
BIBLIOGRAPHY

ACCESS Transportation Systems. (2001). *The ACCESS system: An overview*. Pittsburgh, PA.

Agency Council on Coordinated Transportation, *ACCT 1: Reported on 1997–1999 Demonstration Projects*, Washington State Department of Transportation, January, 2000.

American Public Transportation Association (APTA). (no date listed: probably 1998). *Public transit: critical investments, real benefits*.

American Public Welfare Association. (1983). *Strategies to improve specialized transportation*. Prepared for the U.S. Department of Health and Human Services.

Applied Resource Integration, Ltd. (1980). *Planning guidelines for coordinated agency transportation services*. Prepared for the U.S. Department of Health, Education, and Welfare and the U.S. Department of Transportation.

Applied Resource Integration, Ltd. (1980). *Implementation guidelines for coordinated agency transportation services*. Prepared for the U.S. Department of Health, Education, and Welfare and the U.S. Department of Transportation.

Beverly Foundation. (2001). *Supplemental transportation programs for seniors*. Prepared for the AAA Foundation for Traffic Safety, Washington, DC.

Brooks, S., et al. (1976). *Transportation authorities in federal human services programs*. Office of the Regional Director (Atlanta Office), U.S. Department of Health, Education, and Welfare.

BRW Consulting Team. (2001). *Job access planning: Challenges and approaches*. Prepared for the Federal Transit Administration.

Burkhardt, J.E. (2003). *Critical measures of transit service quality in the eyes of older travelers*. Presented to the Transportation Research Board Annual Meeting. In press.

- Burkhardt, J.E. (2000). *Coordinated transportation systems: Programs that work*. Prepared by Ecosometrics, Incorporated for the American Association of Retired Persons.
- Burkhardt, J.E. (1998). *Recommended framework for developing state and local human services transportation planning guidance*. Prepared by Ecosometrics, Incorporated for the Coordinating Council on Access and Mobility.
- Burkhardt, J.E., and Alexander, L.D. (1998). *Considerations for developing a strategic plan for the Joint DHHS/DOT Coordinating Council on Human Service Transportation*. Prepared by Ecosometrics, Incorporated for the Joint DHHS/DOT Coordinating Council on Human Service Transportation.
- Burkhardt, J.E., Hedrick, J.L., and McGavock, A.T. (1998). *Assessment of the economic impacts of rural public transportation*. Bethesda, MD: Ecosometrics, Incorporated. Published by the Transportation Research Board, Washington, DC, as *TCRP report 34*.
- Burkhardt, J.E., et al. (1992). *Comprehensive financial management guidelines for rural and small urban public transportation providers*. Prepared by Ecosometrics, Incorporated for the Multi-State Technical Assistance Program of the American Association of State Highway and Transportation Officials, Inc.
- Burkhardt, J.E., et al. (1990). *Specialized transportation services coordination plan for southeast Michigan*. Prepared by Ecosometrics, Incorporated for the Southeast Michigan Council of Governments.
- Burkhardt, J.E., et al. (2002). *Improving public transit options for older persons*. *TCRP report 82*.
- Burkhardt, J.E., et al. (1980). *Coordinated transportation demonstration results: Evaluation of the office of Human Development Services Transportation Demonstration Program*. Prepared by Ecosometrics, Incorporated for the Department of Health, Education, and Welfare.
- Centers for Medicare & Medicaid Services (2001). *The State of Oregon 1915(b) Program*. <http://www.hcfa.gov/medicaid/1915b/orfact.htm>.
- Centers for Medicare & Medicaid Services (2002). *Medicaid: A Brief Summary*, www.cms.gov/publications/overview-medicare-medicaid/.
- CGA Consulting Services. (1992). *An analysis of human service transportation: America's other transit network*. Prepared for the Community Transportation Association of America.
- Community Transportation Association of America. (2000). *Community transportation resource guide*. Prepared for the Federal Transit Administration's Rural Transit Assistance Program and the U.S. Department of Health and Human Services' Community Transit Assistance Project.
- Community Transportation Association of America. (1996). *Building mobility partnerships: Opportunities for federal funding*. Prepared for the Community Transportation Assistance Project, U.S. Department of Health and Human Services.
- Community Transportation Association of America. (1994). *Transportation coordination in Lee County, North Carolina*. Prepared for the U. S. Department of Agriculture.

Community Transportation Association of America. (1992). *Coordinating community transportation services: A planning and implementation handbook*. Prepared for the Community Transportation Assistance Project, U.S. Department of Health and Human Services.

Ecosometrics, Inc., and the American Public Works Association. (1999). *Medicaid transit passes: A winning solution for all*. Prepared for the U.S. Department of Transportation and the U.S. Department of Health and Human Services.

Energy Information Administration. (2002). *Energy information administration retail diesel fuel price index, monthly statistics*. www.eia.doe.gov/pub/oil_gas/petroleum/data_publications/.

Fielding, G.F., and Anderson, P.P. (1993). Public transit performance evaluation. In: *Transportation research record 915*. Washington, DC: Transportation Research Board, National Research Council.

Fuller, J.W. (2000). Information for transportation economic analysis: State of the art and relevance for decision making. In: *Information requirements for transportation economic analysis: Conference proceedings 21*. Washington, DC: Transportation Research Board.

Goeddel, D. (1996). *Benefits assessment of advanced public transportation systems*. Prepared by the Volpe Transportation Systems Center, U.S. Department of Transportation.

Hauser, E. (1999). *Guidelines for developing and maintaining successful partnerships for multimodal transportation projects*. Prepared by Kimley-Horn and Associates, Inc. for the National Cooperative Highway Research Program, Transportation Research Board, *NCHRP report 433*, Washington, DC.

Health Care Financing Administration (HCFA), et al. (1998). *Designing and operating cost-effective Medicaid non-emergency transportation programs: A guidebook for state Medicaid agencies*. Prepared by the HCFA and the National Association of State Medicaid Directors' Non-Emergency Transportation Technical Advisory Group.

Hedrick, J.L., and Burkhardt, J.E. (1999). *Impacts of administrative burdens on rural and small urban transportation systems*. Prepared by Ecosometrics, Inc., for the Coordinating Council on Access and Mobility.

Institute of Public Administration. (1975). *Transportation for older Americans*. Prepared for the Administration on Aging, U.S. Department of Health, Education, and Welfare.

Koffman, David, "Medicaid Administrative Costs Related to Transportation," memo to Gary Boley of Tri-Met, Crain & Associates, Inc., June 30, 1994.

Legislative Research Commission (LRC). (2000). *Progress report on coordinated human service transportation system*. Frankfort, KY.

