Innovative Service Design

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Why This? Why Now?

• Funds could be reduced or eliminated any time
  – Government shutdown
• Mobility needs are increasing
• Rethink what we do and how we do it
  – Effective use of scarce resources
Service Design Motivators

- Coverage / Mobility
- Efficient / Cost Effective
- Politics
- Charity
FY13 NC Passengers Per Mile (CT Systems)

<table>
<thead>
<tr>
<th>Type</th>
<th>Passengers Per Mile</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fixed Route</td>
<td>1.92</td>
</tr>
<tr>
<td>Deviated Fixed Route</td>
<td>0.22</td>
</tr>
<tr>
<td>Taxi/Broker</td>
<td>0.15</td>
</tr>
<tr>
<td>Demand Response</td>
<td>0.11</td>
</tr>
</tbody>
</table>
FY13 NC Miles Per Trip (CT Systems)

<table>
<thead>
<tr>
<th>Service Type</th>
<th>Miles per Trip</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fixed Route</td>
<td>0.52</td>
</tr>
<tr>
<td>Deviated Fixed Route</td>
<td>4.56</td>
</tr>
<tr>
<td>Taxi/Broker</td>
<td>6.87</td>
</tr>
<tr>
<td>Demand Response</td>
<td>9.31</td>
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</tbody>
</table>
## Average Trip Costs by Service Type

<table>
<thead>
<tr>
<th>Service Type</th>
<th>Cost at $1.60/mile</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fixed Route</td>
<td>$0.83</td>
</tr>
<tr>
<td>Deviated Fixed Route</td>
<td>$7.30</td>
</tr>
<tr>
<td>Taxi/Broker</td>
<td>$10.99</td>
</tr>
<tr>
<td>Demand Response</td>
<td>$14.89</td>
</tr>
</tbody>
</table>
Demand Response

A transit mode comprised of passenger cars, vans or small buses operating in response to calls from passengers or their agents to the transit operator, who then dispatches a vehicle to pick up the passengers and transport them to their destinations.

http://www.ntdprogram.gov/ntdprogram/Glossary.htm
response [ri spons]

Noun

1. an answer or reply, as in words or in some action
demand  [dih-mand, mahnd]

verb (used with object)
1. to ask for with proper authority; claim as a right
2. to ask for peremptorily or urgently:
3. to call for or require as just, proper, or necessary:

verb (used without object)
1. to make a demand; inquire; ask.

http://www.dictionary.com
1. They ASK

2. You REPLY

3. You both AGREE
Where/When is Demand Response Appropriate

- It is not cost-effective to provide any other kind of service (LAST RESORT!)
- Origins/destinations are far apart from one another (i.e. no “clusters”)
- Passenger pickup/drop off times are spread apart and the transit system never developed a structure to consolidate them
What Good is Demand Response?

2. High value to agency services - These are needed where services are tailored to particular needs of public agencies. These include some patient transport, school transport, joblink services.

3. High care needs - This market is quite diverse to cater for the different care needs of travellers. It includes services for people with disabilities such as dial-a-ride and some non emergency patient transport, social services transport, and community transport.

4. Best value - Where demand is low, greater flexibility in the locations for picking up and dropping off passengers can ensure better value and wider network coverage.

Adapted From: http://www.scotland.gov.uk/Publications/2006/05/18112606/3
Expectations

• Stop thinking **Demand**, start thinking **Request**
• Begin moving away from Demand Response
  – Introduce new service designs
• **Premium Pricing**
  – Charge higher rates to trips outside of your efficient structure

• **Change Billing**
  – Move away from shared miles/hours to a method that rewards efficiency (flat rate, zone, taxi miles)
  – Added benefit- agencies know how much trips costs beforehand
Tools

• Stop Billing
  – Sell passes/cards to agencies
  – Get $ upfront
  – Helps with cashflow
  – Takes you out of the trip eligibility determination process
  – Frees office time to perform service planning
Tools

• Negotiate Times
  – Negotiate with customers to adjust requested times
  – Reservation taker must know what times work best for each area
  – Best if there is a schedule that is shared with the customers and agencies
Tools

• Zones
  – Divide the service area into zones that are served at scheduled intervals
  – Publish and distribute the maps and schedules
  – Customers request the run/time they want
  – The scheduling problem is simplified!
Tools

• Point Deviation Routes
  – Have demand response routes stop at popular destinations at scheduled intervals

• Blended Service
  – Vehicle provides demand response service in some areas and fixed route/deviated route service in other areas
  – Easy and affordable way to create fixed route/deviated route service without adding vehicles/drivers
Tools

• Schedule Out of Area Service
  – Create a schedule of when you will serve out of area destinations
  – Publish the schedule and distribute to your customers and agencies

• Coordinate Out of Area Service
  – Work with other CT providers to establish out of area schedules
Putting it into Practice

• Don’t deny, negotiate
• Create a structure
• Provide info
  – Schedules
  – Maps
• Simplify
Conceptual Maps
Hub & Spoke System with Scheduled Service:
- to/from medical / educational / retail centers
- connecting primary population centers
- interfacing with Link Transit for connections to and from the south
Real World Examples
UTA- Salt Lake City

