Evaluating the Cost Implications of Introducing Night Service: A Case Study from Cedar Rapids, IA

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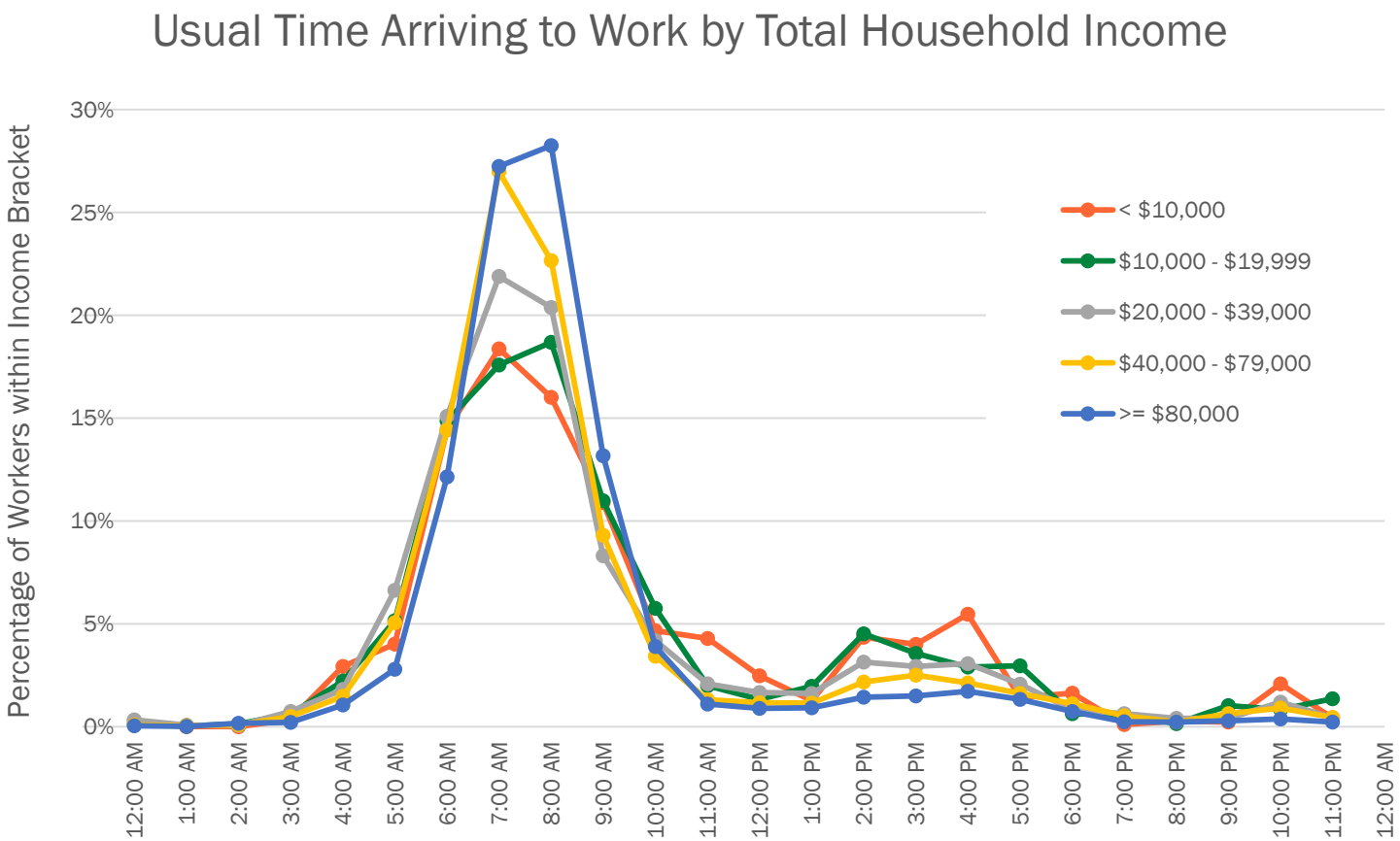
Introduction

- Who needs night service?
- Who provides night service?
- Case study from Cedar Rapids:
  - Identifying transit needs
  - Estimating costs of introducing night service
  - Comparing service alternatives
  - Conclusions

Who needs night service?



