Transit 101
Introduction to Transit Management

Module 2:
Operations
February 10-11, 2015

Logistics

- Logistics:
  - 9AM-4PM daily
  - Restroom facilities
  - Phone calls, texts, and emails
  - Lunch break
  - Short breaks about every hour
  - Discussion, questions, other ideas and views welcome and encouraged

Introductions

- Introduce yourself and briefly describe:
  - The strengths and weaknesses of your transit system's operations and services
  - The top things you would like to take away from this training

Knowledge Evaluation Survey

- You were emailed a “before/after” knowledge evaluation survey, and asked to fill the “before” section before coming to class
- At the end of the training, you will be asked to fill out the “after” section and turn the entire survey in before leaving
- This tool will provide a picture of how your knowledge has improved as a result of the training
- This should provide you and ODOT with guidance on areas for improvement
Goals

• Understand the true meaning of service:
  • Service Types
  • Measuring performance, ridership, and service area
  • Customer expectations
  • Federal mandates
  • Service and fare planning

• Be obsessed with having good data about your service and riders.
• Use the data to:
  – Manage your service
  – Improve customer satisfaction
  – Stretch your budget
  – Keep you, your staff and governing board informed
  – Prove to the community and ODOT and yourself that your service is good

Family of Transportation Services

• Fixed Route
• Demand Response
• Flex–Route
• ADA Complementary Paratransit
• Specialized Human Service
• Special Shuttle Service
• Volunteer Drivers
• Carpool/Vanpool Programs
• Vehicle Sharing Programs
• Taxi/Accessible Taxi

• Thinking outside the box
• Innovation
• Flexibility
Common Service Types for Ohio’s Rural Transit Systems

- Demand Response
- Fixed Route (with ADA paratransit)
- Subscription
- Contract

Demand Response

- Operating in Response to Calls from Passengers to Pick Up and Transport Them to Their Destinations
- A Demand Response Operation Is Characterized by
  - No fixed route
  - No fixed schedule
  - Shared ride service picking up multiple passengers and transporting to multiple destinations

Demand Response (Continued)

- Advanced reservations (1 – 48 hours or longer)
- Door to door, curb to curb, or door thru door
- Pickup window (+/- minutes from scheduled pickup time)
- Standing orders
- Contract services
- Paratransit vehicles
- Wide area coverage
- Low to moderate productivity
- High personal involvement

Demand Response

- Curb to Curb Service
  - The transit vehicle picks up and discharges passengers at the curb or driveway in front of their home or destination
  - In curb to curb service the driver does not assist the passenger along walks or with steps to the door of the passenger’s home or destination
Demand Response

• Door to Door Service
  — Service which includes passenger assistance between the vehicle and the door of the passenger’s origin and destination
  — A higher level of service than curb to curb, yet not as specialized as door thru door service

• Door Thru Door Service
  — A higher level of service than door to door service where the driver actually provides assistance within the origin or destination
  • Providing door thru door service increases a provider’s liability
  • Providing door thru door service takes the vehicle and on board passengers out of driver’s line of sight

• Deviated Route Service
  — Operates along a fixed route path with designated stops or flag stops at generally fixed times
  — May deviate from the fixed route path to either pick-up or drop-off passengers who requested the deviation

• Deviated Route Service
  — Advanced notice for the deviation request is required
  — Not considered a fixed route according to ADA requirements
  — Sometimes referred to as a Flex Route
Fixed Route

- Fixed Route, Fixed Schedule
  - Types of Routes
    - Express
    - Local
    - Crosstown
    - Circulator
  - Radial, grid, or hub

Fixed Route

- Requires complementary and comparable ADA paratransit service for persons with disabilities that prevents them from independently using the regular fixed route service
- Requires disability eligibility plan
  - ADA paratransit will be covered in the service requirements section

Commuter Bus Service

- Fixed route service characterized by
  - Service predominantly in one direction
  - Open to the public
  - Operation in peak periods
  - Limited stops
  - Use of multi-ride tickets as the fare media
  - Routes of "extended length"

Intercity Bus Service

- Regularly scheduled bus service for the general public which operates with limited stops over fixed routes connecting two or more urban areas not close in proximity
  - Transports baggage
  - Open to the public
  - Makes connections with scheduled intercity bus service
Fixed Route

- Service Route
  - A long, winding route that travels past multiple points of interest, e.g., Senior Centers, Senior Housing Complexes, grocery stores, pharmacies, medical buildings, and beauty salons

Subscription Service

- Service Provided under Advanced Arrangements and According to Prearranged Conditions, e.g., Hours, Days, Specific Routing
- May Be Paid for by an Individual, Group of Individuals, or Company
  - This is the only time an individual or group of individuals may be billed for service
  - Not a human service agency or other company or business...

Subscription Service

- Service is
  - Guaranteed
  - Open to the public
  - Arranged for an extended period of time, e.g., six months, one year, etc.
  - Paid for regardless of whether anyone rides the service
- The individuals, routes, and destinations never change
- Revenue is counted as farebox revenue

Contract Service

- Service for a Group of People for a Specified Cost, Scheduled and Paid for by a Third Party and Considered to be Premium Service Because the Service is Guaranteed
- Contract Service Must Be Open-Door, Available to the General Public, Offered During Regular Service Hours, and Cannot Interfere with the Overall General Public Service
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Contract Service

- Because of the Added Value and Convenience of Contract Service
  - A rate higher than the regular fare is negotiated
  - Takes into account the fully allocated cost of providing the service
  - Establishing a rate equal to at least the fully allocated cost is strongly encouraged by ODOT
  - Not ODOT’s intention to fund contract service trips with Federal Public Transit Funding; should be paid for by other funding sources, state or Federal funding designated to a specific target audience
  - Cross-subsidizing services

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Charter Service

- Transportation Provided for a Group of People Who, Pursuant to a Common Purpose, Under a Single Contract, at a Fixed Charge for the Vehicle or Service Travel Together Under an Itinerary Either Specified in Advance or Modified After Having Left the Place of Origin

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Charter Service

- Charter Service is Closed Door Service, i.e., No Other Passengers May Be Boarded During the Provision of Service to the Chartered Group
- Rural Transit Program Grantees Are Only Permitted to Provide Incidental Charter Service and Must Meet all FTA Charter Bus Regulations and Requirements

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Charter Exceptions

- Service to Government Officials for Official Government Business, Within the Established Service Area with No Revenue Generated
- Service to a Qualified Human Service Organization (like Area Agency on Aging) for the Purpose of Serving Persons With Mobility Limitations Related to Advanced Age, with Disabilities, or Low Incomes
Charter Exceptions

• May Lease FTA-Funded Equipment and Provide Drivers to Registered Charter Providers
  – Charter provider must be registered on FTA website
  – Charter provider must own and operate vehicles in a charter business
  – Charter provider cannot provide the service because it exceeds available capacity
  – The charter provider has exhausted all options with other registered charter providers

Charter Exceptions

• No Response from a Registered Charter Provider After Posting Notice (Timeframes for Response)
  • Agreement with All Registered Charter Providers in the Service Area
  • Petition FTA for Exception
    – Limited Approval
    – Events of regional or national significance
    – Hardship (non-urbanized or small urban only)
    – Unique time-sensitive events

Charter Service

• Any System Considering Providing Incidental Charter Service or Is Uncertain if a Service Being Considered is Charter Service Must Contact ODOT for Guidance Prior to Implementing Service

Specialized Human Services

• Agency-Provided Paratransit
  • Can Be Curb to Curb, Door to Door, or Door Thru Door
    – Normally not open to the public but can be
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</table>
| **Special Shuttle Service** | • Transportation Service Provided to Other Organizations to Special Destinations  
  – When provided by public transit providers, must be open to the public |
| **Volunteer** | • Service That Uses Unpaid Drivers or Assistants to Provide Transportation  
  • May provide mileage |
| **Carpool/Vanpool Programs** | • Ridesharing Targeted at Getting Individuals to Jobs, Training, and Special Activities |
| **Vehicle Sharing Programs** | • A Service that Provides Specific Access to Vehicles for Certain Trips Without Requiring the Purchase of a Vehicle |
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Taxi/Accessible Taxi

- Taxi Service Is a Licensed On Demand Transportation Service Provided to the General Public by a Private Company
- Accessible Taxi Service Is Licensed to Provide On Demand Taxi Service for People with Disabilities and Older Adults
  - Accessible taxi vehicles accommodate passengers and their wheelchairs

Your Transit System

- Why Does Your Service Look Like It Does?
- How Was Your Fare Structure Established?
- How Did Your Service Get To Where It Is Today?

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Your Transit System

- What Should Your System Look Like?
- How Can You Determine What Service Is Most Appropriate for Your Community and Service Area?
- How Can/Should You Monitor and Evaluate Your Service?
- How Do You Know When It Is Time to Modify Your Service?
- How Should Your Determine Your Fare Structure?

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Describing the Transit System

- Service Availability — Area Coverage
  — Percentage of Population with Access to Service
- Directness of Travel
  — Circuitousness
  — Interlining
  — Transfers
  — Through-routing
  — Shared Ride
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Describing the Transit System

• Service Level
• Policy Headway – Fixed Route
• Pickup Window – Demand Response
• Advanced Reservation Period – Demand Response
• Span of Service
• Service Spacing
  – Fixed Route – Bus Stop Spacing
  – Demand Response – Scheduling Pick Up Increments

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What Now

• You Have Determined
  – What type of service you are providing
  – Why your service looks like it does

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Paving the Road to Success

• Collect Data and Develop Performance Measures and Standards
• Ensure Service Requirements Are Met
• Initiate On-Going Service Planning
• Establish Appropriate Fares
• Ensure Proper Vehicle and Facility Maintenance and Planning
• Develop and Enforce Policies and Procedures

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Rural Transit Program Goals

• To Enhance the Access of People in Rural Areas to Shopping, Health care, Employment, Public Services, Education, and Recreation
• To Assist in the Development, Maintenance, Improvement, and Use of Public Transportation
• To Encourage and Facilitate the Most Efficient Use of all Federal and State Funds Used to Provide Public Transportation in Rural Areas Through the Coordination of Programs and Services
## Measuring Service
- Where Do You Begin?
  - Understanding, measuring, and evaluating what you have

## Target Audience of Performance Measures
- System Management
- Governing Boards
- General Public
- Passengers
- ODOT and Funding Agencies
- Community and Local Officials
- Non-Management Staff
- Media

## Performance Measures as a Tool
- To Measure and Assess Performance Over Time and Vs Other Systems and Vs Other Modes
- To Evaluate the Progress Towards Transportation Goals and Objectives
- To Serve as a Basis for Decision-Making
- Diagnostic Tool to Identify Performance Problems
- To Assess Policies, Procedures, and Service Implications

## What Will Performance Measures Tell You?
- Are Resources Being Used Most Efficiently to Deliver Service?
- Are the Services Being Delivered in the Most Effective Manner?
- Are the Resources Being Used Most Efficiently to Deliver the Most Effective Services?
Performance Measures