- Circulator
- ¾ mile deviation area
- 2 deviations per run (loop)

http://www rideuta com/mc/?page=Bus-BusHome-RouteF547
Cape Cod

- Technology integration
- Scheduled school stops when needed
- Request stops

http://www.capecodtransit.org/flex-route.htm#outbound
Northwest Michigan

- Regional connections
- Local circulation
- Feeder Zones
- Deviated Routes
- Urban Fixed Routes
- Demand Response Areas

http://old.nwm.org/pubtrans.asp
~ 4000 miles²

- I-77 to US 220/I-74
- I-40 to US 74

1. Mecklenburg 10. RCATS
2. Charlotte 11. Iredell
3. CK Rider 12. WSTA
5. Salisbury 14. Guilford
6. Rowan 15. Davidson
7. Stanly 16. High Point
8. Union 17. YVEDDI
9. Anson 18. PART

http://www.bing.com/maps
Regional Connections
Local Circulation

Map Provided By:
Northwest Michigan Council of Governments

Legend

- Antrim County Transit Authority Service Area
- Bay Area Transit Authority Service Area
- Benzie Bus Service Areas
  - Blue Zone
  - Green Zone
  - Orange Zone
  - Purple Zone
  - Red Zone
- Cadillac/Wexford Transit Authority Service Areas
  - Benzie Bus Stop Service Areas
  - KPTA Demand Response Service Area
- Cadillac City Area: Manton City Area
- Kalkaska Public Transit Authority Service Areas
  - Blue Lake, Bear Lake - Northeast Run
  - KPTA - Demand Response Service Area

- BATA Route 1 Grand Traverse Mall
- BATA Route 2 Cherrybend Center
- BATA Route 3 Tom's East Bay
- BATA Route 4 Otsego's West
- BATA Route 5 South Airport
- BATA Fife Lake Village Connector
- BATA Empire Village Connector
- BATA Northport Village Connector
- KPTA Flex Routes
- KPTA Traverse City Flex Route
- Bus Stops
  - Transfer Center/Dispatch
  - Medical Stops
  - BATA Village Connector Stops
  - Benzie Bus Stops
  - Kalkaska Flex Route Stops

Antrim County
ACT 2009 Ridership: 6,106
(231) 533-3644

Leelanau County
BATA 2008 Ridership: 68,385
(231) 325-3011

Benzee County
BATA 2008 Ridership: 68,385
(231) 325-3011

Grand Traverse County
BATA 2008 Ridership: 549,409
Zone 1 (231) 541-2324

Munson Health Run

Wexford County
BATA 2008 Ridership: 18,702
(231) 479-0123

Kalkaska County
KPTA 2008 Ridership: 112,701
(231) 258-8088

The six-county region comprising Antrim, Benzie, Grand Traverse, Kalkaska, Leelanau and Wexford is home to few public transit agencies. Public transit agencies not only provide on-demand service to commuters, the disabled, seniors and students, they also are large employers of professionalized staff contributions to economic growth and community health.
Urban Demand Response Circulator
Urban Demand Response Circulator

- Outer zones served on a schedule (not true demand response)
- Kalkaska City served by demand response circulator
- Trip requests too infrequent for fixed route/fixed schedules, but frequent enough and short enough for true demand response
Rural Demand Response Areas

- Regional Transfer Site
- Rural Scheduled Service Area: 6 am, 10 am, 2 pm, 4 pm
- Demand Response Area
Feeder Zones
Feeder Zones
Deviated Route
# Deviated Route

## Bear Lake/Blue Lake Area
- Depart Kalkaska 10:00 a.m.
- Depart Kalkaska 1:00 p.m.
- Depart Kalkaska 5:00 p.m.

## Rapid City/131 North Area
- Depart Kalkaska 8:45 a.m.
- Depart Kalkaska 2:30 p.m.
- Depart Kalkaska 5:15 p.m.

## South Boardman/Fife Lake M-66 South Area
- Depart Kalkaska 7:45 a.m.
- Depart Kalkaska 12:30 p.m.
- Depart Kalkaska 3:30 p.m.
Urban Fixed Route
North Carolina Example
Step 1: Establish Core Structure - 2010
Step 2: Build Off the Core-2010
Step 3: Focus on Efficiency - 2011
Step 4: Expand Core-2012
Step 5: Create a Transit Network-2012
Step 6: Regional Integration
Reap the Benefits

Passengers By Year in Thousands

- 2010: 90.2
- 2011: 103.9
- 2012: 137.8

Efficiency By Mode

- Passengers Per Mile:
  - Demand Response: 0.44
  - Deviated Fixed: 0.33
  - Fixed Route: 0.63

- Passengers Per Hour:
  - Demand Response: 1.77
  - Deviated Fixed: 7.73
  - Fixed Route: 10.8

Cost Per Trip By Year

- 2010: $11.42
- 2011: $10.33
- 2012: $9.14
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