

TRANSITECH

Electronic Verification of Fare Collection

Bart Robison

Eurotech, Business Development

Salt Lake City, Utah

Fare Collection Accuracy

- How many are riding without a “fare” payment?
- How is this quantified?
- How is it prevented, and how can we limit the system abuse?

Adding Difficulty...

- Public transportation: In business to serve the diverse public.
 - Seniors
 - Students
 - Serving the upper, middle, and lower classes
 - Every man, woman, and child
 - The disabled and handicapped

Fare Collection Diversity

- Cash
- Tokens
- Punch card / paper pass
- Smart Cards
- Credit Cards
- Free
 - Students, children, or Free Fare Zones

Transit Type Diversity

- Inner-city bus / trolley
- Fixed route bus service
- Bus rapid transit
- Commuter bus
- Light rail
- Commuter rail

Fare Collection Abuse

Diverse transit system

=

Diverse abuse

Add Even *More* Difficulty...

- Increase ridership
 - Standing room only
- Add multiple fare zones
- Multiple transfers from various fare zones
- Intersystem transfers
- Intersystem fare collection

Possible Solutions

- Dedicated fare collection conductor
- Transit police patrols
- Honor system
- Electronic fare collection
- ***Automated Passenger Count Reconciliation***

TRANSITECH

Passenger Counting - a Progression

- **Beginning of time:** Manual counts
- **30 – 40 years ago**
 - Measuring the compression of the springs
 - Mechanical switch under the driver seat
 - Mechanical scale and count trigger on steps
- **10-20 years**
 - Light sensors
- **10-15 years**
 - Infrared and Thermal sensors
- **5 years**
 - Vision based sensors

Today's Counters are Accurate...

- Every method has advanced with technology
- 95% or higher is typical
- How accurate do we have to be?
 - How efficient do we want our transit system?
 - How important is fare collection reconciliation?

TRANSITECH

Fare Collection Accuracy vs. Passenger Count Accuracy

- **Accuracy** is second only to **consistency**
- Consistent fare collection method and implementation
 - Consistent type of fare collection for each reconciliation
- Consistent and broad passenger counter
 - Consistent accuracy across all types of Fare collection used in each reconciliation

Trends, Trends, Trends

- Historical data will show the fare collection trends.
- Consistency is key – the trends will reveal problem areas
- The smaller the set of reconciliation, the more accurate the trend will be
 - Identify the problem area, and zero in.

Issues to Resolve

- Children
- Schools using public transit to address transit needs
- Elderly – various fare rates
- Enormous amount of data to sort and analyze

TRANSITECH

Summary

- Use and apply APC data to verify fare collection
- **Quality** of data versus **Quantity** of data
 - Enormous amount of data sit because it is not accurate enough to rely on.
- Identify the problem areas and zero in.