- It is important to understand:
  - How each performance measure is derived
  - What performance measures apply to the area being evaluated
  - What performance measures are the most important to monitor efficiency and cost effectiveness
  - It is critical to capture and report accurate and consistent data (GIGO)

- Precisely defined data elements to ensure consistency in computation steps
- Auditable data to ensure accuracy of performance results
- Peer to peer comparisons to establish appropriate performance measures

Performance Measures

- Controllable factors:
  - Decisions, policies, and actions of governing board, managers, and employees
- Non-controllable factors:
  - Physical, economic, and social factors not under the control of the transportation system

- Readily available sources
- Management and staff commitment to collecting, interpreting, and reporting
- Management and staff commitment to performance measures
- Established reporting system
Performance Measures

- Stakeholder Acceptance
  - Governing Body, Management and Staff
- Linkage to Goals
  - Performance measure directly relate to system goals
- Clarity/Understanding
  - Others must be able to understand the performance measure

Performance Measures

- Reliability and Credibility
  - Data used for performance measures must be accurate and cannot be influenced by self interest
- Realism
  - Performance measures must be achievable
- Integration
  - Use performance measures to evaluate and improve system

Types of Performance Measures

- Ridership
- Cost Efficiency
- Service Effectiveness
- Cost Effectiveness
- Service Quality

Ridership

- Ridership is the most important performance measure.
- Ridership is why we provide transit service.
### Cost Efficiency

- **Cost Efficiency**
  - The amount of transportation services produced for the community in relation to the resources expended

### Cost Efficiency

- **Cost Per Mile**
  - Total operating cost of service per total miles of service
  - \( C/M \)

- **Cost Per Hour**
  - Total operating cost of service per total hours of service
  - \( C/H \)

### Secondary Cost Efficiency Measures

- **Examples Include:**
  - Driver operating cost per actual revenue hour of service
  - Actual revenue hours of service as a percent of driver pay hours
  - Maintenance cost per total miles of service
  - Administrative cost per revenue hour of service

### Service Effectiveness

- **Service Effectiveness**
  - The amount of ridership generated in relation to the service provided
Service Effectiveness

- Ridership Per Mile
  - Total ridership per total miles of service
  - \( \frac{R}{M} \)

- Ridership Per Hour
  - Total ridership per total hours of service
  - \( \frac{R}{H} \)

Cost Effectiveness

- Cost Effectiveness
  - The total costs per the ridership generated

- Cost per Rider
  - Total costs per total ridership
  - \( \frac{C}{R} \)

Cost Effectiveness

- Cost effectiveness = Cost efficiency divided by service effectiveness

\[
\frac{C}{R} = \frac{C}{M} \quad \text{or} \quad \frac{C}{R} = \frac{C}{H}
\]

\[
\frac{R}{M} \quad \frac{R}{H}
\]

Ooooooo!

Operating Recovery Ratio

- Operating Recovery Ratio
  - The total amount of fare box and contract revenue in relation to total operating cost of service
  - \( \frac{(\text{Farebox Rev} + \text{Contract Rev})}{\text{Total Costs}} \)
Service Quality

- Accessibility
  - Ability to accommodate individuals with disabilities
  - The total of ADA Eligible Trips denied in Relation to the total of all Trip Denials
  - Percent of Actual Revenue Hours of Service with lift-equipped vehicles
  - The total passenger trips unable to be scheduled in relation to total of all trip requests

Availability
- Span of service
- Percentage of population with access to service
- Frequency of service
- Response time

Directness of Travel
- Circuitousness
- Interlining
- Transfers
- Through-routing
- Shared Ride

Advanced reservations (1–48 hours or longer)
- Door to door, curb to curb, or door thru door
- Pickup window (+/- minutes from scheduled pickup time)
- Standing orders
- Contract services

Service Spacing
- Fixed Route – Bus Stop Spacing
- Demand Response – Scheduling Pickup Increments

Fixed Route, Fixed Schedule
- Headway – Average and Maximum
- Transfer Rate
- Policy Headway
Service Quality

- Comfort
  - Seat availability, climate control, and smooth ride operations
- Reliability
  - Road calls Per 100,000 miles; on-time performance
- Safety
  - Accidents per 100,000 vehicle miles; passenger injuries per 100,000 passenger boardings

Service Quality

- Trip Denials
  - Trip denials are trips that cannot be provided within a one hour window before or after the requested trip time
  - Trips negotiated and provided outside the one hour window MUST be considered a trip denial according to ADA requirements
  - A record of all trip denials MUST be maintained identifying those trips denied for ADA eligible passengers

Service Quality

- Trip Refusals
  - Trip refusals are trips requested outside the system's service hours or service area, and the transit system is unable to provide the service
- Trip Turndowns
  - Trips that are refused by a passenger when the transit system is not able to provide service at the requested time, but is able to provide service within the one hour ADA window

Other Performance Measures

- Passenger Trips Per Capita
- Actual Revenue Hours of Service Per Capita
- Actual Revenue Miles of Service Per Capita
Performance Measure Definitions

• Local Funding
  – Local revenue/local cash = Funds generated through local sources and activities other than farebox
    • Local Cash = cash on hand available for operations and match
      – Local Cash to cover 3 months of operating recommended

• Local funding:
  – Special transit fares (contract revenue)
  – Non FTA Federal funds (CDBG, Title III, etc.)
  – Donations and community grants
  – Local and state appropriations
  – Dedicated tax revenue
  – Sale of maintenance service
  – Advertising revenue
  – Contributed services (requires supporting documentation)
  – Investment income

• FTA does not allow fares to be considered local revenue must come off the top Net Expense = total minus farebox. Local Share must be 50%
• Non federal share
Data for Performance Measures

- Service Outputs
  - Vehicle revenue miles of service
  - Vehicle total miles of service
  - Vehicle revenue hours of service
  - Vehicle total hours of service

- Vehicle Miles Traveled
  - Actual revenue miles of service (ARMS) = the miles that vehicles travel while in revenue service; revenue service is from first pick up to last drop off
  - Actual vehicle revenue miles exclude:
    - Deadhead
    - Operator training and maintenance testing
    - School bus and charter services

- Vehicle Service Hours
  - Actual revenue hours of service (ARHS) = The hours that vehicles are scheduled to or actually travel while in revenue service. Revenue hours are recorded from first pick up to last drop off. Vehicle revenue hours include
    - Layover/recovery time
    - But exclude
      - Deadhead
      - Operator training
      - Vehicle maintenance testing
      - School bus and charter services
Data for Performance Measures

• Vehicle Service Hours
  – Total hours of service (THS)
    • The hours that a vehicle is scheduled from the time it pulls out of the garage to go into revenue service to the time it pulls in from revenue service

Performance Measure Definitions

• Public Transportation Use
  – One passenger boarding = one trip
    • Unlinked passenger trip - passengers are counted each time a passenger boards a vehicle no matter how many vehicles they use to travel from their origin to their destination
    • Linked Passenger Trip
      A trip from origin to destination on the transit system. Even if a person must make several transfers during a journey, the trip is counted as one linked trip on the system.
      – Passenger revenue = trip revenue
        • The revenue earned from carrying passengers

• General Service Passenger Trips
  – Trips provided when general public fare is collected. The fare may be paid with cash, a ticket, token, or pass by either the passenger or a third party
    • Elderly/disabled = trips provided to individuals 65 years of age or older or individuals with a mental or physical impairment limiting one or more major life functions and pay a reduced fare
    • All other trips = trips provided to individuals under age 65 with no mental or physical impairment limiting one or more major life function and pay regular fare

• Contract Service Trips
  – Trips provided to a group of people at a specified cost scheduled and paid for by a third party
    • The passengers may pay the full general public fare independently or a third party may pay for the full cost of the trip through a service contract
### Data for Performance Measures

**Module 2**

**Contract Service Trips**
- All other trips
  - Trips provided to individuals under 65 years of age with no mental or physical impairment limiting one or more major life functions and the passengers may pay the full general public fare independently or a third party may pay for the full cost of the trip through a service contract.

**Module 2**

**Operating Cost/Expense**
- The total of recurring expenses associated with the daily operations of a transportation service, including items such as labor, materials, and service necessary for operations, maintenance, and administration (NO CAPITAL COSTS).

### Sources of Data for Evaluation

**Module 2**

**Data and Statistics** | **Probable Source**
--- | ---
Dollars, Labor Hours | Accounting, Payroll
Financial Management
Vehicle Hours, Vehicle Revenue Hours | Driver Manifests, Dispatch Logs, Supervisors
Vehicle Miles, Vehicle Revenue Miles | Driver Manifests, Dispatch Logs, Schedulers, Maintenance
Sources of Data for Evaluation

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<th>Probable Source</th>
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<td>Passenger Boardings</td>
<td>Drivers, Trip Sheets, Dispatch Logs</td>
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<tr>
<td>Accidents, Passenger Injuries</td>
<td>Accident/Incident Reports</td>
</tr>
<tr>
<td>Complaints</td>
<td>Management, Complaint Logs</td>
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</tbody>
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Scheduling and Dispatch Data

- Scheduling and Dispatching:
  - Data must be captured to be evaluated and analyzed
  - Accurate scheduling and dispatching data entry is critical
  - Scheduling and dispatch should capture, at a minimum
    - Trip origin and destination

Scheduling and Dispatch Data

- Customer classification
- Trip classification
- Escorts/PCAs
- Denials, cancellations, refusals, turndowns, no shows
- Miles revenue and non-revenue
- Trip time scheduled and actual
- Trip purpose
- Fare/trip cost
- Route revenue hours

ODOT Performance Measures

- Safety
- Reliability
- Service Effectiveness
- Cost Effectiveness
- Operating Recovery Ratio
- Cost Efficiency
- Service Accessibility
- ADA Compliance
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### ODOT Data Capture

- ODOT Operating Data Report
  - Vehicle miles (revenue and total)
  - Vehicle hours (revenue and total)
- Passenger trips
  - General service trips
  - Elderly/disabled trips
  - All other trips
- Contract service trips
  - Elderly/disabled trips
  - All other trips

- Trip Denials, Refusals, and Turndowns
- Vehicle Fleet Information
  - Vehicle availability and accessibility availability
  - Vehicle safety information
  - Vehicle reliability information
- Staffing Level Information
- Operating Financial Data
  - Total eligible cost
  - Farebox revenue
  - Contract revenue

### ODOT Changes to Data Reporting

- New reporting process will establish system peers and allow for peer comparisons

### Developing a Performance Measure Process

- Define Goals and Objectives
- Generate Support
- Identify Internal Users, Stakeholders, and Constraints
- Select Performance Measures and Develop Consensus
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Developing a Performance Measure Process

• Goals and Objectives
  – Develop or update goals and objectives
  – Incorporate customer and community input
  – Select initial goals
  – Evaluate previous year goals for relevancy
  – Develop statement of desired outcome(s)

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Developing a Performance Measure Process

• Select Performance Measures
  – Determine performance measure categories
    • ODOT performance measure categories
    • Additional performance measure categories
  – Review performance measures used throughout the transit industry
  – Consider data collection constraints
Developing a Performance Measure Process

Module 2

• Test and Implement Program
  – Implement program
  – Periodically review technological developments that may improve data collection capabilities

• Monitor and Report Performance
  – Establish a schedule for reporting
  – Consider system requirements
  – Consider ODOT requirements
  – Monitor system performance at agreed-upon intervals

• Integrate Results into Decision-Making
  – Compare the performance results to the goals set for each measure
  – For measures not meeting goals, identify action items for improving performance
  – For measures consistently exceeding goals, consider increasing the target, if cost-effective to do so
Module 2

Developing a Performance Measure Process

• Review and Update Program
  – Periodically assess the performance evaluation process
  – Based upon the evaluation, make an assessment of whether an update is necessary
  – Update as necessary

Module 2

Formulate Performance Measures

• Inputs
  – Transit System
  – Service Outputs

• Outputs
  – Public Consumptions
  – Cost Efficiency
  – Service Effectiveness
  – Cost Effectiveness

Module 2

Who Uses the Service

• We have talked about how to measure the service
• Now, how do we describe who uses the service?

