be characterized by even more mobility than we observe today. Central business district oriented travel will become relatively weaker, while intersuburban travel, largely by automobile, will continue to grow as expanding employment opportunities in the outlying areas attract the work force living in suburban communities. Lower land-use density as population and employment disperse will contribute to an increasing growth in automobile ownership.

Motor vehicle registrations have grown at an astounding rate compared with population growth. Projections of automobile ownership and usage indicate that by 1985 there will be one passenger car registered for every 2.2 persons. With the possibility then of registrations approximating 125 million and over 85 percent of the travel within urban areas, highway travel, too, will reach some astronomical figure in billion-vehicle miles.

The increased mobility for the individual offer opportunities for a wider choice in places of employment, shopping and recreation. Trip lengths will tend to lengthen and the home-to-work travel will likely become longer. As the number of cars per family household increases (the rate of multi-car ownership per family is continually surging upward) the number of people in each car on an average work trip

decreases. This increases total travel and the need for better highway facilities. The implications for transportation are profound. The linkages between points of origin and destination of travel will form a far more complex pattern than heretofore.

Highways in the Urban Development

In choosing the dispersed living, suburbanites will have consciously discarded their opportunity for choice of transportation, for the private car will become the only practical means of transport. Projections by the Bureau of Census indicate that the "war babies" now crowding the colleges and universities will shortly be establishing households in an environment of more open space conducive to raising children. Their discrimination in the choice of where to live will also prevail in the mode of transportation—the private automobile. A large majority will hardly have experienced any other type of ground transportation.

The flexibility and the freedom from restrictions of fixed routes for the home-based travel also prevails for many types of business, industrial, and recreational activities. Industry is increasingly taking advantage of highway transportation for the location of single-story plants with space for future expansion and providing ample parking space for the workers. Suburban and neighborhood shopping centers and commercial business centers, places of recreation, new centers for cultural activities, hospitals, churches, and many other activities are locating so as to be accessible by motor vehicle.

Such development resulting from highway accessibility has contributed to the economic growth and helped shape the development of the urban area. An example of note is the circumferential highway around Boston, Route 128. Conceived as an outer ring connecting the many radial routes leading into the city, and serving as a bypass for through traffic, it has become in addition, a major artery along which have been established industrial, commercial and residential developments that have necessitated substantial reconstruction of the route to increase its traffic capacity. The bypass (I-465 and Route 100) around Indianapolis, appears to be developing quite similar to that on Route 128 around Boston.

More often, however, new residential and industrial development takes place with the confidence that the necessary highway improvements such as widening or a higher type of surface will follow. Then with rising volumes of traffic and more developments along the same road, highway improvements are forced to follow—usually at greater expense. Needless to say the orderly process is to plan for the highway improvements and economic development to proceed together.

The highways, together with the motor vehicle, permit realignment and redistribution of economic and social activity and provide mobility between home, employment and market. The great diversity of movements of people and goods results from decisions by urban residents as to how they choose to work, live and play. It is the job of the transportation planner to understand the forces and influences that bring about the type of living that transportation will be called upon to support in the future. He will need the full support and cooperation of many disciplines to assure the orderly development of efficient and effective transportation.

Growth of the Urban Transportation Planning Process

The highway engineer or planner, perhaps more than any other professional, has the technical background and the understanding of the urban transportation problems. As far back as the mid-1940's state highway departments in cooperation with the Bureau of Public Roads engaged in traffic surveys and analysis as a basis for determining the highway needs and development program. These early state-wide highway planning studies and analysis providing traffic flow maps and recommended route locations, left much to be desired, especially in projecting future travel patterns. As the surveys were repeated and checked with the results of prior studies it was recognized that a relation existed between travel and measurable economic and social factors. As the need for highway improvements in urban areas became more pressing city planners, sociologists, geographers and economists also became concerned. It soon developed, from the data tabulated and analyzed, that basic relations existed between travel desires and land use and other social and economic factors. For example, it was found that the home-interview sampling of residents in urban areas of what trips they made the day prior to their interview, produced travel *desire lines* that indicated the total movement in a *corridor*. Comparisons could then be made with the traffic capacity of the streets in the corridor.