Medicaid. *Medicaid: A summary*. <http://www.cms.gov/publications/overview-medicare-medicaid/>.

Multisystems, et al. (1999). Integrating school bus and public transportation services in non-urban communities. *TCRP report 56*. Washington, DC: Transportation Research Board.

- Multisystems, et al. (2000). *Welfare to work: Integration and coordination of transportation and social services*. Multisystems, Inc., Ecosometrics, Inc., Howard/Stein-Hudson Associates, Inc., Mundle & Associates, Inc., and Simon & Simon Research and Associates, Inc., published by the Transportation Research Board, Washington, DC, as *TCRP Web Document 16*.
- National Transportation Consortium of States, et al. (2000). *Working together: Directory of state coordination programs, policies, and contacts: 1999-2000*. Prepared by the National Transportation Consortium of States, Ecosometrics, Inc., and the American Public Works Association for the Coordinating Council on Access and Mobility.
- Ohio Department of Transportation (Ohio DOT). (1997). *A handbook for coordinating transportation services* (prologue).
- Palmateer, J.F. (1998). *Independent assessment of non-emergency Medicaid transportation brokerage in the tri-county area*. ODOT Public Transportation Section.
- RLS & Associates, Inc. and CGA Consulting Services, Inc. (1991). *A handbook for coordinating transportation services*. Prepared for the Ohio Department of Transportation.
- Seidman, H. (1975). *Politics, position, and power: The dynamics of federal organization*. New York: Oxford University Press.
- United States Energy Information Administration, *Gasoline and Diesel Fuel Update*. February 6, 2002.
- U.S. Department of Health, Education, and Welfare. (1976). *Transportation authorities in federal human services programs*. Prepared by the Office of the Regional Director.
- U.S. Department of Health and Human Services (DHHS). (1981). *HDS transportation initiative: A report on research findings*. Prepared by Office of Human Development Services.
- U.S. DHHS and U.S. Department of Transportation (DOT). (2000). *Planning guidelines for coordinated state and local specialized transportation services*. Prepared by the Coordinating Council on Access and Mobility, Office of the Secretary, U.S. DHHS, and the Federal Transit Administration, U.S. DOT.
- U.S. DOT/DHHS Coordinating Council on Human Services Transportation. (1992). *Final report on the DOT/DHHS coordination roundtable*. Distributed by the U.S. Department of Transportation.
- U.S. General Accounting Office. (1977). *Hindrances to coordinating transportation of people participating in federally funded grant programs*. Report of the Comptroller General of the United States to the Senate Committee on Environment and Public Works, U.S. GAO.
- Volpe National Transportation Systems Center. (2002). *Innovative state and local planning for coordinated transportation*. Prepared for the Office of Planning, Federal Transit Administration, U.S. Department of Transportation.
- Volpe National Transportation Systems Center. (1997). *Transportation planning for access to jobs*. Prepared for the U.S. Department of Transportation, Federal Transit Administration and the Federal Highway Administration.

Weslin Consulting Services, Inc. (1992).
*Martin County transportation development
plan*. North Carolina.

NOTES:

A current list of classic and newer
coordinated transportation references may
be found on the web site of the
Coordinating Council for Access and
Mobility at www.fta.gov/ccam.

Copies of many of these references are
available from The National Transit
Resource Center. Call 1/800/527-8279.

GLOSSARY OF TECHNICAL TERMS

GLOSSARY

AAA

Area Agency on Aging. The local entity that plans senior services and advocates for the elderly within their communities, administering provisions of the Older Americans Act (see *OAA*).

Access

The opportunity to reach a given *destination* within a certain time frame or without being impeded by physical, social, or economic barriers.

Access Board

Common name for the Architectural and Transportation Barriers Compliance Board, an independent Federal agency whose

mission is to develop guidelines for accessible facilities and services and to provide technical assistance to help public and private entities understand and comply with the *Americans with Disabilities Act (ADA)*.

Accessibility

The extent to which facilities, including *transit* vehicles, are barrier-free and can be used by persons with disabilities, including wheelchair users.

Access to Jobs

Federal funding for programs to increase work-related transportation available to low-income individuals, authorized in *TEA-21*. Nonprofit organizations and

Note: Items shown in boldface and italics are defined in this glossary.

municipalities can apply to *FTA* for funding.

ADA

See Americans with Disabilities Act.

ADA Complementary Paratransit Service

Demand-responsive service that is operated in addition to *fixed route* service to accommodate persons who cannot ride the *fixed route* service because their disability prevents it. Under the *Americans with Disabilities Act*, public entities that operate *fixed route service* (excluding *commuter service*) are required to provide complementary paratransit with service characteristics equivalent to the *fixed route* service. The *ADA* is very specific in what constitutes equivalent service and what kinds of persons must be provided this service. A plan describing the service, which documents the planning process, must be submitted to the *Federal Transit Administration* regional office and updated annually. Many rural operators are not required to provide complementary paratransit service because they typically do not operate pure *fixed route* service.

Advance Reservation Scheduling

Passengers call ahead and reserve, in advance, a ride for a particular date and time. This is used in *demand-responsive* transportation systems. *Transit* systems may set limits on the minimum and maximum advance reservation times before the requested trip. Advance reservation of trip requests allow the scheduler/dispatcher

to identify *ridesharing* opportunities and assign rides to vehicles for the most efficient service delivery. A drawback to allowing requests far in advance of the desired trip is that *no-shows* may be more frequent than with *real-time scheduling*.

AFDC

Aid to Families with Dependent Children. The joint Federal-state welfare program until 1996 when welfare reform ended AFDC and created *TANF*.

Allocation

An administrative distribution of funds among the states, done for funds that do not have statutory distribution formulas.

Americans with Disabilities Act of 1990 (ADA)

Federal law that requires public facilities, including transportation services, to be fully accessible for persons with disabilities. ADA also requires the provision of complementary or supplemental *paratransit services* in areas where *fixed route* transit service is operated. Expands definition of eligibility for accessible services to persons with mental disabilities, temporary disabilities, and the conditions related to substance abuse. The Act is an augmentation to, but does not supersede, Section 504 of the Rehabilitation Act of 1973, which prohibits discrimination on the basis of disability against otherwise qualified individuals in programs receiving Federal assistance.

AoA: Administration on Aging

The agency within the U.S. Department of Health and Human Services that oversees the implementation of the *OAA*, including senior nutrition programs, senior centers, and supportive services for elders.

Apportionment

A term that refers to a statutorily prescribed division or assignment of funds. An apportionment is based on prescribed formulas in the law and consists of dividing authorized *obligation authority* for a specific program among the states.