Module 2

Typical Transit User

• No Car Available
• Lower Income
• Minority
• Female
• Work Trip
Transit Travel Characteristics

- Peak Periods – AM, PM, Midday
  - Varies by type of trip
- Off-Peak Periods – Evenings, Weekends
  - Trip purpose
    - Work
    - School
    - Social service agencies
    - Shopping
    - Personal business
    - Medical
    - Recreational

Age by Rider Group

- Non-Minority
- Minority
- All Riders

- 18 years or less
- 19 to 24
- 25 to 30
- 31 to 35
- 36 to 40
- 41 to 45
- 46 to 50
- 51 to 55
- Over 55 years

Travel Characteristics

- Frequent Riders: GDRTA
  - 73% Daily
  - 17% Weekly
  - 10% Monthly

- Trip Purpose: GDRTA
  - 51% Work
  - 12% School
  - 12% Shopping

- Average Trip Time: GDRTA
  - 31% > 70 Minutes
  - 29% 45 – 70 Minutes
  - 21% 30 – 45 Minutes

Travel Characteristics

- Distance to Bus Stop: GDRTA
  - 21% > 6 Blocks

- Transfer: GDRTA
  - 56% 2 Buses
  - 12% 3 or more
Passenger Data Collection

- Route Maps and Timetables
- Point Checks
  - Maximum Load County
  - Arrival Time
- Ride Checks
  - On/Off Counts by Stop
  - Average Trip Length
  - Running Speed
  - Load Profile Diagrams
  - Passenger Miles
- Boarding Counts
  - Fare Category by Trips
- Farebox Readings
  - Total cash
  - Ridership
  - Average fare
- Revenue Counts
- Transfer Counts
  - Transfer activity
  - O/D pairs
- Passenger Surveys
  - Passenger travel patterns, characteristics, and opinions
Data Collection Techniques

- Availability of Technology
- Availability of Personnel
- Union Rules
- Ridership Levels
- Number of Vehicles
- Route Structure (Degree of Interlining)
- Transfer Tickets
- Availability of Smart Fare Cards

Data Collection Process

- Develop Baseline
  - On/off counts
  - Farebox readings, average fare
  - Onboard survey
- Monitor Changes
  - Point checks
  - Arrival times
  - Total boardings or revenue
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Module 2

Excellent and Good Ratings

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Module 2

Describing the Service Area

- We have discussed how to describe the riders
- Now, how do we describe the service area (includes riders and non-riders)

Service Area Characteristics

- Socioeconomic Characteristics
  - Auto ownership
  - Age
  - Income
- Land Use Characteristics
  - Density – Residential
  - Density – Commercial
  - Density – Social Service
- Travel Characteristics
  - Time of day
  - Trip purpose

Service Area Characteristics

- Geographic and Topographical Characteristics
  - Bodies of water
  - Street widths and direction
  - Traffic restrictions
  - Railroad crossings and underpasses
  - Bridge weight restrictions
  - Hills
  - Pavement condition
Socioeconomic Characteristics

- Auto Availability
- Income Level
- Age
- Gender
- Employment Status
- Minority
- Education Level
- Disability

Land Use Characteristics

- Density of Origins
  - Residential development
  - Elderly housing
  - Subsidized housing
- Density of Destinations
  - Employment sites
  - Job training sites
  - Day care facilities
  - Schools
  - Universities/colleges
  - Shopping/retail centers
  - Social service agencies

Trip Generators

- Trip Generator
  - A place that generates a demand for frequent travel
  - Trip generators may be origins or destinations; examples include
    - A residential area
    - An employment area/business park
    - Shopping and retail areas
    - A recreational area
Geographic and Topographic Features
- Bodies of Water and Bridge Weight Restrictions
- Street Widths and Direction
- Pavement Quality
- Parking
- Grades
- Railroad Tracks and Overpasses
- Traffic Restrictions and Signals
- Congestion – Roadway Capacity
- Community Boundaries

Service Area Characteristics
- Trip Generators
  - Residential areas
  - Major employers
  - Medical facilities
  - Shopping centers
  - Educational facilities
  - Tourist attractions
  - Entertainment centers
  - Other transit modes (rail, air, intercity bus)
Major Origin and Destination Flows

- High Volume
- Medium Volume
- Low Volume
- Trip Purpose
- Time of Day

Customer Expectations

- We Have Learned What the Service Looks Like and How to Measure the Service—Now Let’s Find Out What the Customers Want

Service Considerations

- No Industry Can Prosper That Does Not Place the Customer First
- Customer-Focused Public Transportation Can Make a Difference
- To Be Successful, Systems Must Implement Agency-Wide, Results-Oriented, Customer-Focused Programs

Customer Service Goals

- Increase Customer Satisfaction
- Increase Ridership
- Improve System Image
- Increase Community Support
Customer-Focused Transit Programs
- General Interaction Between the Customer and Transit System
- Obtaining and Using Customer Input
- Involving Employees in Customer-Focused Transit Service
- Methods to Achieve Customer Satisfaction

Ten Demandments
- Earn My Trust
- Inspire Me
- Make It Easy
- Put Me In Charge
- Guide Me
- 24/7
- Get To Know Me
- Exceed My Expectations
- Reward Me
- Stay With Me

Customer focused Mission Statements
“With our customer-first focus to exceed guests’ expectations, we pledge to provide a safe, dependable, and clean public transit system – delivered by a spirited, diverse workforce accountable to the people of our community.”

Federal Mandates
- ADA
- Title VI
- Environmental Justice

These topics will be addressed in detail at separate ODOT trainings specific to the individual topic.
### ADA Goals
- Equality of Opportunity
- Independence
- Integration
- Self-Sufficiency

### Impact of ADA
- Established a Clear National Goal
- Defines a Specific and Detailed Course of Action
- Requires Much Greater Degree of Affirmative Action

### Impact of ADA
- Provides Accessibility Standards for Vehicles and Facilities
- Elevates the Importance of Access and Nondiscrimination
- Interrelated With Section 504
  - Entities cannot discriminate against persons with disabilities as a condition of Federal funding

### USDOT Regulations
- Nondiscrimination
- Facility Access
- Accessibility of Vehicles
- Complementary Paratransit Services for Fixed-Route Providers
- Demand Responsive Equivalency
- Operating Policies and Procedures
ADA Definitions

- A Physical or Mental Impairment That Substantially Limits One or More Major Life Activities of Such Individual
- A Record of Such an Impairment
- Being Regarded as Having Such an Impairment

Applicability

- Public and Private Entities That Provide Public Transportation
- Private Entities That Operate Demand Response or Fixed Route System
- Services Provided Under Contract or Other Arrangement
- University Transportation Systems
- Taxi Services
- Vanpools Operated By Public Entities

Excluded Services

- Elementary and secondary school transportation
- Transportation for recreation, not primarily for transport
- Transportation exclusively for own employees
- Transportation systems operated by private clubs

Applicability

- Public Entity
  - Any state or local government;
  - Any department, agency, special purpose district
  - Instrumentality of one or more state or local governments
  - Tribal organization
  - Amtrak
  - Any commuter authority
### Nondiscrimination

- All Covered Entities
  - Covered entities shall not deny service to those who can use system
  - Covered entities cannot require person to use designated priority seats
  - Covered entities cannot impose special charges
  - Covered entities cannot require an attendant
  - Cannot refuse service due to insurance coverages or limitations

### Nondiscrimination

- Can refuse service to persons but only in circumstances where the individual exhibits illegal, violent, or disruptive behavior
  - To be illegal, there must be an established law prohibiting the behavior, not just a common standard of appropriate behavior
  - Seriously disruptive behaviors must be significant, not just annoying or unpleasant

### Facilities

- New Facilities Must Be Accessible
- Bus Stops Pads and Shelters Must Be Accessible (To Extent Transit System Has Control Over ROW)
- Bus Stops Should Be Sited to Provide Accessibility to the Maximum Extent Practicable
- Altered Areas Accessible (and Paths of Travel to Primary Function Areas)

### Facilities

- Key Rail Stations Accessible
- Changes/Alterations to Existing Facilities
### Vehicles

<table>
<thead>
<tr>
<th>Service Type</th>
<th>Requirements</th>
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</thead>
<tbody>
<tr>
<td>Public Entities</td>
<td></td>
</tr>
<tr>
<td>• Fixed Route Service</td>
<td>All New Vehicles Accessible</td>
</tr>
<tr>
<td></td>
<td>Used Vehicles (Good Faith Effort)</td>
</tr>
<tr>
<td></td>
<td>Remanufactured Vehicles Accessible</td>
</tr>
<tr>
<td>• Demand Response Service</td>
<td>All New Vehicles Accessible...Unless Equivalent Service is Provided</td>
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</tbody>
</table>

<table>
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<tr>
<th>Service Type</th>
<th>Vehicle Type</th>
<th>Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Private Entities, Not Primarily Engaged</td>
<td>All New Vehicles, Except Vans Capacity &lt;8 or Autos</td>
<td>Acquire Accessible Vehicles</td>
</tr>
<tr>
<td></td>
<td>All New Vehicles, Except Vans Capacity &lt;8 or Autos</td>
<td>No Requirements</td>
</tr>
<tr>
<td>• Demand Response Service</td>
<td>All New Vehicles Except Vans Capacity &lt;8 or Autos</td>
<td>Accessible Vehicles, Unless Equivalent Service is Provided</td>
</tr>
<tr>
<td>• Fixed Route or Demand Response Service</td>
<td>Vans, Seating Capacity &lt;8</td>
<td>Accessible Vehicles, Unless Equivalent Service is Provided</td>
</tr>
</tbody>
</table>

- Contracts for Service with Private Entities Cannot Diminish Fixed Route or Demand Response Fleet Accessibility
- Private Entities Obtaining Vehicles for Use in Contracts with Public Entities Must Follow Rules for Public Entities
Fixed Route Complementary and Comparable Paratransit