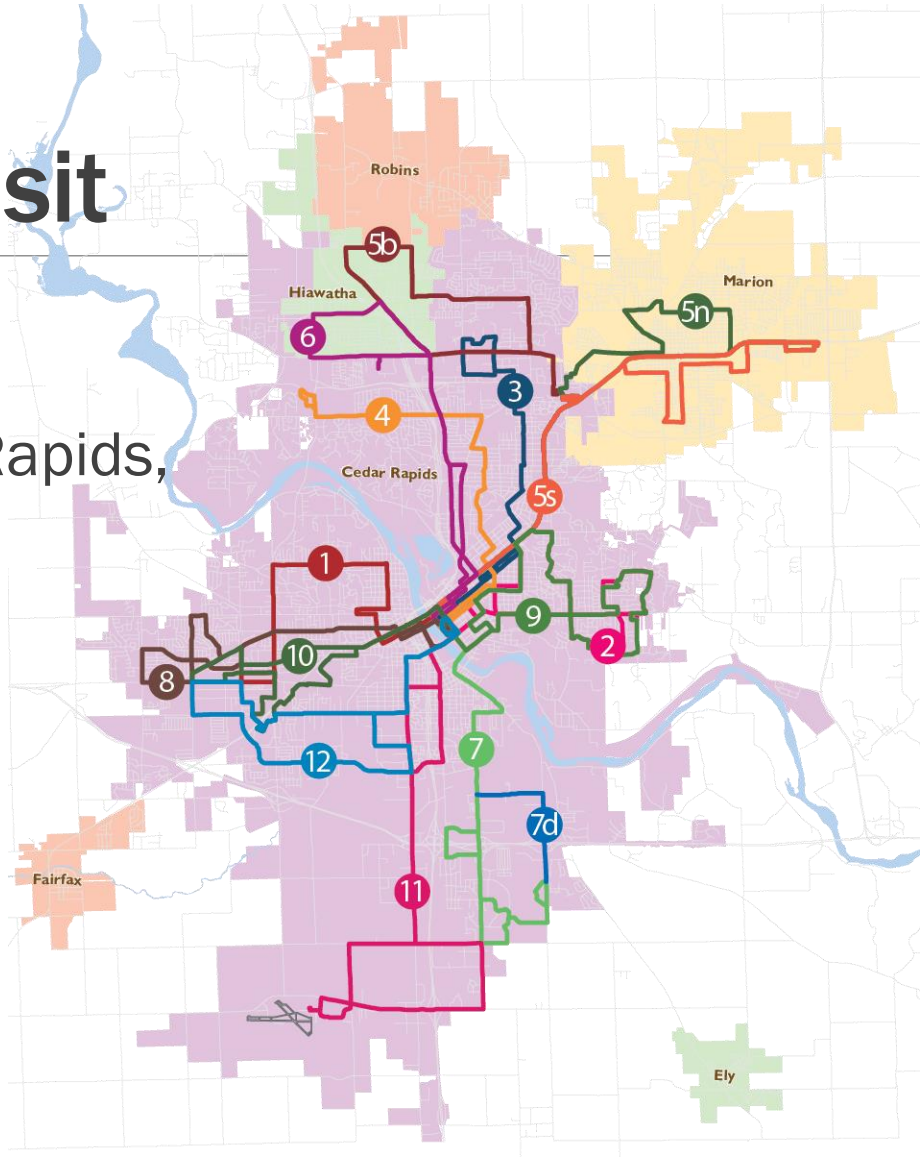
Source: *Federal Highway Administration, 2009 National Household Travel Survey (NHTS)*:

Who provides night service?

- 2015 National Transit Database (NTD):
  - 83% of transit agencies with a service area population > 250,000 operate past 8PM
  - 69% of transit agencies with a service area population < 250,000 operate past 8PM
- Many agencies in smaller communities are unable to meet the demand for night service.