Appropriations Act

Action of a legislative body that makes funds available for expenditure with specific limitations as to amount, purpose, and duration. In most cases, it permits money previously authorized to be obligated and payments to be made.

Arterial

A class of street serving major traffic movement that is not designated as a *highway*.

Arterial Route

A bus route that runs on major arterial streets, out along a straight line and back, often in the form of a *radial network* and often connecting with other routes at a transfer point. This route design is used to provide a high frequency of service in a limited geographic area (as opposed to a

loop route design). Arterial routes are recommended for higher density areas.

Attainment Area

An area considered to have air quality that meets or exceeds the *U.S. Environmental Protection Agency (EPA)* health standards used in the Clean Air Act. An area may be an attainment area for one pollutant and a nonattainment area for others.

Nonattainment areas are areas considered not to have met these standards for designated pollutants.

Authorization Act

Basic substantive legislation or that which empowers an agency to implement a particular program and also establishes an upper limit on the amount of funds that can be appropriated for that program.

Brokerage

In general, an institutional organization that functions as an interface between transportation providers and users. More specific roles include

1. *Coordination* of transportation services in a defined area. The transportation broker may centralize vehicle dispatching, recordkeeping, vehicle maintenance, and other functions under contractual arrangements with agencies, municipalities, and other organizations. This type of brokerage may be appropriate when full *consolidation* of services is not the best option.
2. A method of matching travelers with a variety of transportation providers and

modes through use of central dispatching and administrative facilities. Volunteer drivers are often coordinated by a broker. A *ridesharing* broker provides assistance in forming *carpools* or *vanpools* as well as identifying *transit* options.

Budget Authority

Empowerment by Congress that allows Federal agencies to incur obligations to spend or lend money. This empowerment is generally in the form of appropriations. However, for the major *highway* program categories, it is in the form of “*contract authority*.” Budget authority permits agencies to obligate all or part of the funds that were previously “authorized.” Without budget authority, Federal agencies cannot commit the government to make *expenditures* or loans.

Capital Costs

Refers to the costs of long-term assets of a public *transit* system such as property, buildings, and vehicles. Under *TEA-21*, *FTA* has broadened its definition of capital costs to include bus overhauls, preventive maintenance, and even a portion of *ADA* paratransit expenses.

Carpool

A carpool is a type of transportation arrangement (usually for commuter trips) in which two or more individuals share a regular trip in an automobile. The driver may be the same for every trip, or may rotate among the riders. Carpools typically provide *door-to-door service*, change when

a rider’s travel needs change, and may be arranged on an informal basis or through a *rideshare program* or *brokerage*.

Central Business District (CBD)

The most intensely commercial sector of a city.

Central Transfer Point

A central meeting place where routes or zonal *demand-responsive* buses intersect so that passengers may transfer. Routes are often timed to facilitate transferring. That is, routes with the same *headways* are scheduled to arrive at the central transfer point at the same time and depart once passengers have had time to transfer. When all routes arrive and depart at the same time, the system is called a *pulse system*. The central transfer point simplifies transfers when there are many routes (particularly *radial routes*), several different *modes*, and/or paratransit *zones*. A downtown retail area is often an appropriate site for a central transfer point, as it is likely to be a popular *destination*, a place of traffic congestion and limited parking, and a place where riders are likely to feel safe waiting for the next bus. Strategic placement of the transfer point can attract riders to the system and may provide an opportunity for joint marketing promotions with local merchants.

Charter Service

Transportation service offered to the public on an exclusive basis (either as individuals or as groups). It is provided with a vehicle that is licensed to render charter service and

engaged at a specific price for the trip or period of time, usually on a reservation or contractual basis. Typically charter service is contracted on a one-time or limited basis and is used to provide transportation on sight-seeing tours and to recreational *destinations*, sometimes on an overnight basis. Over-the-road coaches (intercity buses), typically equipped with baggage compartments, comfortable seats, and restrooms, are typically used in charter service. Public transportation operators that receive Federal and other public subsidies may only operate charter services under limited conditions.

Checkpoint Service

This term is commonly used interchangeably with *point deviation service*. Riders are picked up and taken to their own *destinations* or to transfer points.

Circulator

A bus that makes frequent trips around a small geographic area with numerous stops around the route. It is typically operated in a downtown area or area attracting tourists, where parking is limited, roads are congested, and *trip generators* are spread around the area. It may be operated all day or only at times of *peak* demand, such as rush hour or lunch time.

Commercial Drivers License (CDL)

The standardized driver's license required of bus and heavy truck drivers in every state. Covers drivers of any vehicle manufactured to seat 15 or more passengers

(plus driver) or more than 13 tons gross vehicle weight. The CDL was mandated by the Federal government in the Commercial Motor Vehicle Safety Act of 1986.

Congestion Management and Air Quality Improvement Program (CMAQ)

A categorical funding program created with the *ISTEA*. Directs funding to projects that contribute to meeting national air quality standards. CMAQ funds generally may not be used for projects that result in the construction of new capacity available to *SOVs*.

Connector Service

Service in which a transfer to or from another *transit* system or *mode* is the focal point. An example of this is service provided under the Greyhound Rural Connector program: local *transit* providers operate service that brings people to and from the Greyhound station. This type of connector service is also known as *feeder service*. Connector service may also connect two different *transit* systems (such as in two adjacent cities). It is often useful in improving service efficiency and effectiveness when important *destinations*, such as medical centers, are located beyond the *transit* system's service area.

Consolidation

Restructuring transportation services to serve the same market with fewer service providers (sometimes only one provider).

Contract Authority

A form of *budget authority* that permits obligations to be made in advance of appropriations. The Federal-Aid Highway Program operates mostly under contract authority rules.

Coordination

Coordination means pooling the transportation resources and activities of several human service agencies with each other or with mass *transit* operations. The owners of transportation assets talk to each other to find ways to mutually benefit their agencies and their customers. Coordination *models* can range in scope from sharing information, to sharing equipment and facilities, to integrated scheduling and dispatching of services, to the provision of services by only one transportation provider (with other former providers now purchasing services).

Curb-to-Curb Service

A service that picks up and delivers passengers at the curb or roadside, as distinguished from *door-to-door service*. Passenger assistance is generally not rendered other than for actual boarding and alighting. The passengers are responsible for getting themselves from their homes or other buildings to the curb. *Fixed route* service is always provided curb-to-curb, while *demand-responsive service* may be provided curb-to-curb or *door-to-door*. Curb-to-curb is more efficient for the *transit* system, but *door-to-door* provides a higher level of service.