• Complementary Paratransit Is Meant to Be Comparable, But Not Equivalent, to Fixed Route Service Levels
• Complementary Paratransit Is Meant as a "Safety Net" for Only Those Individuals Who Cannot use Accessible Fixed Route Public Transportation
• Complementary Paratransit Is Not Meant as a Comprehensive System

• Complementary Paratransit MUST Be Comparable to Fixed Route Service, as Measured by Six (6) Service Criteria:
  — Service Area
  — Response Time
  — Fares
  — Trip Purposes and Priorities
  — Hours and Days of Service
  — Capacity Constraints

• Transit Agencies Operating Fixed Route Required to Provide Paratransit for Trips with Origins and Destinations Within 3/4 of a Mile of a Route/Station

• ADA Requires Paratransit Rides to Be Provided to All Eligible Riders if Requested Any Time the Previous Day
  — ADA allows providers to negotiate trip times with the customer, but no more than one hour before or an hour after the requested time
## Fixed Route Complementary and Comparable Paratransit

### Fares
- Complementary Paratransit Fares Cannot Exceed Twice the Base Fare for A Comparable Fixed Route Trip (Without Regard for Discounts)
- Cannot Impose Special Charges
- Fare Premiums, Transfers, Zone Fares, Etc., May Be Included
- Personal Care Attendants Ride Free
- Companions Pay the Same Fare as the Disabled Passenger

### Trip Purpose Restrictions
- The Public Agency May Not Impose Restrictions or Priorities Based on Trip Purpose

### Hours and Days of Service
- Paratransit Must Be Provided During the Same Days and Hours as Fixed Route Service

### Capacity Constraints
- The ADA:
  - Prohibits Establishment of Waiting Lists
  - Prohibits Establishment of Caps on the Number of Trips an Individual Can Make During a Given Time Period
  - Prohibits Operational "Patterns or Practices" that Limits Access to Paratransit Service

### Operational "Patterns or Practices"
- Operational "Patterns or Practices" are Substantial Number of:
  - Significantly Untimely Pickups For Initial or Return Trips
  - Long Wait Times
  - Trip Denials
  - Missed Trips
  - Trips With Excessive Trip Lengths
  - Trips Negotiated +/- One Hour
Fixed Route Complementary and Comparable Paratransit

- Subscription Service
  - Subscription Service May Not Absorb More Than Fifty Percent of the Number of Trips Available at a Given Time of Day, Unless There Is Non-Subscription Capacity

Eligibility Determination

- Determination of Completed Applications Must Be Completed in 21 Days
- Presumptive Eligibility Must Be Provided if the Certification Process Is Not Completed Within this Timeframe

- Eligibility Determinations must Be in Writing and, if Necessary, in Other Appropriate Formats
- Anticipated Outcomes
  - Unconditional certifications
  - Conditional certifications
  - Denials

Eligibility Determination

- Appeals Process
  - May appeal either a denial or a conditional eligibility certification
  - Opportunity to appear and/or be heard either through
    - Written testimony
    - In-person appearance
    - Testimony of others
Demand Response ADA

- Demand Response Service Equivalency
  - Same area
  - Same response time
  - Same fares
  - Same days and hours
  - Same trip purposes
  - Same capacity constraints
  - Access to information & communications

Equivalent Services:
- Services Must Be Provided in the Most Integrated Setting Possible
- Trip Request Procedures and Timeliness Must Be the Same
- Response Time Must be the Same

Personal Care Attendants

- A Personal Care Attendant (PCA) Is Someone Specifically Designated or Employed by a Disabled Person and Is Required by This Person in Order to Complete the Trip or the Trip Purpose
- A PCA Must Always Be Allowed to Ride With an ADA Paratransit Eligible Individual
- The Transit System May Not Charge a Fare for a PCA

Companions

- One Other Individual Accompanying the ADA Paratransit Eligible Individual Shall Be Provided Service
  - If the ADA paratransit eligible individual is traveling with a PCA, the transit system must provide service to one other individual in addition to the PCA who is accompanying the eligible individual
Companions

- Additional individuals, or companions, accompanying the ADA paratransit eligible individual shall be provided service, provided that space is available for them on the paratransit vehicle carrying the ADA paratransit eligible individual and that transportation of the additional individuals will not result in a denial of service to ADA paratransit eligible individuals

- Companions can be charged a fare

Service Animals

- A disabled person must be allowed to bring on a service animal if they so request
- Transit system not allowed to examine the certification of the animal or question if it is indeed a service animal or the function of the animal
- Animals that pose a danger to the driver and passengers does not have to be allowed

Visitors

- A Visitor Is an Individual With a Disability Who Does Not Reside in the Jurisdiction(s) Served by the Public entity That Provides Fixed Route Transportation
- The Public Entity Must Treat a Visitor Who Presents ADA Paratransit Eligibility Documentation as Eligible for Its Complementary Paratransit

Visitors

- The Public Entity Must Make Service to a Visitor Available for Any Combination of 21 Days During Any 365-Day Period Beginning With the Visitor’s First Use of the Service
- In No Case Can the Public Entity Require a Visitor to Apply for or Receive Eligibility Before Receiving the Service
### Title VI

- **Applies to All FTA Recipients and Sub-Recipients**
  
  "No person in the United States shall, on the grounds of race, color, or national origin, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving Federal financial assistance."
  
  - 42 U.S.C., Section 2000d

### Title VI Protects

- **Anyone Intended to Be the Beneficiary of, Applicant for, or Participant in a Federally-Assisted Program**

- **Applies to All Persons**
  
  - All races
  
  - All shades of color
  
  - National origin

### Title VI Protects

- **Later Statutes Extended the Scope of Title VI to Include Prohibitions Against Discrimination on the Basis of Income, Age, Sex, and Disability**

### Title VI

- **All FTA Recipients (ODOT) Must Submit to FTA:**
  
  - Title VI notice to the public
  
  - Complaint procedures
  
  - Complaint form
  
  - Limited English proficiency plan & public involvement plan
  
  - List of investigations, lawsuits, and complaints
Title VI

- All FTA Recipients Must submit...(continued):
  - Information regarding siting of fixed facilities (not construction projects)
  - Table depicting racial composition of membership of non-elected bodies
- All Transit Providers Regardless of Size Must Adopt Service Standards and Policies

Title VI Applicability

- Recipient
  - State DOT
  - Transit agency
  - Any public or private agency receiving FTA funding
- Subrecipient
  - Pass thru recipient of FTA financial assistance

DOT and DOJ Regulation

- Prohibits Disparate Impact/Unintentional Discrimination
  - Practice lacks a substantial legitimate justification
  - There are other comparable alternatives that would result in less disparate impact
  - The justification is a pretext for discrimination
- Intentional Discrimination
  - Disparate treatment

DOT Title VI Regulations

- Recipients MUST:
  - Take affirmative action to assure non-discrimination
**Potential Title VI Issues**

- Unintentional Exclusion of Groups From the Decision Process
- Failure to Consider Impacts of Alternatives and Programs on Groups
- Disproportionate Impact

**Unintentional Discrimination**

- Transit Service Discrimination Can Occur in Many Ways, Including:
  - Assigning buses to routes (old v. new buses)
  - Crowding allowed on buses
  - Service headways
  - Service on-time performance
  - Temporal distribution of service (time of day, day of week)

**Limited English Proficiency – Title VI**

- FTA Recipients Must Take Responsible Steps to Ensure Meaningful Access to the Benefits, Services, Information, and Other Important Portions of Their Programs and Activities for LEP Individuals

**Meaningful Access to Persons with LEP and Low Literacy**

- Persons With Limited English Proficiency (LEP)
  - Persons who do not speak English as their primary language
  - Persons who have a limited ability to read, write, speak, or understand English
### Meaningful Access to Persons with LEP and Low Literacy

- **Households With Limited English Proficiency (LEP)**
  - No one over age 14 speaks English well, and is linguistically isolated

### LEP Population in the U.S.

- **Other Common Languages**
  - Spanish
  - Chinese
  - Vietnamese
  - Korean
- **More Than 11% of LEP Persons Take Transit to Work**

### Low Literacy

- **National Literacy Council Defines “Low Literacy” as:**
  - “An individual’s ability to read, write, and speak English and compute and solve problems at levels of proficiency necessary to function on the job and in society, to achieve one’s goals, and develop one’s knowledge and potential.”

### DOT LEP Guidance

- **Two Methods**
  - Agencies serving significant populations of LEP persons
    - Develop a language implementation plan
  - Agencies serving small populations of LEP persons
    - Implement procedures to reasonably provide meaningful access
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<tbody>
<tr>
<td><strong>Safe Harbor and LEP Thresholds</strong></td>
<td><strong>Small LEP Populations</strong></td>
</tr>
<tr>
<td>• Safe Harbor</td>
<td>• Areas with Small LEP Populations Are Required to Implement Reasonable Procedures to Provide Meaningful Access</td>
</tr>
<tr>
<td>• 5% or 1,000 individuals</td>
<td>• Written plan requirement for ODOT</td>
</tr>
<tr>
<td>• Written translation of vital documents for each group</td>
<td>• Minimum recommendations</td>
</tr>
<tr>
<td>• If you are a transit system claiming Safe Harbor, you MUST support the claim with factual documentation</td>
<td>• Summaries of vital documents should be translated upon request</td>
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<tr>
<td></td>
<td>• Qualified community volunteers should be engaged to provide oral translation when needed</td>
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<td></td>
<td>• Other actions as appropriate</td>
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<tr>
<td></td>
<td>• Migrant and seasonal workers</td>
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<tbody>
<tr>
<td><strong>Reasonable Steps</strong></td>
<td><strong>Engaging Low-Literacy and LEP Populations</strong></td>
</tr>
<tr>
<td>• Smaller Agencies Are Encouraged to Explore the Most Cost-Effective Means of Delivering Competent and Accurate Language Services Due to Resource Concerns</td>
<td>• Hold Public Meeting(s) in Accessible Locations and at Accessible Times</td>
</tr>
<tr>
<td>• Reduce Cost by Technological Advances, Reasonable Business Practices, and Sharing Language Assistance Materials and Resources</td>
<td>• Provide Notice Through Radio Announcements</td>
</tr>
<tr>
<td>• TTY – free translations.com. PSM - translation</td>
<td>• Be Observant and Sensitive to People Who Cannot Read English</td>
</tr>
<tr>
<td></td>
<td>• Give Opportunity to Provide Verbal Comments</td>
</tr>
<tr>
<td></td>
<td>• Use Maps, Diagrams, Pictures</td>
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</table>
Environmental Justice (EJ)

• Three Principles of EJ
  1. Avoid, minimize, or mitigate disproportionately high and adverse human health and environmental effects, including social and economic effects
     • Minority populations
     • Low-income populations