Cedar Rapids Transit

- 1.37 million riders
- Serves the cities of Cedar Rapids, Hiawatha, Marion
- Radial system
- 14 routes
  - 5AM–7PM weekdays
    8AM–5PM Saturdays



LIFTS and NTS

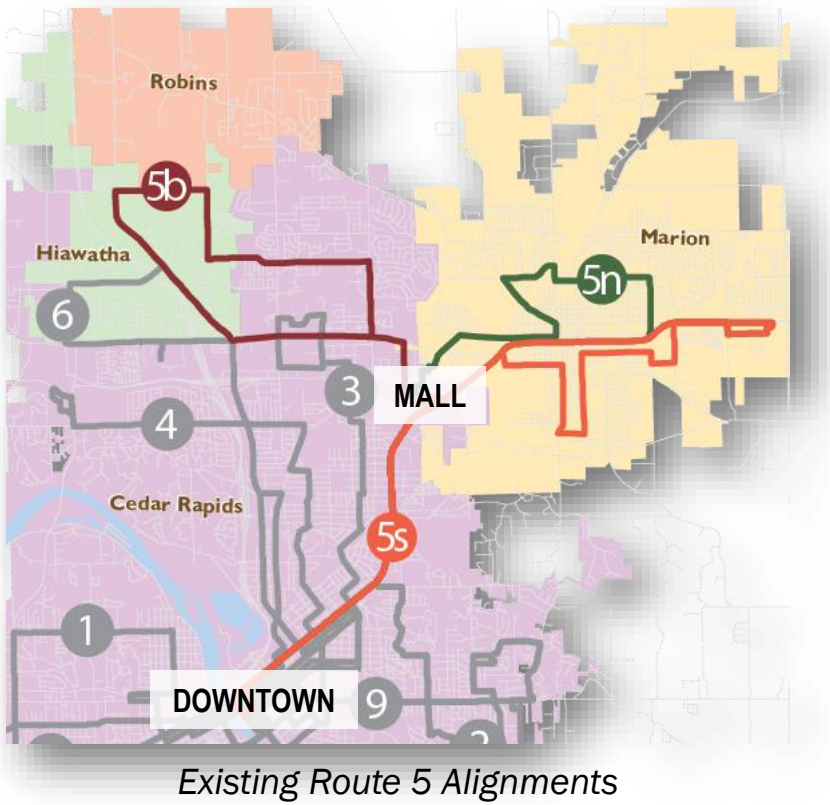
- Cedar Rapids Transit contracts with Linn County and Neighborhood Transportation Services (NTS) to provide:
  - Complementary paratransit service for all seniors and ADA-eligible residents during the same days and hours as the fixed route service
  - Demand responsive service for eligible work, school, and life skills trips during the days and hours when fixed route service is not operated

Transit Needs Assessment

- Two major needs identified from public engagement, survey:
  - Longer service hours
  - Increased frequency on Route 5

Route 5

- Three patterns with branching alignments
- Each branch pattern is operated every 90 minutes; every 30 minutes on trunk
- ~30% of system ridership
- Overcrowding on the trunk



Existing Route 5 Alignments

What will night service cost?

- Cost of an additional hour of revenue service at night would be greater than the incremental, or even fully burdened, cost per revenue hour.
- Why?
  - Less efficient use of labor
  - Keeping facilities open later
  - Extending paratransit service hours

Identifying additional costs

Fixed Route

- Labor costs:
  - Additional support staff
  - Introducing scheduling inefficiencies
- Non-labor costs:
  - Keeping fixed route facilities open later

Paratransit

- Labor costs:
  - Additional operator and support staff
  - Introducing scheduling inefficiencies
- Non-labor costs:
  - Increased fuel and vehicle maintenance costs
  - Keeping LIFTS facilities open later

Additional fixed route labor costs

Accounts for cost of support staff at night

- Staffing plan developed in coordination with Cedar Rapids Transit:
  - One supervisor
  - One dispatcher
  - Two service staff
- Cost estimated by applying Cedar Rapids Transit's labor costs to additional hours of service