Demand-Responsive Service

Service activated based on passenger requests. Usually passengers call the scheduler or dispatcher and request rides for particular dates and times. A trip is scheduled for that passenger, which may be canceled by the passenger. Usually involves *curb-to-curb* or *door-to-door service*. Trips may be scheduled on an advanced reservation basis or in “real-time.” Usually smaller vehicles are used to provide demand-responsive service. This type of service usually provides the highest level of service to the passenger but is the most expensive for the *transit* system to operate in terms of cost per trip. However, in rural areas with relatively high populations of elderly persons and persons with disabilities, demand-responsive service is sometimes the most appropriate type of service. Sub-options within this service type are discussed in order of least structured to most structured, in terms of routing and scheduling.

- **Pure Demand-Responsive Service**

Drivers pick up and drop off passengers at any point in the service area, based on instructions from the dispatcher. In pure demand-responsive systems, the dispatcher combines immediate requests, advance reservations, and *subscription service* for the most efficient use of each driver’s time.

- **Zonal Demand-Responsive Service**

The service area is divided into *zones*. Buses pick up and drop off passengers only within the assigned *zone*. When the drop off is in another *zone*, the dispatcher chooses a meeting point at

the *zone* boundary for passenger transfer or a central transfer is used. This system ensures that a bus will always be within each *zone* when rides are requested.

- **Flexible Routing and Schedules**

Flexible routing and schedules have some characteristics of both *fixed route* and *demand-responsive service*. In areas where demand for travel follows certain patterns routinely, but the demand for these patterns is not high enough to warrant *fixed route*, service options such as *checkpoint service*, *point deviation*, *route deviation*, *service routes*, or *subscription service* might be the answer. These are all examples of flexible routing and schedules, and each may help the *transit* system make its *demand-responsive services* more efficient while still maintaining much of the flexibility of demand responsiveness.

Destination

A place at which a passenger ultimately disembarks from a *transit* vehicle; the point at which a trip terminates.

DHHS

U.S. Department of Health and Human Services. Funds a variety of human services transportation through *AoA*, *Head Start*, *Medicaid*, and other programs.

Dial-A-Ride Service

A name that is commonly used for *demand-responsive service*. It is helpful in marketing the service to the community, as the meaning of “dial-a-ride” is more self-evident than “*demand-responsive*” to

someone unfamiliar with transportation terms.

Disabled Individual

Any person who by reason of illness, injury, age, congenital malfunction, or other permanent or temporary incapacity or disability is unable, without special facilities, to use local *transit* facilities and services as effectively as persons who are not so affected. This definition is part of the *Americans with Disabilities Act*.

Door-to-Door Service

A service that picks up passengers at the door of their place of *origin* and delivers them to the door of their *destination*. The driver pulls the vehicle off the road if possible and escorts or physically assists the passenger if needed. Door-to-door service provides a higher level of assistance than *curb-to-curb* service and is typically used for passengers with severe physical disabilities.

Elderly and Handicapped (E&H)

Anachronistic designation for special transportation planning and services for persons with special needs; current *FTA* terminology is elderly and persons with disabilities.

Empowerment Zones/Enterprise Communities (EZ/EC)

These areas, so designated by the Department of Housing and Urban Development (HUD) and the Department of Agriculture (USDA), are eligible for

preferences and flexibility in many Federal *grant* programs. EZ/ECs are chosen competitively based on community poverty characteristics and local strategic planning processes.

Enhancement Activities

Refers to activities related to a particular transportation project that “enhance” or contribute to the existing or proposed project. Examples of such activities include provision of facilities for pedestrians or cyclists, landscaping or other scenic beautification projects, historic preservation, control and removal of outdoor advertising, archeological planning and research, and mitigation of water pollution due to *highway* runoff.

Environmental Impact Statement (EIS)

Report that details any adverse economic, social, and environmental effects of a proposed transportation project for which Federal funding is being sought. Adverse effects could include air, water, or noise pollution; destruction or disruption of natural resources; adverse employment effects; injurious displacement of people or businesses; or disruption of desirable community or regional growth.

Environmental Protection Agency (EPA)

A Federal agency whose responsibilities include development and enforcement of national air quality standards and support of anti-pollution activities by state and local governments.

Expenditures (Outlays)

A term signifying disbursement of funds for repayment of obligations incurred. For example, an electronic transfer of funds, or a check sent to a state *highway* or transportation agency for voucher payment, is an expenditure or outlay.

Expressway

A controlled *access*, divided *arterial highway* for through traffic, the intersections of which are usually separated from other roadways by differing grades.

Fare Structure

Fare structure is the basis for determining how fares are charged. Common types of structures are distance-based (the longer the trip is, the higher the fare will be), time-based (higher fares for trips made during *peak hour* service than during the “*off peak*”), quality-based (*demand-responsive* trips are typically charged a higher fare than *fixed route* trips), or flat fares (the same fare is charged for all trips). In addition to these four methods, a fare structure may differentiate among passengers based on age, income, or disability (often lower fares are charged for elderly persons, children, *Medicaid* recipients, and persons with disabilities).

Federal Highway Administration (FHWA)

The agency within the U.S. Department of Transportation that administers Federal aid *highway* programs.

Federal Transit Administration (FTA)

The agency within the U.S. Department of Transportation that administers Federal aid transit programs.

Financial Capacity, Capability

Refers to U.S. Department of Transportation requirement that an adequate financial plan for funding and sustaining transportation improvements be in place prior to programming federally funded projects. Generally refers to the stability and reliability of revenue in meeting proposed costs.

Fiscal Year (FY)

Since FY 1977, the Federal yearly accounting period beginning October 1 and ending September 30 of the subsequent calendar year. Prior to FY 1977, the Federal fiscal year started on July 1 and ended the following June 30. Fiscal years are denoted by the calendar year in which they end; e.g., FY 1991 began October 1, 1990, and ended September 30, 1991.

Fixed Route

Bus service on a prescribed path or route that never varies. The schedule may be fixed or flexible (see *jitney or shuttle service*). Passengers may be required to wait at designated stops, or *flag stops* may be permitted. Usually larger vehicles are used to provide fixed route service.

Fixed Schedule

Predetermined times at which a vehicle is to arrive at a certain location. The actual bus route may be fixed or flexible. A flexible route combines fixed schedule stops with *demand-responsive* stops (see *checkpoint, point deviation, and route deviation*).

Flexible Routing and Schedules

Flexible routing and schedules have some characteristics of both *fixed route* and *demand-responsive service*. In areas where demand for travel follows certain patterns routinely, but the demand for these patterns is not high enough to warrant *fixed route*, service options such as *checkpoint service, point deviation, route deviation, service routes, or subscription service* might be the answer. These are all examples of flexible routing and schedules, and each may help the *transit* system make its *demand-responsive services* more efficient while still maintaining much of the flexibility of demand responsiveness.