• Three Principles of EJ (Continued)
  2. Ensure full and fair participation by all potentially affected communities in the transportation decision-making process
  3. Prevent the denial of, reduction in, or significant delay in receipt of benefits by minority or low-income populations

Environmental Justice Population Calculation

• Environmental Justice Population Compares Minority Population to General Population
  – ‘Meaningfully greater’ determined on a case by case basis
  – Always when the percentage of minority population exceeds 50%
Environmental Justice Analysis Required
- Service Cuts, Changes, or Restructuring
- Building or Extending a Rail Line
- Establishing a Multi-Modal Station
- Increasing Fares
- Building New Facilities

Now What?
- Now That We Know
  - What types and modes of service there are
  - How to measure the effectiveness of service
  - Who is using the service
  - What is the service area
  - And are aware of the Federal mandates
- We Need to Determine How That Impacts Our Service Planning

Service Planning
- A Necessary and Effective Tool for
  - Reviewing and evaluating existing service
  - Adding service
  - Cutting service
  - Restructuring service
  - System start up
  - Fare changes
  - Other service modifications

Service Planning
- Used for
  - Minor system modifications
  - Short and long range transit development plans
- Forces You to Clearly State Your Assumptions; Makes Actions Defensible
- ODOT Must Be Notified Anytime a System Is Considering a Service Change
Six Elements of a TDP

- Study Overview
- Description of Service Area
- Public Participation/Outreach Plan
- Service Analysis of Existing Conditions
- Service Alternatives and Capital Needs
- Recommended Improvement and Implementation

Transit Development Plan

- A Transit Development Plan (TDP)
  - Assesses the operations of a transit system to ensure the system meets the needs of the community in an efficient and economically effective manner
  - Is a 3-5 year planning document that systems can use as a guide for developing and initiating transit service

- Is intended for major planning efforts
  - The same approach can be used for minor planning efforts based on a scaled back model
  - You don’t usually need to have a full TDP, but at least consider all the points to make a good business decision
Service Planning and Design Considerations

Planning Process

Mission Statement
- Who Are You?
- What Do You Want to Do?

Goals and Objectives
- Reflect a System’s Mission
- Means to Achieve Broader Community Goals
- Provides Framework for Designing and Evaluating Existing and Proposed Service
### Operational Goals
- A Statement of an Ideal End
- Used to Establish Policy
- Determines Organizational Direction

### Potential Goal Areas
- Service Quality and Quantity
- Effectiveness and Efficiency
- Responsiveness
- Financial
- Community Participation

### Service Improvement Concepts
- Assess Family of Services as a Whole
- Traditional with Core Services
- Introduction of Innovative Services
- Complementary Paratransit Services
- Operating Environments
- Passenger Needs and Expectations
- Political Realities

### Financial Realities
- Labor Realities
- Technology Realities
- Funding Realities
## Core Service Operating Strategies - Traditional

**Module 2**

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<thead>
<tr>
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<tbody>
<tr>
<td>- Increase or Decrease Headways</td>
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<td>- Turnbacks</td>
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<td>- Route Branching or Splitting</td>
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<td>- Schedule Coordination (Timed Transfers/Hubs)</td>
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<td>- Schedule Coordination with Workday and School Schedules</td>
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<td>- Span or Service Adjustments</td>
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<tr>
<td>- Modify Route Alignments</td>
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<tr>
<td>- Alter Bus Stop Locations</td>
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<tr>
<td>- Establish Parking Restrictions</td>
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<tr>
<td>- Transit Priority at Intersections</td>
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<td>- With-flow curb lanes</td>
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<tr>
<td>- Contra-flow curb lanes</td>
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<tr>
<td>- Two-way median lanes</td>
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</table>
ODOT Transit 101

Module 2

Innovative Services Mobility and Connectivity

- Incorporate Full Family of Services
- Introduce New Target-Specific Service Options
- Transit Centers (Multi-Modal)
- Hubs
- Service Routes
- Circulators
- Shuttles
- Mobility Managers
- Travel Training
- Filling the Gaps
- Incorporation of the Private Sector
- Reverse Commute
- Vanpools

ODOT Transit 101

Module 2

Demand Response

- Zones
- Transfers
- Subscription
- Point Deviation
- Route Deviation
- Human Service Agency Coordination
- Volunteers
- Advanced Reservation
- Real-Time
- Guaranteed Ride Home

ODOT Transit 101

Module 2

Community Based Mobility Improvements

- Transit-Oriented Development
- Transit Pass/Vouchers
- Gas Vouchers
- Vehicle Programs
  - Low interest car loans
  - Car sharers
  - Pool cars
  - Low cost auto
  - Loaner cars
  - Car donation
Service Planning Considerations

- Public Involvement to Determine Needs and Expectations
- Identify Stakeholders
- Demand Estimation
  - Survey
  - Similar routes
  - Elasticity models
  - Regression models
  - Transit propensity

Service Improvement Concept

- Assess Family of Services as a Whole
- Traditional with Core services
- Introduction of Innovative Services
- Complementary Paratransit Services
- Operating Environments
- Passenger Needs and Expectations

Service Improvement Concept

- Increase or Decrease Headways
- Turnbacks
- Route Branching or Splitting
- Zone Scheduling
- Overlapping Service Types
- Skip Stop Operation

Service Improvement Concept

- Political Realities
- Financial Realities
- Labor Realities
- Technology Realities
- Funding Realities
Service Improvement Concept

- Interlining or Through-Routing
- Running Time Adjustments
- Schedule Coordination (Timed Transfers/Hubs)
- Schedule Coordination with Workday and School Schedules

Service Improvement Strategies

- Incorporate Full Family of Services
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Service Improvement Strategies

- Reverse Commute
- Vanpools
- Mobility Managers
- Travel Training
- Filling the Gaps
- Incorporation of the Private Sector

The Right Price for Transportation

- How do I Establish a ‘Fair’ Fare?
- What Process Do I Use to Set Fares?
Fares

- The Designated Payment for a One-Way Trip on a Passenger Vehicle, such as Cash, Token, Transfer, Coupon, Pass, or Other Acceptable Means as Established by the Transportation Provider

Farebox Revenue

- Revenue Collected From Passengers or Third Party Agents at the Advertised General Public or Elderly and Disabled Fares Is Reported as Farebox Revenue
- May Be Collected Through the Bulk Sale of Tickets, Tokens, Passes, Etc., or Collected in Cash at the Time the Passenger Boards the Vehicle

Fare Policy

- The Broad Organizational and Community Bridging Mechanism by Which a Specific Fare Structure is Established
  - Must be in place for boards and management to make complex decisions on:
    - Service levels
    - Personnel resources
    - Fare structures

Fare Policy

- Policy Establishes
  - Affordable yet cost effective public transportation service
  - Reasonable fares for elderly and disabled
  - Explanation of fares to the public and political structures
  - Desire to maintain specific revenue recovery ratio
### Fare Structure
- A Price Scale That is Determined by Changes in Operating Costs and Conditions
  - Adult Fare
  - Elderly and Disabled Fare
  - Student Fare
  - Child Fare
  - Transfer

### Fare Type
- Flat
- Distance Based
- Zone Based
- Peak v. Offpeak
- Fares by Mode
  - Vehicle size
  - Express v. local

### Fare Considerations
- Equity
- Ease of Understanding
  - Driver
  - Passenger
- Ease of Administration and Accountability
- Revenue Generating Capability
- How much are your riders willing to pay for your service before they look for other transit or non-transit options

### Fare Media
- Cash
- Tokens
- Passes
- Smart Cards
- Fare Boxes
- Smart Fare Boxes
- Invoices
**Fare Elasticity**

- Elasticity is a Measure of the Responsiveness of Ridership to Changes in Fares
- Commonly Expressed as a Ratio of the Percent of Change in Ridership to the Percent Change in Fare
  - Percent Change in Ridership
  - Percent Change in Fare

**Arc Elasticity Fares**

- \( E = \frac{R_2 - R_1 + F_2 - F_1}{\frac{R_1 + R_2}{2} + \frac{F_1 - F_2}{2}} \)

- \( E = \) Arc Elasticity/ 0.33 for forecasting
- \( R_1 = \) Average daily ridership before change
- \( R_2 = \) Average daily ridership after change
- \( F_1 = \) Fare before fare change
- \( F_2 = \) Fare after fare change

**Service Changes**

- A Critical Element of Service Planning is Determining the Overall Impact the Change Will Have on the Transit System

**Implementing Service Changes**

- Types of Service Change
- Before Service Change
- Reasons for Change
- Cost of Service
- Revenue – Amount Needed and Sources
- Vehicles, Staff and Other Resources
- Productivity
- Public Input
Types of Service Changes

- Adding New/Expanding Existing Service
- Reducing Service
- Redistributing Service
  - Service re-design
  - Route revisions
- Fare Changes

Adding New/Expanding Existing Service

- Adding a New Route
  - Serving a new trip generator (new business, new residential area, medical facility, etc.)
- Expanding Hours of Service for the Entire System or One or More Routes
  - Early morning
  - Midday
  - Evenings
  - Weekends

Types of Service Changes

- Starting a new system in Ohio is not a common occurrence. It entails so many issues that we will not address it in this module.

Adding New/Expanding Existing Service

- Extending Service Area Boundaries
- Increasing the Number of Demand Response Vehicles
- Increasing the Frequency of an Existing Fixed Route
- Extending the Length of an Existing Fixed Route
- Adding Contract Service
Module 2

Adding New/Expanding Existing Service

• Adding a New Program
  – Volunteer Service
  – Vouchers
• Substituting a Larger Capacity Vehicle for a Smaller Vehicle

Reducing Service

• Reducing the Hours of Service for the Entire System or One or More Routes
  – Early morning
  – Midday
  – Evening
  – Weekends
• Reducing Service Area Boundaries

Module 2

Reducing Service

• Reducing the Number of Demand Response Vehicles on the Street
• Reducing the Frequency of an Existing Fixed Route
• Reducing the Length of an Existing Fixed Route
• Reducing/Eliminating a Contract Service

Module 2

Redistributing Service

• Redistributing (Redesigning) Service is a Hybrid of Adding or Reducing Service
  – At different locations
  – At different times
  – Reallocating resources between routes and services
  – Net effect may be an increase or decrease in costs
    • Fares may also be affected
Redistributing Service

- Redistributing Services Common in Tight Budget Times
  - Sometimes uses “rob Peter to pay Paul” approach
  - Resources can be redistributed in an attempt to improve productivity and service quality

Fare Changes

- Across the Board Increases/Decreases
- Increases/Decreases on Specific Modes, Service Types, Times of Day, Days of Week
- Adding or Reducing Discounts

- Adding or Reducing Fare Media Types
  - Increased fare revenues can be reallocated to increase service, assuming that ridership does not fall too fast

Steps Required ‘Before’ Service Changes

- Contact ODOT Early in the Planning Process
- Have Clear Reasons for Making the Changes
- Make Sure Your Governing Body/Board Has Buy-In
  - Obtain input from your TAC
- Always follow these steps BEFORE you make any service or fare changes.
<table>
<thead>
<tr>
<th>ODOT Transit 101 Module 2</th>
<th>Steps Required ‘Before’ Service Changes</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>• Use Realistic Assumptions About New/Redesigned Routes, Service Levels, Miles and Hours, Ridership, Fares, Etc. and How They Will Address the Reason for the Changes</td>
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<tr>
<td></td>
<td>• Consider Title VI, EJ and ADA Impacts</td>
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<th>ODOT Transit 101 Module 2</th>
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<tbody>
<tr>
<td></td>
<td>• Cost Out the Changes (Budget/Fiscal Analysis)</td>
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<tr>
<td></td>
<td>• Calculate the Before and After Productivity Measures</td>
</tr>
<tr>
<td></td>
<td>• Determine if Additional Funding Will Be Required and if so, Where It Will Come From</td>
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<td></td>
<td>— Prepare budget amendment/revision, if necessary</td>
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<th>ODOT Transit 101 Module 2</th>
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<td>• Obtain Public Input</td>
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<td>• Allow Sufficient Time to Publicize the Changes</td>
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<th>Contact ODOT</th>
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<tr>
<td></td>
<td>• Contacting ODOT Early in the Process Can Assist You in Determining</td>
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<tr>
<td></td>
<td>— If your proposed changes meet all required regulations and program criteria</td>
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<td></td>
<td>— If your assumptions and forecasts are reasonable</td>
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</table>
Contact ODOT

- If you are using best practices
  - Have other Ohio systems attempted what you are proposing?
- Are there pitfalls you can avoid?
- If costs are increased, will there be ODOT or other sources of funding available?