Continuing efforts to improve the basis of measuring today's travel and estimating the volume and pattern of travel in the future revealed the importance of the traffic generation characteristics of the abutting land. First attempted in Detroit, in the early 1950's, it was found that traffic generation was related to the use or purposes of the abutting land and combined with pertinent, economic and social factors, such as personal income, location and environment, produced a means of forecasting future travel patterns and traffic demand. This basic land-use-transportation relationship has been further identified and refined by more sophisticated techniques used in subsequent comprehensive trans-

portation studies. By the use of mathematical equations or models and electronic data processing equipment, today's travel and its land-use relationship can be reproduced and compared with actual observation and reliable projection of future travel and needs can be made. Experience to date gives confidence that travel demand can be predicted as accurately as can future land-use.

While comprehensive urban transportation studies were being undertaken in several of the larger urban and metropolitan areas—Chicago, Pittsburgh, Washington, D.C., Los Angeles, New York, and others, it was not until early 1962 that the state highway departments really began a continuing program of such studies in all urban areas. It was then possible to obtain federal funds through the Bureau of Public Roads and the Housing and Home Finance Agency toward the cost of these studies. The program was accelerated as a result of President Kennedy's "Message on Transportation" to Congress in March 1962. The President recommended that the expenditure of Federal Aid Highway funds in urban areas be approved only when the projects were based on the results of the transportation plan, properly integrated with comprehensive general plans for the area. President Kennedy's recommendation, subsequently spelled out in detail in the 1962 Federal Aid Highway Act, emphasizes that states, and cities of 50,000 population or more, shall cooperate in a continuing comprehensive planning process in order to obtain federal approval of any projects in any urban areas. This means briefly, a joint cooperative undertaking between the state highway departments and urban communities, that will insure continuing availability of current data on land use, travel and transportation and related facilities for use in developing comprehensive land use-transportation plans and programs.

Urban Transportation Planning

The Bureau of Public Roads "Instructional Memorandums" and HHFA's "Urban Planning Guide" issued in late 1963, provide the broad guidelines of the two federal agencies in respect to the utilization of federal funds to develop adequate transportation plans for urban areas. It is the responsibility of the state highway department and the planning agency representing the urban regions or state, to indicate, to the respective federal agencies, that there is adequate coordination and cooperation in the undertaking of urban transportation planning and that there is effective participation at the local governmental level. This participation should include the county as well as the municipal officials or representatives.

Generally speaking, state agencies, whether highway, planning, finance, conservation or natural resources, are so autonomous that they are seldom aware of the programs and facilities in the other agencies that could be used to develop comprehensive and coordinated urban transportation plans. As a consequence, which unfortunately has prevailed so often in the past, urban transportation plans developed primarily by state highway departments have had difficulty in obtaining complete public acceptance. It is imperative, therefore, that in taking the lead in the urban transportation planning process, state highway departments should first obtain a mutual understanding of the respective programs of other agencies that are pertinent, and with such assistance as can be provided by specialists in these agencies, proceed with the development of comprehensive urban transportation plans.

Such plans, regardless of how good they are or seem to be, will in the end require public acceptance to be implemented. This is more easily accomplished with the cooperation of the local officials. This cooperation can be anticipated when effective working relations are established between the several pertinent agencies and at all levels of government. This will insure a continuing planning process so essential in our constantly growing urbanized nation.

Recognizing the growing trend toward urbanization and the need for suitable environment in which to live, work and play, President Johnson, in his "Message on Cities" to the Congress earlier this month, pointed out the need for sound, long range and comprehensive planning to provide proper environmental development in urban and metropolitan areas. This further emphasizes the importance of the comprehensive urban transportation planning process required under the 1962 Federal Aid Highway Act, and underway in the several states.

An effective cooperative undertaking of the continuing comprehensive planning process will also provide a basis for obtaining the information required for estimating the highway needs for the next 20 years (1965-1985) and for establishing the functional classification of all streets and highways based on the anticipated travel demand characteristics.

The Administration's support for comprehensive urban transportation planning is unquestioned. The tools and the technical know-how are readily available; so also are federal funds to assist in paying the cost of the planning studies. Here is both a challenge and the opportunity to implement a very important urban planning program. Success will depend on full cooperation among the officials representing the federal, state and local jurisdictions. As the benefits of the planning

process in laying out programs of transportation improvement in an orderly manner become apparent to both officials and the public, there is little reason to doubt that the future will see an effective and accepted basis for developing transportation facilities that will be needed to make our cities and urban areas the place we desire to live and work.