Flexible route service follows a direction of travel but allows for deviation or rerouting along the way to accommodate for specific trip requests. Examples of flexible route systems are *route deviation* and *point deviation*. The schedule may be fixed or flexible.

Fragmentation

A situation stemming from the lack of effective and efficient integration of programs, facilities, and services.

Freeway

A divided *arterial highway* designed for the unimpeded flow of large traffic volumes. *Access* to a freeway is rigorously controlled and intersection grade separations are required.

Grant

The award of funds to an entity. Federal funds are typically awarded either as formula (or “block”) grants, where a predetermined legislative process establishes the level of funding available to an entity, or discretionary grants, where the funding agency is free to determine how much (if any) funding an entity will be given based on the relative merits of the proposal. Private foundations also give grants based on much the same criteria.

Group Service

Used most often in *charter* or contracted service, a bus trip is provided to a group of passengers who ride between a single *origin* and *destination*. The riders have some demographic variable in common and travel together in the same vehicle. This type of service is commonly used by senior centers and other human service agencies that take their clients on field trips and shopping trips as a group.

Guaranteed Ride Home

Refers to programs that encourage employees to *carpool*, use *transit*, or bike or walk to work by guaranteeing them a ride home in case they cannot take the same *mode* home (e.g., if they need to work late or if an emergency occurs).

Head Start

A program of comprehensive services for economically disadvantaged preschool-age children. Services, including transportation, are provided by local *Head Start* agencies and are funded by the Administration for Children and Families, part of *DHHS*.

Headway

The length of time at a stop between buses following the same route. If buses operating along Route A arrive at Stop 1 at 9:00, 9:30, 10:00, 10:30, and 11:00, it is operating on half-hour headways during the period between 9:00 and 11:00. Headways are short if the time between them is short and long if the time between them is long. When headways are short the service is said to be operating at a high frequency, whereas if headways are long, service is operating at a low frequency. In rural areas, headways tend to be very long—a week is not uncommon.

High Occupancy Vehicles (HOVs)

A term generally applied to vehicles carrying three or more people. *Freeways*, *expressways*, and other large volume roads may have lanes designated for HOV use.

HOV lanes may be designated for use by *carpools*, *vanpools*, and buses. The term HOV is also sometimes used to refer to high occupancy vehicle lanes themselves.

Highway

Term applies to roads, streets, and parkways and also includes rights-of-way, bridges, railroad crossings, tunnels, drainage structures, signs, guard rails, and protective structures in connection with highways.

Home-Based Work Trip

A trip to or from home for the purpose of one's employment.

Human Service Agency Transportation

Transportation for clients of a specific agency that is usually limited to a specific trip purpose. Human service agency trips are often provided under contract to a human service agency and may be provided exclusively or rideshared with other human service agencies or general public service.

Infrastructure

A term connoting the physical underpinnings of society at large, including, but not limited to, roads, bridges, *transit*, waste systems, public housing, sidewalks, utility installations, parks, public buildings, and communications *networks*.

Intercity Bus Service

Intercity bus service provides long distance service between cities, often as part of a

large *network* of intercity bus operators. Both *express* and *local* bus service may be provided. The Greyhound and Trailways systems are national intercity bus *networks*.

Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA)

Legislative initiative by the U.S. Congress that restructured funding for transportation programs. ISTEA authorized increased levels of *highway* and transportation funding and an enlarged role for regional planning commissions/*MPOs* in funding decisions. The Act also requires comprehensive regional long-range transportation plans extending to the year 2015 and places an increased emphasis on *public participation* and transportation alternatives.

Jitney Service

Vehicles travel along a *fixed route* with no time schedule and passengers are picked up anywhere along the route (*flag stops*). Because there are no schedules, *headways* are usually 5 to 10 minutes so passengers have only brief waiting periods. Jitney service is often used in the United States to provide *seasonal, tourist, or park and ride service*. Jitney service is a more common public transportation *mode* in other countries where private entrepreneurs are often the providers of service.

Land Use

Refers to the manner in which portions of land or the structures on them are used, i.e., commercial, residential, retail, industrial, etc.

Limitation on Obligations

Any action or inaction by an officer or employee of the United States that limits the amount of Federal assistance that may be obligated during a specified time period. A limitation on obligations does not affect the scheduled *apportionment* or *allocation* of funds, it just controls the rate at that these funds may be used.

Local Bus Service

Local bus service is a term used to describe a route along which many stops are made, allowing flexibility in where passengers may board and depart. It is typically used in contrast to *express bus*, a bus that makes a limited number of stops and is targeted more at long distance riders. Local bus service is important in rural areas unless *feeder* or *connector service* is available to bring people to the station.

Local Street

A street intended solely for *access* to adjacent properties.

Long Range

In transportation planning, refers to a time span of more than 5 years. The *Transportation Improvement Program (TIP)* is typically regarded as a short-range program.

Management Systems

Six systems required under *TEA-21* to improve identification of problems and opportunities throughout the Nation's entire

surface transportation *network* and to evaluate and prioritize alternative strategies, actions, and solutions. The six *management systems* include: Pavement Management System (PMS), Bridge Management System (BMS), Highway Safety Management System (HSMS), Congestion Management System (CMS), Public Transit Facilities and Equipment Management System (PTMS), and *Intermodal* Management System (IMS).

Medicaid

Also known as Medical Assistance, this is a health care program for low-income and other "medically needy" persons. It is jointly funded by state and Federal governments. The Medicaid program pays for transportation to non-emergency medical appointments if the recipient has no other means of travel to the appointment.

Metropolitan Planning Organization (MPO)

The organizational entity designated by law with lead responsibility for developing transportation plans and programs for *urbanized areas* of 50,000 or more in population. MPOs are established by agreement of the Governor and units of general purpose local government that together represent 75 percent of the affected population of an *urbanized area*.

Mobility

The ability to move or be moved from place to place.

Mode, Intermodal, Multimodal

Mode refers to a form of transportation, such as automobile, *transit*, bicycle, and walking. Intermodal refers to the connections between modes, and multimodal refers to the availability of transportation options within a system or corridor.

Model

A mathematical or geometric projection of activity and the interactions in the transportation system in an area. This projection must be able to be evaluated according to a given set of criteria that typically include criteria pertaining to *land use*, economics, social values, and travel patterns.

Network

All component paths in a transportation system.

National Ambient Air Quality Standards (NAAQS)

Federal standards that set allowable concentrations and exposure limits for various pollutants.

