

Principles of operations management for metro rail

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Pricing

Point to point - Current metro operations (possible where there is detailed control through access points and automated fare calculation)

Slab based - Railway, bus, where as of now, tickets are issued

Zone based - where there is either single point validation or no validation (only inspection)

Flat fare - Token based ticketing for ease of issue

Free (!!) - In some cities

Ticketing products

Single journey

Multiple journeys

Short/medium duration based passes/season tickets

Multi mode tickets in a given urban region

Many experiments in European countries

Will be relevant in many urban areas in future

Germany

9 Euro ticket in June - July - August 2022

49 Euro ticket planned from April 2023

Unlimited travel on ALL local transport (city buses, regional buses, trams, regional trains, ferries) in the entire country

How to allocate revenues?

How to estimate passenger demands, which were earlier (partly) through ticketing information?

Free transport!!

Talinn (Estonia)

Luxembourg

Some smaller cities in France

Germany in summer 2022 (almost free)

...

In future??

In future

Integrated ticketing and access to transport system will be expected

Sharing information on usage is one challenge so that revenue can be apportioned

If there is non-validated travel, then indirect methods have to be used for apportioning revenues, allotting subsidies or direct government/community spends etc.

These require methods of estimation (shortest path, other paths, gravity models, traffic assignment models) and revenue allocation models