
ETC Accuracy

How Accurate Should We Be?

ETC accuracy

- Accuracy versus precision
- Perception of accuracy
- History of accuracy, transact/transponder
- Pareto economic rule
- Accuracy and level of effort
- Anatomy of ETC accuracy
- Summary

Accuracy versus Precision



Perception of Accuracy

- Public
 - Collect all the revenue (Press reports)
- Private Concessions
 - Lack of profitability is not a public concern
 - Better service (express lanes, AETC) create more trips and therefore a higher net revenue

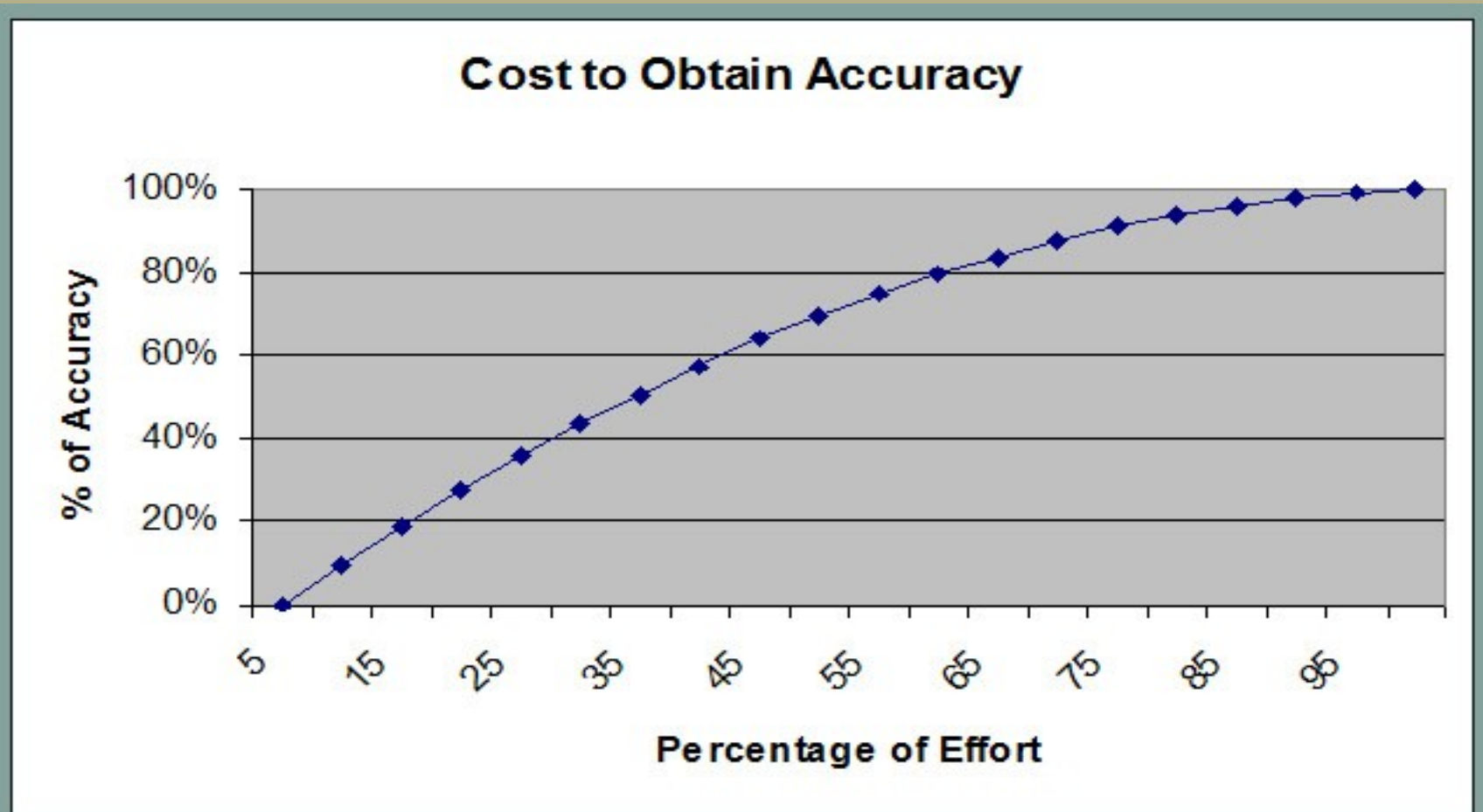
History of Accuracy

- Tests by IAG, Florida, Texas etc.
 - Transponder read accuracy of 99.96% (4 in 10,000)
- Testing focus led to accuracy interpretations in procurements
- Procurement specifications began to require 99.96% accuracy which was interpreted as the transaction

Pareto Economic Rule

- Vilfredo Pareto, Italian who in 1900 discovered that 20% of the people consistently controlled 80% of the wealth
- Has become known as the 80/20 rule
 - 80% work done by 20% of the people
 - 80% value comes from 20% of the work day
 - X% of accuracy comes from Y% effort & \$

Accuracy curve



Anatomy of ETC Accuracy

- Framing
- Classification
- VES
- AVI
- Exception processing
- Transaction accuracy is the product of the component accuracies (the critical measure)

Framing

- Detection, vehicle separation & associating the transponder read
 - Straddling
 - Shoulders
 - Associate AVI read to correct vehicle and correct image capture

Classification

- AVC system accuracy
- Ability of lane controller to correctly process AVC information
- Fail safe audit system needed to determine this accuracy

Violation Enforcement System

- Percentage of useable images
 - Cameras
 - Triggering mechanism
- Percentage of images processed and verified
- Lane controller processing
- Customer record accuracy

AVI

- Reader operation
 - Read vs. read-write
- Transponder operation
 - Mounted correctly in vehicle
- Lane controller processing

Exception Processing

- Lane controller processing
 - Various modes
 - Closed, special events, degrade
- Emergency conditions

Is 99.96% reasonable?

- Certain components perhaps
- Entire transaction, not likely
- Varies with homogeneity of traffic and composition of vehicles
- Business rules must be set to error in the favor of the customer

Why Insist on 99.96%?

- Tradition evolved into a standard
- Adverse to risk in the public sector
- Following the lead of others

Accuracy is Facility Dependent

- Nature of traffic
 - Mostly 2 axle vs. many trucks and types of vehicles
- Type of collection system
 - Barrier vs. ticket

Summary

- Transaction accuracy should be a conscious decision considering the components and the tolling environment
- High accuracy is possible but costly