National Highway Systems (NHS)

A Federal transportation program authorized by *ISTEA* that designates nationally significant Interstate Highways and roads for interstate travel, national defense, intermodal connections, and

international commerce. Other eligible activities include bikeways and park-and-ride lots. The NHS is being developed as the first component of a larger, *intermodal National Transportation System*.

National Transit Database Reports

Annual reports formerly known as Section 15 reports, based on financial and operating data, required of almost all recipients of transportation funds under *FTA*'s urban transit program.

National Transit Resource Center

A resource center housed at the Community Transportation Association of America (CTAA). Provides technical assistance, information, and support to the community transportation industry. Most services and materials are available at no charge.

National Transportation System (NTS)

ISTEA called for the development of a "National Intermodal Transportation System that is economically efficient and environmentally sound, provides the foundation for the Nation to compete in the global economy, and will move people and goods in an energy efficient manner." The NTS is intended to allow for the development of transportation planning, program management, and investment strategies that will bring about a transportation system that will move people and goods more effectively and efficiently and thereby advance our economic, environmental and social goals.

No-Show

A passenger scheduled for a *demand-responsive* trip who does not appear at the designated pick-up point and time and does not cancel the trip in advance. Frequent no-shows can hurt the efficiency and effectiveness of the service, particularly in rural areas where passengers live in very remote areas that take time to get to and return from the pick-up point.

OAA: Older Americans Act

Federal law first passed in 1965. The act established a *network* of services and programs for older people. This *network* provides supportive services, including transportation and nutrition services, and works with public and private agencies that serve the needs of older individuals.

Obligation Authority

See “Limitation on Obligations.”

Obligations

Commitments made by Federal agencies to pay out money (as distinct from the actual payments, which are “outlays”). Generally, obligations are incurred after the enactment of *budget authority*. However, because *budget authority* in many *highway* programs is in the form of *contract authority*, obligations in these cases are permitted to be incurred immediately after *apportionment* or *allocation*. The obligations are for the Federal share of the estimated full cost of each project at the time it is approved, regardless of when the

actual payments are made or the expected time of project completion.

Operating Costs

Noncapital costs associated with operating and maintaining a *transit* system, including labor, fuel, administration, and maintenance.

Origin

A place at which a passenger boards a *transit* vehicle; the point at which a trip begins. Often this term is used to refer to a passenger’s home, even though the home actually becomes the *destination* of a return trip.

Paratransit Service

Paratransit is a broad term that may be used to describe any means of shared ride transportation other than *fixed route* mass transit services. The term paratransit usually indicates that smaller vehicles (less than 25 passengers) are being used. These services usually serve the needs of persons that standard mass transit services would serve with difficulty or not at all. A paratransit service is typically advanced reservation, *demand-responsive service* provided *curb-to-curb* or *door-to-door*. *Route deviation* and *point deviation* are also considered paratransit. Paratransit is often more appropriate than *fixed route* services in rural areas and in areas with large populations of elderly persons or persons with disabilities. Paratransit services that are provided to accommodate passengers with disabilities who are unable

to use *fixed route* service and that meet specific service equivalency tests are called *ADA complementary paratransit services*.

Peak/Off-Peak

The period during which the maximum amount of travel occurs. This is also the period during which the demand for transportation is usually highest. It may be specified as the morning (a.m.) or afternoon or evening (p.m.) peak, typically between 6:30 to 9:30 a.m. and 3:30 to 6:30 p.m. on weekdays when commuters are traveling to and from work and school. The actual times vary according to local employer shift times, school hours, and population density. Typically, during the peak period in urban *transit* systems, the maximum number of vehicle are placed in service, *headways* are shorter, and higher fares are charged than during the off peak period. In rural areas where the bulk of the ridership may actually be seniors going to nutrition sites, this concept may not apply.

Penalty

An action that does not allow a recipient to use the full amount of its apportioned funds. Applied to state recipients from Federal programs, the action may be a withholding of project approvals or withholding of a percentage of the state's *apportionment*. The action may be taken when the state does not comply with a required provision of law.

Person-Trip

A trip made by one person from one *origin* to one *destination*.

Point Deviation Service

A type of *flexible route transit* service in which *fixed scheduled* stops (points) are established but the vehicle may follow any route needed to pick up individuals along the way if the vehicle can make it to the fixed points on schedule. This type of service usually provides *access* to a broader geographic area than does *fixed route service* but is not as flexible in scheduling options as *demand-responsive service*. It is appropriate when riders change from day to day but the same few *destinations* are consistently in demand. Also sometimes called *checkpoint service*.

Privatization

The supplying of traditionally government-supplied goods and services through for-profit business entities. Enhanced public cost efficiency is a primary goal of such actions.

Provider of Transportation

An agency that offers or facilitates client transportation (as opposed to an agency whose role is limited to funding programs).

Public Authority

A Federal, state, county, town, or township, Indian tribe, municipal, or other local government or instrumentality with authority to finance, build, operate, or maintain transportation facilities.

Public Participation

The active and meaningful involvement of the public in the development of

transportation plans and improvement programs. The *ISTEA* and subsequent regulations require that state departments of transportation and *MPOs* proactively seek the involvement of all interested parties, including those traditionally underserved by the current transportation system.

Public Road

Any road or street under the jurisdiction of and maintained by a *public authority* and open to public traffic.

Pulse System

A type of *fixed route transit* system (usually involving a *radial network*) in which all routes arrive at and depart from the *central transfer point* at the same times. This timing facilitates transferring but necessitates a transfer facility where simultaneously all buses can safely drop off passengers, wait, and passengers can easily and safely get to the bus to which they are transferring.

Radial Network

A public *transit* route service pattern in which most routes converge into and diverge from a *central transfer point* or hub, like the spokes of a wheel. *Arterial* or *loop routes* may be used. If the routes are timed to arrive and depart at the same time, it is called a *pulse system*.

Real-Time Scheduling

Passengers call and request *demand-responsive* trips a short time before the trip is needed, and the dispatcher is responsible for assigning vehicles and drivers to meet passengers' requests. This type of scheduling is most convenient for passengers but most costly for a *transit* system to implement as a large fleet of vehicles and drivers is needed to ensure all trip requests are met. This type of scheduling is most frequently used by *taxi* services.

Region

An entire metropolitan area, including designated urban and rural subregions.

Regionally Significant

A term that has been defined in Federal transportation planning regulations as "a project...that is on a facility which serves regional transportation needs...and would normally be included in the modeling of a metropolitan area's transportation *network*, including, at a minimum, all principal *arterial highway* and fixed guideway *transit* facilities that offer a significant alternative to regional *highway* travel."