Identifying Reasons for the Changes

- List the Issues You Are Trying to Address
  - Low productivity
  - Cutting costs
  - Additional service coverage
  - Safety issues
  - Community/rider complaints
  - Driver complaints

Realistic Assumptions

- Your Assumptions and Forecasts Must Be Realistic and Calculated Correctly
  - Vehicle miles
  - Vehicle hours
  - Ridership
    - Too optimistic about ridership increases or impacts?
  - Fare revenues
  - Public reaction

Realistic Assumptions

- Impacts to Service Quality
- Safety
  - Operating speeds
- Locations of
  - Trip generators
  - Road connections
  - Stop locations
## Realistic Assumptions

- Vehicle Requirements
- Staffing Requirements
- Overall Feasibility of the Change
- Proposed Changes Address the Reasons for the Change(s)

## Have the Assumptions Reviewed by

- Governing body/board
- Need their buy-in for the changes
- All transit departments and staff
- TAC
- Listen to All Comments, Criticisms
- Be Ready to Revise or Cancel, if Necessary

## Title VI, EJ and ADA

- Service and Fare Changes Must Be Evaluated
  - Title VI equity impact criteria
  - ADA service criteria
    - Fixed Route complementary/comparable service
    - Demand response equivalent service

- Even Innocent or Minor Service or Fare Changes Can Have Negative Impacts
  - Low income
  - Minorities
  - Individuals with disabilities
Title VI, EJ and ADA

• Public Input Is Useful (Sometimes Painful) to Make Sure You Have Not Overlooked Civil Rights and Equity Issues

• A Quantitative Equity Analysis Is a Way to Allow the Numbers to Speak for Your Proposed Changes

Cost Out the Changes

• Know the Impact to Your Budget, Expenses, and Revenues

• At a Minimum Your Cost Analysis Should Reflect the Proposed Change’s Impact on
  – Estimated vehicle miles
  – Estimated vehicle hours
  – Fuel consumption

Cost Out the Changes, Continued

– Increased personnel costs
– Increased overhead costs

• Resources for Cost Analysis
  – Rural Transit Manual, Chapter V
  – ODOT’s Fully Allocated Cost Model

Productivity Measures

• Calculate the Current ‘Before’ Productivity Measures

• Forecast ‘After’ Productivity Measures Based on Your Assumptions

• Identify the Increase/Decrease of Each Service Change to Determine the Impact
Productivity Measures

- Do the Productivity Measures Support the Changes (Collectively and Individually) and Achieve Your Goals?

Additional Funding

- Additional Service Must Be Paid For
  - Expenses v. Revenues
  - How much will the change cost?
  - Can ODOT provide additional funding?

Additional Funding

- Is additional local funding available?
  - Additional contracts
  - Increased contract service rates
  - Local governmental revenues
  - Foundations
  - Fare increases

Vehicles and Staffing

- Staff Considerations
  - Drivers
  - Schedulers/dispatchers
  - Street supervisors
    - Full-time v. part-time
- Fleet Considerations
  - Will additional vehicles be needed?
  - Lease v. purchase
Public Input

- ODOT Requirements for Public Input
  - At least one public hearing, advertised 30 days prior to the hearing
  - Notices must be in newspapers that serve the entire service area, including multiple counties and urbanized areas
  - Post the notice on agency websites, Facebook, Twitter, and other social media
  - For substantial route or service changes, written descriptions and maps should be available before, during, and after the hearing

- A 30 day comment period following the hearing
  - All questions and comments must be responded to in writing

- Refer to Rural Transit Requirements
  - [http://www.dot.state.oh.us/Divisions/Planning/Transit/Pages/Rural.aspx](http://www.dot.state.oh.us/Divisions/Planning/Transit/Pages/Rural.aspx)

Who is the Public?

- Riders
- Non-riders
- Human service agencies
- Local businesses

Who is the Public, Continued

- Local press
- All stakeholders
  - Anyone with a ‘stake’ in the transit system
- Provide the Opportunity for Input by
  - Governing body/board
  - Drivers, dispatchers, and other staff
Publicizing the Changes

- In Addition to Public Hearings and Participation, You Must Allow Sufficient Time to Inform and Educate the Public
  - Use a variety of methods such as press releases, advertisements, flyers
  - Agency websites, Facebook, Twitter, and other social media
  - In the case of reduced service, riders will need time to make other arrangements
- Inform and Educate the Transit Staff so That They Can Answer Questions From the Public

Steps for ‘After’ the Service Change

- Monitor the Changes
- Give the Changes a Chance to Catch on
- Make Sure Marketing Is Effective
- Don’t Delay in Intervening In a Problem That Will Not Correct Itself
  - Wasting of resources
  - Route or service that is a ‘big loser’
  - Operational problems/safety issues
  - Public relations ‘nightmares’

Steps for ‘After’ the Service Change

- Realistically and Objectively Determine if the Changes Are Meeting Your Goals and Forecasts
- Don’t Be Afraid to Revise or Reverse the Service Change, if Necessary
- Often Changes Work Well; Sometimes They Don’t; Learn From Both

Steps for ‘After’ the Service Change

- Accept the Praise for Changes that Work and the Blame for Those that Don’t
  - Share successes with the Board and the Staff
  - Recognize if your talents don’t include service changes and design; ask for help
Service and Fare Change Summary

- **Always** Contact ODOT Early in the Planning Process
- Have a Clear Reason for the Change and Support it With Reasonable Assumptions, Ridership Forecasts, and Cost Analysis
- Consider Title VI and ADA Impacts

Determine Where Any Additional Funding, if Needed, Will Come From and Take Action to Secure it

- Contracts
- Budget revisions/amendments
- Grant applications

Obtain Public Input

Secure Necessary Vehicles and Staff

Publicize the Changes

Monitor the Service

Make Adjustments, as Necessary

How Do You Know the ‘What and Where?’

If I Build It, Will They Come (and Use It)?
Transit Propensity

- Transit Propensity Measures the Likelihood of Public Transportation Ridership by Applying a Formula That Accounts for the Population Density, Older Adult Population Density, and Number of Zero Vehicle Households

\[ \text{Transit Propensity} = \frac{(12 \times X) + (19 \times Y)}{0.8} \]

where \( X \) = population aged 65+ and \( Y \) = Number of zero vehicle households

- Model Derived From 1986 Study “Financing and Sustaining Rural Mobility in Rural Areas: A Manual” by Theodore A. Wallin and Alice Kidder

These Factors Are Included in the Formula Because They Represent Characteristics of the Population That Most Likely Coincide With Using Public Transportation in Rural Areas

- Older Adults and Households Without Vehicles in Rural Areas Are More Likely to Use Available Transportation Services Than Other Populations
Data Collection Sources

- Service Area Characteristics
  - U.S. Census
  - Chambers of commerce
  - Departments of development
  - Metropolitan planning organizations
  - Local planning agencies
  - Departments of transportation

Demand Estimation Methodologies

- Survey Response
- Similar Routes Method
- Elasticity Models
- Regression Models – Transit Propensity

Survey Method

- Request Travel Itineraries
- Assess Perceptions and Attitudes of New Service
- Identify Sensitivities
- Extrapolate the Response to Potential User Groups
- Adjust Patronage Estimates for Noncommittal Bias x 20%

Similar Routes Method

- Identify Similar Routes
- Utilize Same Trip Rates
- Elasticity Models
  - Wide variation by market segment, mode, time period, and trip purpose
    - Fare changes elastic
    - Services change inelastic
Regression Models

- Associates Independent Factors to Ridership
- Requires Calibration to a Specific Site
- Based on Socioeconomic, Land Use, or Transit Service Variables

Public Involvement Needs and Expectations

- Public Meeting
- Rider Surveys
- Stakeholder Interviews
- Household Surveys
- Employer Survey
- Elected Official Interviews
- Focus Groups
- Driver Input

Stakeholders

- Human Service Agencies
- Higher Education Institutions
- Employers/Business Community
- Retailers
- Governmental Entities
- Seniors
- Medical Community

Stakeholders

- Children of Older Adults
- Youth
- Developers
- Minority Populations
- Non-English Speaking Populations
- General Public
Service Delivery

• Equally Important, if not More Important than Service Design is Service Delivery
• A Key Component of Service Delivery is Scheduling and Dispatching

Scheduling and Dispatching

• Schedulers and Dispatchers Play a Vital Role in the Transportation System
  – Interacting with customers, drivers, and co-workers
  – Reflecting the company mission and values to the public
  – For the purpose of this training the Scheduler and Dispatcher positions are individual positions, however, they may be one position in some systems

Scheduler Role

• The Scheduler is Likely the First Contact a Customer Will Have With Your System and Must be Focused on Providing Excellent Customer Service
• Remember, a First Impression is a Lasting Impression—Choose YourSchedulers Wisely
Scheduler Role

- The Role of a Scheduler Is to Build Routes as Effectively and as Efficiently as Possible
  - Requires a strong understanding of the system’s policies and procedures
    - Interpret ride and system information
    - Interact with customers to get needed information

- Interact With Dispatchers and Drivers After the Schedule Has Been Created
  - Balance the Customer’s Need to Get to Their Destination with the System’s Need to Maintain High Productivity

Scheduler Attributes

- Expert Problem Solver
- Work Well Under Pressure
- Understand That Schedules May Require Revisions to Meet Changing Customer Demands, Especially When Demand Response Services Are Offered

