

# RESEARCH PAYS OFF

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## Quick Response *A New Approach to Planning*

### **Problem**

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During the decades of the 1960s and 1970s, urban transportation planning techniques were developed to evaluate alternative transportation systems for entire regions. The same techniques were also applied by many agencies to nonregional issues such as site development, corridor analysis, and localized system changes. Large computers, considerable data for both model calibration and application, and personnel with highly specialized expertise in computers and modeling were required to utilize these planning techniques. Therefore, the procedures were costly, time-consuming, and not always responsive to the needs of decision makers. Moreover, they required modification and adaptation for a wide variety of applications. Obviously, a need existed for less complex and more suitable procedures.

### **Solution**

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In 1976 quick-response techniques for transportation planning were developed under the National Cooperative Highway Research Program. The process is described in a research report prepared by the COMSIS Corporation: *NCHRP Report 187: Quick-Response Urban Travel Estimation Techniques and Transferable Parameters, A User's Guide*.

The *User's Guide* is a compilation of parameters and characteristics widely used for trip-generation analysis, trip distribution, mode-choice prediction, traffic assignment, time-of-day analysis, and automobile-occupancy estimation. These characteristics were analyzed, summarized, and converted to a format

that could be used for many applications, greatly reducing, and in some cases eliminating, the collection of new data needed for planning purposes.

The guide offers procedures for applying planning models and processes without utilizing a computer and without coding transportation networks. Procedures are presented for trip generation, trip distribution, mode choice, traffic assignment, and capacity analysis.

At the time of the development of the *User's Guide*, most agencies were employing the problem-oriented program of UTPS or PLANPAC, both of which required large mainframe computers. Since then, microcomputers have become increasingly popular. Recognizing the efficiencies to be realized by means of the quick-response techniques, the Federal Highway Administration contracted with the COMSIS Corporation to develop a microcomputer version called QRS; this set of programs is available from the Transportation Systems Center, U.S. Department of Transportation, Cambridge, Massachusetts.

### **Application**

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Indicative of the demand for quick-response techniques, the *NCHRP User's Guide* has been reprinted four times. To date, more than 5,500 copies have been distributed. In addition, QRS software has been distributed to more than 200 planning agencies, consultants, universities, state departments of transportation, and other agencies.

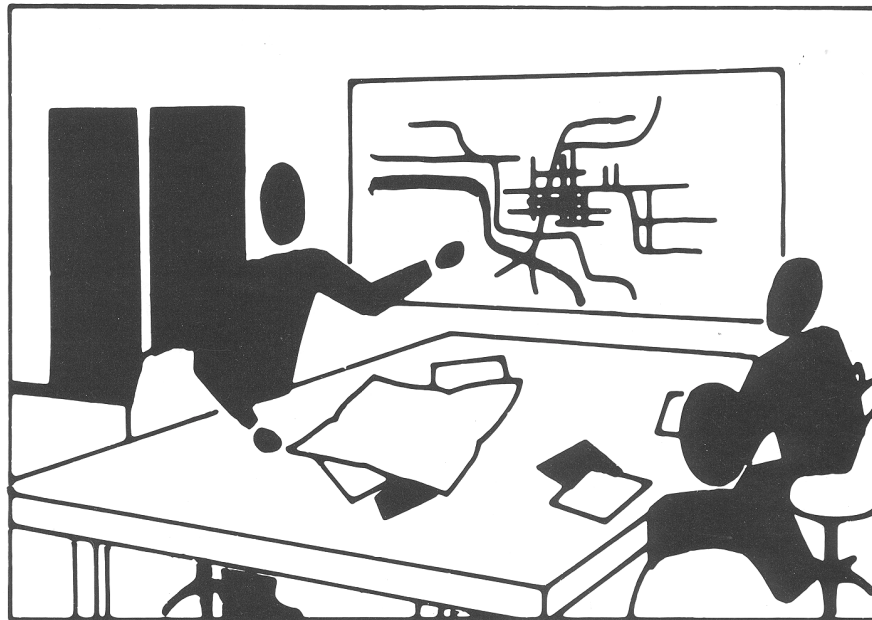
The Federal Highway Administration has trained more than 1,000 people in 30 3-day workshops that provide instruc-

tion in the techniques presented in *NCHRP Report 187*. Currently, FHWA is offering workshops on the principles contained in *NCHRP Report 187* and the QRS software. Approximately 150 students have attended the workshops to date. In addition, colleges and universities use the report in teaching the principles of transportation planning and systems design.

Transportation planners most frequently apply the quick-response techniques to four areas: long-range systems analysis, corridor or subarea analysis, site-impact analysis, and intersection-capacity analysis. The predominant application is in evaluating the impacts of proposed land-use changes on traffic. Consultants generally apply trip-generation rates and other transferable parameters to development-impact projects. The procedures have also been used for national transportation studies in Trinidad and Tobago.

Metropolitan planning organizations (MPOs) utilize the material in various ways, depending on the size of the metropolitan area and previous experience with the large mainframe computer systems such as UTPS. Those with effective UTPS capabilities continue to rely on the system, but use parameters in the *User's Guide*, especially trip-generation rates, to check UTPS forecasts and the validity of locally collected data. The report is also helpful for training new staff in system planning.

Agencies in smaller metropolitan areas tend to rely on the techniques presented in *NCHRP Report 187* and the QRS procedures for applications varying from the entire analysis of a small region to site-specific impacts. Some MPOs report that they are able to support constituent agencies with QRS



techniques, something they could not do with UTPS because of the resources required.

Several city and county agencies have used the report and QRS procedures to analyze the potential impacts of rezoning and development requests. In addition, *NCHRP Report 187* and QRS have been utilized by some states in planning studies for urban areas in the 25,000 population range and for training staff in transportation planning procedures.

### **Benefits**

Development of the quick-response concept has had enormous impact on transportation planning. Instead of making wholesale use of network-based mainframe computer programs for the full range of planning problems, users tailor the approach to the problem being addressed. Application of transferable parameters has reduced the need for expensive and time-consuming data collection. Thus, regional analysis of smaller areas as well as some corridor analyses and site-impact studies have become more practical, more responsive, and more affordable.