Rescission

A legislative action to cancel the *obligation* of unused *budget authority* previously provided by Congress before the time when

the authority would have otherwise lapsed. Rescission may be proposed by the Executive Branch but requires legislative action in order to take effect.

Reverse Commute

Commuting against the main directions of traffic. Often refers to travel from the central city to suburbs during *peak* period commuting times.

Rideshare/Ridematch Program

A rideshare program facilitates the formation of *carpools* and *vanpools*, usually for work trips. A database is maintained of the ride times, *origins*, *destinations*, and driver/rider preferences of users and potential users. Persons requesting to join an existing pool or looking for riders are matched by program staff with other appropriate persons. In rural areas, a rideshare program is often used to coordinate *Medicaid* or volunteer transportation.

Ridesharing

Ridesharing is the simultaneous use of a vehicle by two or more persons.

Route Deviation Service

Transit buses travel along a prescribed route at scheduled times and maintain scheduled or unscheduled *checkpoint* stops. The vehicle may leave and return to the route to pick up persons who have requested *demand-responsive* trips near the route. Passengers may call in advance for route deviation or may *access* the system at

predetermined route stops. The limited geographic area within which the vehicle may travel off the route is known as the route deviation corridor. This type of *flexible routing* essentially meets *demand responsive* service requests with a *fixed route*. It is often the best option for higher density rural areas where travel patterns are consistent but isolated riders cannot get to the route because they cannot walk the distance needed or they use a wheelchair and there are no sidewalks.

Right of Way (R-O-W)

Priority paths for the construction and operation of *highways*, light and heavy rail, railroads, etc.

Service Route

Service routes are *transit* routes that are tailored to meet the needs of a specific market segment (such as older person or persons with disabilities) in a community. Service routes often evolve out of a pattern of *demand-responsive* travel within a community. Characteristics of a service route include stops at high-density residential complexes or group homes, shopping areas, medical facilities, and *destinations* specific to the target population such as senior centers or sheltered work sites. Stops are usually positioned near an accessible entrance of a building instead of on the street, and the ride times are typically longer than on a “conventional” *fixed route* covering the same general area. Service routes may be operated instead of, or in conjunction with, a “conventional” route in the same area. Vehicles tend to be smaller and accessible

to persons with disabilities, and drivers usually offer a relatively high level of personal assistance. Service routes are used widely in Europe and are gaining greater popularity in the United States since the passage of the *Americans with Disabilities Act*.

Shared Ride Taxi

A shared ride taxi service provides taxi transportation in which more than one passenger is in the vehicle at the same time, usually at a reduced rate for each of the passengers. Shared ride taxi service is a way of using taxicabs for *paratransit service*.

Shuttle Service

Shuttle service refers to *fixed route* service that connects only a small number of fixed stops and operates at a high frequency (or short *headways*). The vehicle follows a repetitive back-and-forth route. This type of service is related to *circulator* service but connotes a more linear route structure. A *parking shuttle* is an example of use that could apply to areas that have a seasonal tourist attraction.

Single-Occupant Vehicle (SOV)

A SOV is a vehicle used to transport just one person to a *destination*.

Social Equity, Justice

The provision of affordable, efficient, and accessible transportation services to all people regardless of race, ethnicity, income, gender, or disability. A socially equitable

transportation system provides all people with convenient *access* to meaningful jobs, services, and recreational opportunities.

State Highway Department

The department, commission, or board of any state responsible for *highway* construction, maintenance, and management.

State Implementation Plan (SIP)

Required documents prepared by states and submitted to *EPA* for approval. SIPs identify state actions and programs to implement designated responsibilities under the Clean Air Act.

Subscription Service

When a passenger or group of passengers requests a repetitive ride (such as on a daily or weekly service on an ongoing basis), trips are often scheduled on a subscription or “standing order” basis. The passenger makes a single initial trip request, and the *transit* system automatically schedules them for their trip(s) each day or week. This type of service is frequently used in transporting human service agency clients to regular agency programs.

Surface Transportation Program

A new categorical funding program created with the *ISTEA*. Funds may be used for a wide variety of purposes, including roadway construction, reconstruction, resurfacing, restoration, and rehabilitation; roadway operational improvements; *capital costs* for *transit* projects; *highway* and

transit safety improvements; bicycle and pedestrian facilities; scenic and historical transportation facilities; and preservation of abandoned transportation corridors.

Temporary Aid to Needy Families (TANF)

Created by the 1996 welfare reform law, TANF is a program of block *grants* to states to help them meet the needs of families with no income or resources. It replaces *AFDC*, *JOBS*, Emergency Assistance, and some other preceding Federal welfare programs. Because of TANF-imposed time limits, states are trying to place recipients in jobs as quickly as possible, often using program funds to pay for transportation, childcare, and other barriers to workforce participation.

Taxi

Demand-responsive transportation vehicle offered to individual members of the public on an exclusive basis, in a vehicle licensed to render that service, usually operated by a private for-profit company. Fares are usually charged on a per-mile or per-minute (or both) basis on top of a base fare charged for all trips. Passengers may call the dispatcher to request a trip (*real-time scheduling*) or hail a passing unoccupied taxi.

TEA-21

See *Transportation Equity Act for the 21st Century*.

Telecommuting

The substitution, either partially or completely, of the use of computer and telecommunications technologies (e.g., telephones, personal computers, modems, facsimile machines, electronic mail) for transportation to a conventional place of work. Implies either working at home or at a satellite work center that is closer to an employee's home than the conventional place of work.

Title III

An important Title of the *Older Americans Act* that authorizes *expenditures* for nutrition and transportation programs that serve older persons.

Title IV

An important Title of the Civil Rights Act of 1964 that ensures that no person in the United States will be discriminated against on the basis of race, color, or national origin. The transportation planning regulations, issued in October 1993, require that metropolitan transportation planning processes be consistent with Title IV.

Transit

Generally refers to passenger service provided to the general public along established routes, with fixed or variable schedules, at published fares. Related terms include public transit, mass transit,

public transportation, urban transit, and *paratransit*.

Transit Dependent

Persons who must rely on public *transit* or *paratransit* services for most of their transportation. Typically refers to individuals without *access* to personal vehicles.

Transportation Control Measures (TCMs)

Local actions to adjust traffic patterns or reduce vehicle use to reduce air pollutant emissions. These may include *HOV* lanes, provision of bicycle facilities, *ridesharing*, *telecommuting*, etc.