Scheduling Function

- Scheduling Consists of Three Major Steps
  - Receiving trip requests
  - Scheduling pick-ups and drop-offs
  - Scheduling vehicle and driver assignments
- Scheduling Service Is an Iterative Process, Going Back and Forth Among All 3 Steps
<table>
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<tr>
<th>Module 2</th>
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<tr>
<td><strong>Fixed Route Scheduling</strong>&lt;br&gt;• For Fixed Route Systems, Scheduling is Solved Essentially Once, with Fine-Tuning Over Time, or with Major Service Changes Resulting from Major Demand Changes</td>
<td><strong>Demand Response Scheduling</strong>&lt;br&gt;• Demand Response Service Scheduling is Much More Complicated Than Fixed Route Service Scheduling&lt;br&gt;– The service changes on a daily basis, as a result of demand, and new scheduling solutions must be found every day&lt;br&gt;• What works one day, will very likely have to be modified significantly in order to work the next day</td>
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<tr>
<td><strong>Scheduling Policies</strong>&lt;br&gt;• Transit Systems Must Have Standard Scheduling Policies in Place and Ensure the Scheduler Fully Understands the Purpose and Meaning of the Policies</td>
<td><strong>Scheduling Policies</strong>&lt;br&gt;• Trip Reservation Policy&lt;br&gt;– Trip reservation hours of operation&lt;br&gt;– After hours trip requests&lt;br&gt;– Advance trip request&lt;br&gt;– Same day trip request&lt;br&gt;– Trip wait list, including how trips are drawn from list&lt;br&gt;– Same-day requests and a wait list can be used to fill gaps that occur due to cancellations and no-shows&lt;br&gt;– Confirming trip immediately or calling back</td>
</tr>
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</table>
Scheduling Policies

- Trip Request Customer Service Policy
  - Message system and monitoring
  - Response time to customer
    - Answering calls
    - Hold time
    - Response to electronic and written requests

- Trip Scheduling Policy
  - First come first served
  - Cost efficiency

- Trip Denial Policy
  - Denial tracking procedure
  - ADA requirements

- Maximum Passenger Ride Time Policy
  - Specific requirements of contract service
    - DD 90 minute maximum
  - Long distance trips

- Service Window Policy
  - Time points
    - Early arrival
### Trip Specific Information

- A Routine Procedure Ensures That the Same, Necessary Information is Taken for Each Trip
  - Name
  - Date of desired trip
  - Trip legs (when need to be at destination, where coming from, where going to)

### Trip Specific Information

- Trip purpose
  - Random or subscription trip
  - Fare paying trip or to be paid by agency
    - Identify paying agency
    - How many people in the party

### Trip Specific Information

- Accompanied by an attendant
- Need for car seat for infant
- Need for accessible vehicle
- Need for door to door service

### Trip Specific Information

- Negotiating a Trip Time and Date is Acceptable
  - Scheduler should ask if the person is flexible in the trip times or days of service
Customer Specific Information
• A Routine Procedure Ensures that the Following Information is Collected for Each Person
  – Prior to the first trip
  – Updated regularly

Customer Specific Information
– Name
– Address
– Phone number
– Email address

Customer Specific Information
– Mobility issues
  • Cognitive
  • Physical
  • Mental
  • Behavior issues
  • Difficulty with stairs
  • Difficulty ambulating

Customer Specific Information
– Use of mobility devices
  • Folding wheelchair
  • Electric wheelchair
  • Walker
  • Cane
  • Service animal
### Customer Specific Information

- Emergency contacts (especially important for disabled and elderly riders)
- Age
- Sex
- Ethnicity
- Income

### Trip Types

- **Subscription (Standing Order)**
  - Requires service impact evaluation
  - Will likely form the base of the schedule
- **Random (Reservation)**
  - Will likely be placed within the structure created by subscription trips
  - The selection of random trips allow flexibility to build efficient schedules

### Scheduling Considerations

- **Care Should be Taken With Same-Day Insertions**
  - A trip that is inserted without accurately taking into account the effect on other scheduled trips can seriously disrupt an otherwise good schedule

- **For demand response services, adding riders means adding vehicle miles and vehicle hours**
  - This means adding costs, unless the additional riders are at or near the same locations as already scheduled pick-ups and drop-offs
  - Schedulers must consciously think about each trip. Goal is to transport people, but it has to be balanced with a system's overall budget.
**Module 2**

### Scheduling Considerations

- Mobility Issues
  - Curb to curb or door to door
  - Ambulatory aids in use
  - Boarding and alighting time

**Module 2**

### Customer Communication

- The Scheduler Should Keep a Log
  - All trip requests
  - Trip requests that are accepted
  - Trip requests that are denied
  - Trip requests that are refused
  - Turndowns
  - Trip requests that are put on a wait list

**Module 2**

### Customer Communication

- Changes to trips
- Cancellations
- No-shows
- Call-backs
- Reminders
  - Record the Time, Date, and Summary of All Discussions, in Case of Dispute or Miscommunication

**Module 2**

### Trip Denials and Turndowns

- Trip Denials or Turn Downs Can Be an Important Indicator of Latent (Unmet) Demand
- This Information Can Be Used as an Evaluation Tool to Determine When to Add or Modify the Services
### No-Show and Cancellations

**Module 2**

- **No Shows and Cancellations Are a Waste of Resources and Take Away Trips From Others**

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<th>No-Show and Cancellations</th>
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<td>• No Shows and Cancellations</td>
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<tr>
<td>- The person is not there when the bus arrives</td>
</tr>
<tr>
<td>- Person waves off the bus</td>
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<tr>
<td>- Person cancels within “X” hours or minutes of the scheduled pick-up time</td>
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<tr>
<td>- The rider (or someone on his/her behalf) contacts scheduling to cancel the trip or make a significant change in the trip</td>
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<th>Systems Must Adopt a Clear Policy Regarding No-Show and Cancellations</th>
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<tbody>
<tr>
<td>• Clearly defines the window for acceptable cancellations</td>
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<tr>
<td>• Consequences for repeat no-shows and cancellations</td>
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<tr>
<td>• Wait time for a rider (must meet ADA requirements)</td>
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</table>
Scheduling Monitoring Tips for Managers

- The Service Design Criteria Will Dictate How the Service is Scheduled
- Circuitous Routing Must be Minimized
- Most Efficient to Go from One Event (Pick-Up or Drop-Off) to the Next in as Straight and as Fast a Manner As Possible, in Order to Minimize Costs

Scheduling Monitoring Tips for Managers

- Vehicle Should Travel in an ‘Arc’ Manner from One Event to Another To Minimize Miles and Hours and Increase Efficiency
  - Avoid ‘zigzagging’
- Group Riders as Much as Possible for Efficiency

Scheduling Monitoring Tips for Managers

- Schedules Should Include Appropriate Designated Breaks
  - Lunch
  - Fueling
  - Other required breaks

Scheduling Monitoring Tips for Managers

- Proper Scheduling of Breaks, First Pick-Up, Last Drop-Off, Fueling, Etc., Minimizes Deadhead Miles
- By the Middle of the Day, Complete the Schedule for the Next Day
- Weekend Schedules Should Be Prepared the Day Before
Module 2

Scheduling Monitoring Tips for Managers
• Skeleton Schedules Should Be in Place for the Next Several Days

Module 2

Dispatcher Role
• The Dispatcher Is at the Center of Transit Operations
  – Keeps the vehicles moving
  – Interacts with schedulers
  – Gives instructions to drivers
  – Communicates with customers
  – Works closely with managers

Module 2

Dispatcher Role
• Dispatchers Must Consider the ‘Big Picture’ of Service
  – Know where the vehicles are
  – Where to send them
• Responsibilities Can Be Grouped into Three Categories

Module 2

Dispatcher Role
– System Coordination
– Communications
– Recordkeeping
Dispatcher Role

• Dispatchers Should Be ‘Obsessed’ with Keeping the Operations Running Efficiently and as Close as Possible to the Original Schedule
  – Often as soon as efficient schedules are prepared, and begin to be put into operation, they begin to unravel
  – It is often nobody’s fault—life just happens

Drivers Rely on Dispatchers for Information They Need During the Day

• Communication Responsibilities Include
  – Dispatching trips
  – Monitoring and updating vehicle locations
  – Assisting with directions
  – Confirming no-shows, trip refusals, and cancellations

Dispatcher Attributes

• Work Well in Fast Paced, Hectic Environments
• Excellent Communicator and Decision Maker
• Works Well Under Pressure
• Ability to Multi-Task
• Ability to Remain Calm and in Control
Vehicle and Driver Assignments

- Vehicles and Driver Assignments Should be Completed with the Goal of Minimizing Operating Costs
  - Avoid overtime
  - Appropriate vehicle for schedule
  - Consider deadhead miles
  - Communicate vehicle and driver assignments to eliminate issues with maintenance and training

Technology

- Technology Has Provided the Opportunity for Drastic Change in Scheduling and Dispatching Through
  - Automated scheduling and dispatching software
  - Global positioning systems (GPS)
  - Geographic information systems (GIS)
  - Automatic vehicle locators (AVL)
  - Mobile data computers (MDC)

Types of Technology, Continued

- Mobile data computers (MDC)
- Automatic call distributors (ACD)
- Advanced phone data systems (APDS)

Technology

- Technology Provides Many Benefits
  - Electronic data capture and recordkeeping
  - Call distribution and recording
  - Trip reminder calls to customers
  - Automatic trip scheduling
  - Vehicle location and travel monitoring
  - Travel time and direction calculations
  - Invoicing capabilities
Technology

• Schedulers and Dispatchers Must Stay Informed About Daily Service and Rider Data
• Some Type of Computerized System Can Be Vital to the Success of this Process

It Is Beneficial to Have Software that Covers a Wide Spectrum of Needs
  — Rider information
  — Taking trip requests
  — Scheduling
  — Verification of data

Technology

Manual v. Automated Scheduling

• There Are Several Manual or Manual/Computer-Assisted Approaches That Can Be Used
  — A big chalkboard and ‘yellow stickies’ for the next day’s schedule and a notebook for the following days
  — A notebook with a page for each day
  — A Microsoft Excel-type spreadsheet with a worksheet for each day

— Dispatching
— Reporting
— Invoicing
— Interfacing with GPS, mobile data terminals/tablets, security cameras
Module 2
Technology

• How Do You Determine Which Approach and Technology to Use?
  – Use ODOT’s List Serve to query other transit systems about the approach/system they use
  – Call a peer that you know
  – Use On-line product testing
  – Go for a site visit to see how it actually works

Module 2
Technology

• Be Skeptical—No System Is Perfect
  – Some work, others don’t

• Cost It Out—Where Would the Funds Come From?
  – Computerized systems can be expensive
  – Conduct research to be as informed as possible prior to your purchase

Module 2
Technology

• Coordinate with Your ODOT Rural Transit Representative
• Follow the Process in Chapter 7 of the Rural Transit Manual for Any Software and Hardware Purchases