Additional fixed route non-labor costs

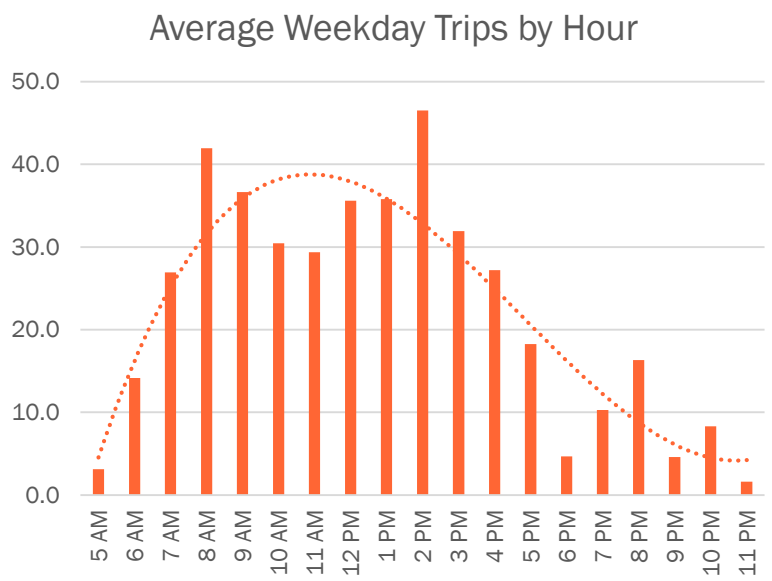
Accounts for cost of keeping facilities open later

- Cost estimated by applying an inflation rate equal to the increase in service span to:
  - Non-vehicle maintenance costs (excluding labor)
  - Utilities
  - Casualty and liability costs

Additional paratransit labor costs

Accounts for cost of operators and support staff at night

- Staffing plan developed in coordination with LIFTS, utilizing paratransit data from an agency with similar operating hours:
  - Three operators
  - One dispatcher
  - One mechanic
- Cost estimated by applying LIFTS's labor costs to additional hours of service



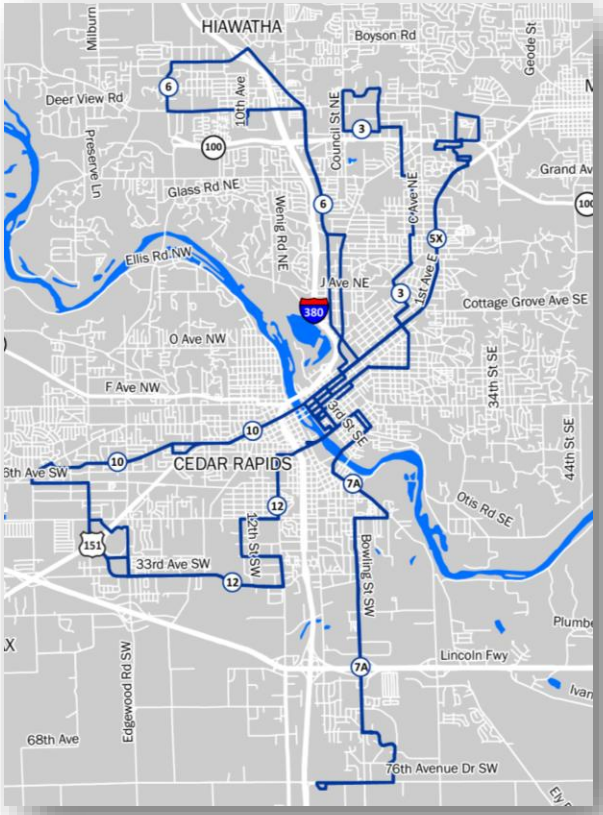
Additional paratransit non-labor costs

Accounts for cost of vehicle operations and maintenance (excluding labor); keeping facilities open later

- Estimated increase in paratransit trips applied as an inflation factor to vehicle operations and maintenance costs (excluding labor)
- Cost associated with keeping facilities open later was estimated by applying an inflation rate equal to the increase in service span to:
  - Non-vehicle maintenance costs (excluding labor)
  - Utilities
  - Casualty and liability costs

Comparing service alternatives

- Without any additional resources Cedar Rapids Transit could:
  - Increase frequency on trunk of Route 5 to every 15 minutes
  - Eliminate AM peak service and extend hourly service on three routes until 10PM
  - Eliminate AM and PM peak service and extend hourly service on six routes until 10 PM



Proposed night service network with elimination of peak service

Conclusions

- Addition of night service would substantially change the way in which Cedar Rapids Transit operates.
- Less service could be operated at night than could be added during existing service hours with the same amount of resources.
- Cost of night service was too great – exchanging peak period service for night service was not desirable if only a few routes could be extended to 10PM.
- Despite growing demand for fixed route service at night, supplemental services are often a more cost-effective choice for smaller communities.

Thank You

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