Transportation Disadvantaged

A term used to describe those persons who have little or no *access* to meaningful jobs, services, and recreation because a transportation system that does not meet their needs. Often refers to those individuals who cannot drive a private automobile because of age, disability, or lack of resources. See also “*Social Equity, Justice.*”

Transportation Equity Act for the 21st Century (TEA-21)

The 1998 Congressional legislation that reauthorized *U.S. DOT's surface transportation programs* is called the Transportation Equity Act for the 21st Century (TEA-21). This legislation replaces the 1991 authorizations known as *ISTEA* but essentially continues the program

changes initiated under *ISTEA* (increased levels of *highway* and transportation funding, an enlarged role for regional planning commissions/*MPOs* in funding decisions, and requirements for comprehensive regional long-range transportation plans and for *public participation* and transportation alternatives).

Transportation Improvement Program (TIP)

This is a document prepared by states and planning commissions citing projects to be funded under Federal transportation programs for a full-year period. Without TIP inclusion, a project is ineligible for Federal funding.

Transportation Management Area (TMA)

Defined by *TEA-21* as all *urbanized areas* over 200,000 in population. Within a TMA, all transportation plans and programs must be based on a continuing and comprehensive planning process carried out by the *Metropolitan Planning Organization (MPO)* in cooperation with states and *transit* operators. The TMA boundary affects the responsibility for the selection of transportation projects that receive Federal funds.

Transportation Management Association (TMA)

A voluntary association of public and private agencies and firms joined to cooperatively develop transportation-enhancing programs in a given area. TMAs

are appropriate organizations to better manage transportation demand in congested suburban communities.

Transportation System Management (TSM)

The element of a *Transportation Improvement Program* that proposes noncapital-intensive steps toward the improvement of a transportation system, such as refinement of system and traffic management, the use of bus priority or reserved lanes, and parking strategies. It includes actions to reduce vehicle use, facilitate traffic flow, and improve internal *transit* management.

Travel Time

Customarily calculated as the time it takes to travel from “*door-to-door*.” Used in transportation planning. In forecasting the demand for *transit* service, measures of travel time include time spent accessing, waiting, and transferring between vehicles, as well as that time spent on board.

Trip Generator

A place that generates a demand for frequent travel is called a trip generator. Trip generators may be *origins* or *destinations*. For example, a high-density residential area generates a need for all kinds of trips outside of the residential area into commercial areas, a medical center generates trips for medical purposes, and a downtown area may generate trips for retail, recreational, or personal business purposes.

Trust Funds

Accounts established by law to hold receipts that are collected by the Federal Government and earmarked for specific purposes and programs. These receipts are not available for the general purposes of the Federal Government. The Highway Trust Fund is comprised of receipts from certain *highway* user taxes (e.g., excise taxes on motor fuel, rubber, and heavy vehicles) and reserved for use for *highway* construction, mass transportation, and related purposes.

U.S. Department of Transportation (U.S. DOT)

The principal direct Federal funding and regulating agency for transportation facilities and programs. Contains *FHWA* and *FTA*.

Urbanized Area (UZA)

An area that contains a city of 50,000 or more population, plus incorporated surrounding areas, and meets set size or density criteria.

U.S. Department of Agriculture (USDA)

The Federal agency charged with oversight of Federal agricultural programs. Among its many other functions, USDA is the Federal Government’s primary agency for rural economic and community development.

User-Side Subsidy

A transportation funding structure in which qualified users (usually economically

disadvantaged persons) are able to purchase vouchers for transportation services at a portion of their worth. The users may then use the vouchers to purchase transportation from any participating provider; the vouchers are redeemed by the provider at full value and the provider is reimbursed by the funding agency for the full value.

Vanpool

An organized *ridesharing* arrangement in which a number of people travel together on a regular basis in a van. The van may be company owned, individually owned, leased, or owned by a third party. Expenses are shared, and there is usually a regular volunteer driver. In terms of service design, a vanpool is basically a *carpool* that uses a vehicle larger than a car. In rural areas, vanpools can be an important form of employment transportation where densities are not high enough to justify commuter bus service.

Vehicle Miles of Travel (VMT)

A standard areawide measure of travel activity. The most conventional VMT calculation is to multiply average trip length by the total number of trips.

Volunteer Network

A volunteer network matches requests for transportation with a volunteer driver who is typically reimbursed on a per-mile basis for providing the trip. Persons requesting service call the network; the network calls

the driver and schedules the trip. Volunteer networks are frequently used in rural areas where resources are scarce, persons needing transportation may live in remote areas, and a sense of community is not uncommon.

Workforce Development Boards

Formerly known as Private Industry Councils (PIC), Workforce Development Boards are concerned with training and developing workers to meet the needs of local businesses. Workforce Development Boards are responsible for most local job training programs and related welfare-to-work efforts.

Zone

A defined geographic area. Zones are used in *demand-responsive service* for dispatching purposes and in *fixed route* and *demand-responsive service* for fare determination. In zonal *demand-responsive service*, each vehicle travels only within a particular zone. Trips that originate in one zone and end in another involve a transfer at the zone boundary or a *central transfer point*. In a *zonal fare structure*, the service area is divided into zones, and the fare is determined according to the number of zones traveled (the higher the number of zones, the higher the fare). This is a method of charging a distance-based fare. Zones can assume a number of different forms depending on the route design, including concentric circles, key stops along a route, a grid system, or a hybrid of these.

Sources:

Burkhardt, J.E., Hamby, B., and McGavock, A.T. (1995). *User's manual for assessing service-delivery systems for rural passenger transportation. TCRP report 6.* Prepared by Ecosometrics, Incorporated for the Transit Cooperative Research Program. Washington, DC: Transportation Research Board.

Community Transportation Association of America. *Public and community transportation glossary.* www.ctaa.org/ntrc/glossary.asp.

COMSIS Corporation. (1990). *Guidebook for planning small urban and rural transportation programs, Volume 1* (U.S. Department of Transportation Report DOT-T-91-07, pp. V.2-V.5). Prepared for the New Mexico State Highway and Transportation Department, Transportation Programs Division.

Federal Highway Administration and Federal Transit Administration. Statewide metropolitan transportation planning. *Federal Register* 65:02, pp. 33922-33958.

Federal Highway Administration. *A summary of transportation programs and provisions of the clean air act amendments of 1990.* Washington, DC: United States Department of Transportation.

Federal Highway Administration. (no date). *Financing Federal-aid highways.* Washington, DC: United States Department of Transportation.

Gray, B.H. (Ed.). (1989). *Urban public transportation glossary.* Washington, DC: Transportation Research Board, National Research Council.

Transportation: Environmental justice and social equity: Conference proceedings. (1995). Prepared by the Surface Transportation Policy Project and the Center for Neighborhood Technology for the Federal Transit Administration. <http://www.fta.dot.gov/fta/library/policy/en-vir-just>.