Module 2
Vehicle Maintenance

• Rural Transit Grantee Requirements
  – Operate all vehicles and equipment acquired through the Rural Transit Program for the purposes described in their Rural Transit Program proposal
  – Properly maintain all vehicles and equipment in accordance with the manufacturer’s recommended maintenance schedule
Vehicle Maintenance

• Preventive Maintenance (PM) Is an Essential Element of Every Effective Maintenance Program to Ensure Maximum Vehicle Reliability, Longevity, and Passenger Safety
  – ODOT requires that all transportation providers develop and implement a written preventive maintenance (PM) program

• Good Customer Service
• Safe Operations
• Control Operating Cost
• Reduce Capital Cost

Vehicle Maintenance and Customer Service

• Reliability of Service
  – On-time
  – Few service interruptions (road calls)
  – No missed trips
  – Operating wheelchair lifts

• Safe
  – Meet safety requirements
  – Safe equipment for riders, drivers, and other vehicles

• Clean and Comfortable
  – Exteriors free of dirt, grime, and graffiti
  – Interiors free of dirt, trash, and graffiti
  – Seating in good, clean condition
  – Clean and properly stored securement devices
  – Functioning heating and A/C
Major Components of a Vehicle Maintenance Program

- Preventative Maintenance
- Repair
- Management Information System
- Warranty Management
- Consumables Tracking
- Vehicle Storage
- Type of Vehicle
- Spare Parts

Components of Vehicle Maintenance

- Vehicle Maintenance
- Management Information System (MIS)
- Preventive Maintenance
- Repair Function
- Warranty Management
- Consumables: Fuel, Oil, Parts

Maintenance Philosophies

- Maintenance Philosophies Are Tied to System Goals
- Condition-Based Maintenance
  - Monitor condition
  - Diagnosis made based on inspection or trend monitoring
  - Predict pending failure
  - Schedule repair

Reference Workbook, Resource Material Section – Online Resources, ODOT Preventative Maintenance Guide
Maintenance Philosophies

- Road Call Maintenance
  - Operate until failure
  - Attributable to service demand, lack of spaces, limited access to maintenance
  - Potential for breakdowns, accidents, and poor reliability
  - Component specific
  - Deferred maintenance

Objectives of an Effective Maintenance Program

- Provide Sufficient Vehicles to Meet the Service Requirement
  - Preventative maintenance program
  - Staffing levels
  - Staffing qualifications
  - Spare vehicles

- Ensure Vehicles are Safe and Serviced
  - Active, knowledgeable maintenance management
  - Quality control program
    - Compliance inspections
  - Good internal/external communication
    - Drivers
    - Mechanics
    - Dispatcher
    - Maintenance Manager
    - Contractor

- Quality control internal with drivers and in-house maintenance checks as well as audits of outsider vendors
Objectives of an Effective Maintenance Program

• Ensure Vehicles Are Clean
  – Develop schedule for exterior and interior cleaning
  – Immediately remove graffiti
  – Repair vandalism
  – On-going monitoring

• Provide Maintenance at a Reasonable Cost
  • Track expenditures/repairs
  • Individual vehicles
  • Function/component
  • Total cost
    – Provide input into capital planning
    – Assess best use of resources
      • In-house staff
      • Outside vendor

Preventive Maintenance

• Differs by Vehicle Type, Manufacturer, Model, Age, and Operating Environment
• Modifications Required Over Time
• Minimizes Overall Life Cycle Cost
• Need to evaluate PM plan on a regular basis to determine if it is still the most appropriate plan for the fleet and service delivery

Effective Preventive Maintenance Program

• Service Intervals Set Up at Multiple of Common Denominator (i.e. 3000, 6000, 12,000)
  – Improves labor efficiency and minimizes down time
• Reflects Seasonal and/or Environmental Conditions Specific to the Operating Environment
• Clean Vehicles to Reduce Environmental Corrosives
Effective Preventive Maintenance Program

- Include Input from Drivers and Maintenance Workers
- Include Input from Passengers

Effective Preventive Maintenance Program

- Driver Pre-trip Inspection
  - Exterior
  - Interior
  - Under the hood checkpoint
  - Emergency equipment
- Defect Reports

Elements of Preventive Maintenance Programs

- Interval-Based Inspections
  - Lubrication
  - Filter replacement
  - Inspection for wear and damage
  - Fluid level check
  - Oil change
  - Belts
  - Safety feature equipment
  - Accessibility equipment (annual)

Elements of Preventive Maintenance Programs

- Repair Order Process, Routine, and Emergency
  - PM inspection, pre-trip inspection, and road call identifies problem
  - Schedule repair
  - Perform repair
Elements of Preventive Maintenance Programs

- Document repair
  - Repair order – Document the repair with associated cost, labor, and date
  - Vehicle history

Management Information Systems

- Develop Work Orders and PM Schedule
- Track Parts Inventory

Maintenance Management Information Systems

- Record Performance of Individual Vehicles
- Method for Analyzing Overall Maintenance, Performance, and Cost
  - Tracks maintenance information
    - PMs
    - Repairs
    - Costs by vehicle
    - Fuel use and efficiency
    - Consumable use
    - Road calls

Vehicle Storage

- Safe and Secure Area
- Fence/Lighting
- Forward Driving
### In-House Maintenance

- Cost Per Hour/Per Repair
- Potential Revenue Source
- Oversight
- Administration Burden

### Contract Maintenance

- Cost Per Hour
- Time Required for Repairs
- Oversight
- Shuttling Vehicles

### Warranty Management

- A Manufacturer’s Assurance That the Product Will Perform for a Specified Amount of Time or Level of Use
- Manufacturers Correct Problem
- Know Who is Responsible for Correcting Problem
- Know Who are Authorized Manufacturer’s Representatives
- Monitor Timeline

### Warranty Management

- Review Performance and Condition of Warranty-Related Item at Service Intervals Prior to Warranty Expiration
- Report Warranty Work to ODOT
### Vehicle Type and Fleet

- Type of Service
- Operating Environment
- Ease of Maintenance
- Availability of Maintenance Expertise for Specialized Components
- Availability of Equipment and Facilities
- Availability of Outside Vendors
- In-House Capabilities
- Fleet Mix

### Vehicle Type and Fleet

- Peak Requirements
- Spare Ratio
- Spare Parts Requirements
- Parts Inventory

### Best Practices

- Involve Maintenance Staff in Driver Training or Pre-Trip Inspection
- Monitor Driver Completion of Pre-Trip Inspection
- Randomly Inspect Pre-Trip Inspections for Accuracy
- Review Breakdown

### Best Practices

- Review Vehicle Records for Repeat Repairs or On-Going Problems
- Provide Opportunities for Maintenance and Operations Staff to Share Vehicle and Servicing Issues
- Replaced Part Inspection
- Assess Cause of Major Component Failure
Facility Maintenance

- Rural Transit Grantees Must Demonstrate Satisfactory Continuing Control Over All FTA-Funded Facilities to Ensure That Such Facilities Are Continued to Be Used for Transit and Are Maintained in Good Working Order in Compliance with FTA Circular 5010 http://www.fta.dot.gov/legislation_law/13718.html.

Facility Maintenance Plan

- FTA and ODOT Require Rural Transit Grantees to Have a Written Facility/Equipment Maintenance Plan
- These Plans Should Describe a System of Periodic Inspections and Preventive Maintenance to Be Performed at Certain Defined Intervals

Group Exercise

- Quick Review of ODOT Facility Maintenance Plan Elements and Inspection Sheet

Policies and Procedures

- The Development of Comprehensive Policies with Clearly Outlined Procedures Is the Basis for Establishing a Strong Administrative and Operating Management Structure
- Every Rural Transit Grantee Should Develop and Maintain Standard Policies and Procedures for the Administration and Operations of its Rural Transit Service
Establishing Operating Standards

- Effective, Useable, and Enforceable Policies and Procedures
  - Policy = The “what” - guidance or rule
  - Procedure = The “how” to implement the guidance or rule

Policy Types

- Fiduciary
- Service
- Business

Policies and Procedures

- Service
  - Passenger rights
    - ADA
    - Title VI
    - Environmental Justice
  - Passenger responsibilities
    - Scheduling
    - Cancellation
    - Safety
  - Employee responsibilities
    - Job descriptions

- Service
  - Customer service
    - Customer relations etiquette
    - After hours communication
    - Customer complaints
    - Scheduling
    - Reservations
    - Passenger etiquette on board
ODOT Transit 101
Module 2

Policies and Procedures

— Business:
  • Personnel
  • Recruiting
  • Qualifications
  • Hiring
  • Training
  • Discipline

— Leave
  • Conduct
  • Evaluation
  • Promotion
  • Etc.

ODOT Transit 101
Module 2

Policies and Procedures

— Safety
  • Passengers
  • Crisis management
  • Accident/incident
  • Information
  • Customer and system
  • Community

  • Vehicle
  • Facilities
  • Employee
  • Risk management
  • Emergency management
  • Safety and security
  • Weapons
  • Smoking in facility

ODOT Transit 101
Module 2

Policies and Procedures

• Safety and Business
  — Training
    • Management
    • Customer service
    • Fiscal staff
    • Operator

• Safety and Business, Continued
  — Driver Work Rules
    • Maximum hours of work
    • Breaks
    • Work schedules (variations in times and hours)
    • Part time vs. full time
    • Availability for work
    • Overtime
    • Incentive pay
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Module 2 Conclusion

• Are you ready to be an even better provider and operator of public transit?
• Complete the “after” portion of the Knowledge and Skills Evaluation Survey, and turn in the full “before”/“after” completed survey
  – Where did you improve?
  – Where should you focus your efforts?

Module 2 Conclusion

• Complete and turn in the course evaluation before you leave
• Trade business cards, phone numbers and emails with your peers
• Discuss the need and feasibility of Transit Manager “user group” blog and social media connection to share ideas and resources

Homework Assignment

• Prepare your transit manager and transit system action plans that shows how you and your system will acknowledge and reinforce strengths and addresses corrective actions for weaknesses
• Blank action plans have been emailed to you
• Return the filled out action plans by 2 weeks after this training session
• Submit via e-mail to: Alex Schultze
  alex.schultze@dot.state.oh.us

Policies and Procedures

• ODOT Has Developed Over 80 Sample Operating Policies That Can Be Customized by Rural Transit Grantees
• Sample Policies Are Available at http://www.dot.state.oh.us/Divisions/Planning/Transit/Pages/Rural.aspx.

Reference Workbook, Resource Material Section – Online Resources, ODOT Transit Policies and Procedures
### Remaining Modules

- **Module 3: Financial Management**  
  – March 18-19, 2015
- **Module 4: Procurement**  
  – April 22-23, 2015
- **Module 5: Regulatory Compliance**  
  – May 20-21, 2015 (tentative; date may slide to July)

### Thank You

- Instructor contact information:  
  – Rich Schultze, rschultze@rlsandassoc.com  
  - Phone: (937)299-5007 or (937)304-6333