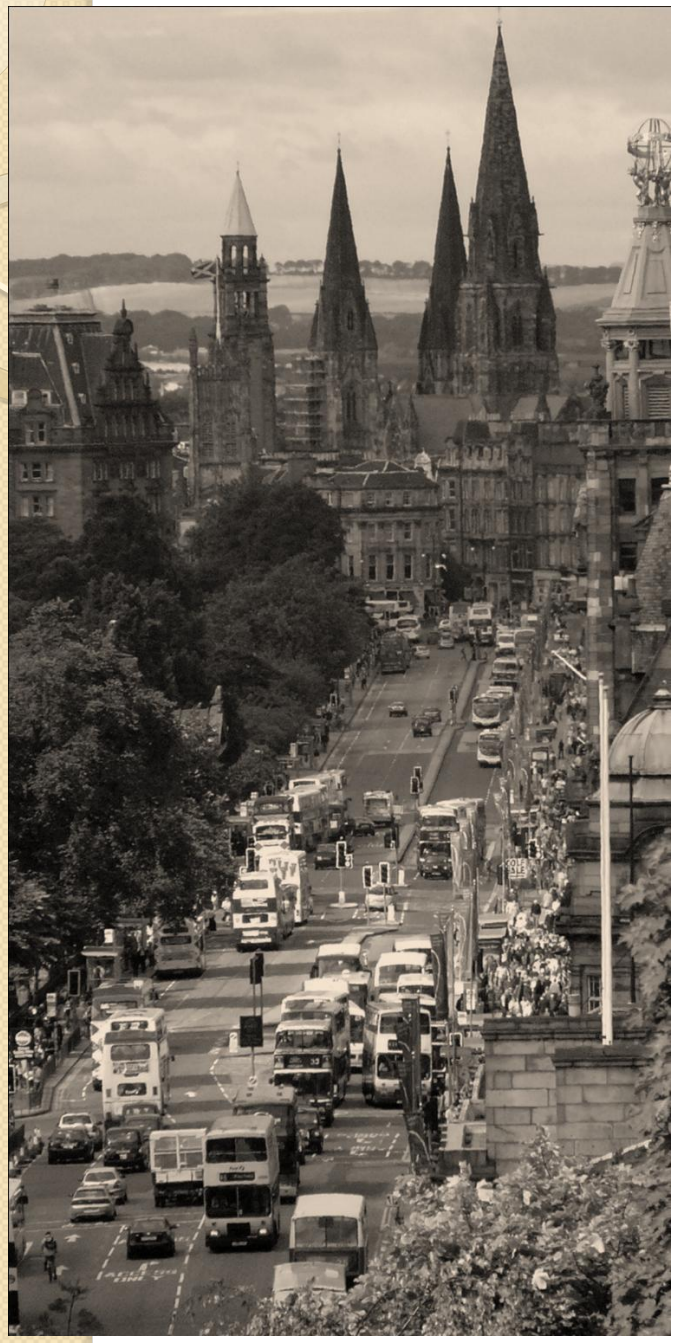

Accessibility Instruments:

Literature Review

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Outline

- Aspects of accessibility instruments
- Categorisation of accessibility instruments
- Review of number of accessibility instruments
- Recommendations for improvements

Aspects of Accessibility Instruments

- Spatial separation **(deterrence) factor**
- Type of **accessibility indicator**
- **Origins**
- **Destinations** & associated opportunities
- **Input data** and parameters
- **Output** of accessibility modelling
- **Dimension of accessibility values**
- Spatial detail and **geographical scale**
- **Type of transport** (personal travel or freight transport, or both)
- **Travel modes** & mode choice
- Route choice
- Interchange options
- Interchange points by facilities available
- Scheduling
- Travel costs and fares
- Walking time & waiting time
- Real time updates and reliability
- Type of vehicle
- Day of the week, seasonal variations
- Time of day
- Environmental impact
- Health impact
- Safety and security information:
- Physical features
- Non-spatial barriers
- Quality and environment of journey
- Information and booking
- Equity: between poor and rich, urban and rural, central and peripheral, or nodal and interstitial areas
- Dynamics (due to investments in transport infrastructure or impacts of other transport policies)
- Land use analysis
- Modelling program (e.g. GIS or more heavily bespoke programme)

Categorisation of Instruments:

Scottish Transport Appraisal Guidance (STAG)

- Based on the purposes of developing instruments indicators of local access, there are three main categories:

Category 1 – Accessibility instruments which analyse walk times to different tiers of public transport systems or to local facilities.

Category 2 - Accessibility instruments which analyse travel times using public transport systems.

Category 3 - Instruments not primarily designed to calculate accessibility but which are used as part of the accessibility modelling process. These include: demand models, land-use models and activity based models.

Category I

Instrument	Developer	Definition & Aims
PTALs - "Public Transport Accessibility Levels"	The London Borough of Hammersmith and Fulham, UK	•Measures access to the public transport network at a point without measuring the separation or interaction between places. •PTAL deals only with the origin or destination of journey using a set **formula to measure the intensity of PT** provision at different points within easy walking distance of each area or site. •The formula considers walk time to nearby PT services, the number of services available, service reliability and **average waiting time** to score each location on a six-point scale.
WALC - "Weighted Access for Local Catchments"	Transport Studies Group (TSG) researchers, University of Westminster, UK	•Measuring perceived walk access times to bus stops / DLR and London underground stations based on a **very detailed representation of the local walking network**, covering pedestrian only routes, alleyways and short cuts. •WALC calculates walk access times for different groups of people taking account of several limitations associated with **the local environment including the local terrain**, the lack of provision of a shelter and seating at bus stops, low levels of street lighting, and difficulties in crossing busy roads.

Category 2

Instrument	Developer	Definition & Aims
PTAM – "Public Transport Accessibility Mapper"	West Yorkshire Passenger Transport Executive, UK	•Measures the accessibility of a location or set of locations by calculating the total travel time of bus journey including walking time, waiting time and in-vehicle time. •Restricted to **bus network** accessibility only. •An **interchange function is not considered** in the calculation.
CAPITAL – "CalculAtor for Public Transport Accessibility in London"	Transport for London (TfL), UK	•Measures accessibility from a set of origins/ specific origin, or to a set of destinations/ specific destination based on the **minimum of total travel time** using any **combination of public transport modes** in Greater London •Considers walking time, waiting time, in-vehicle time and **interchange time**. •Restricted to travel during only **morning peak period**.
TRANSAM - "TRANSport Accessibility Modelling"	Brown & Root, UK	•Measures and quantifies road network accessibility by making a **comparison of accessibility measures for cycle, walk and public transport networks**, or for a combination of these travel modes for the complete journey from origin through to destination. •Creates travel time contours based on the lowest generalised cost route for a range of travel modes from all network nodes to the destination node.
SONATA - "SOcial Needs And Transport Accessibility"	Steer Davies Gleave, UK	•Evaluates the extent to which the existing public transport services are able to **meet people travel needs** based on trip profiles estimated from maximum travel times and duration of purpose. •**Test the effect of service changes** and define those services that are most significant in meeting these needs.
Accession	MVA and Citilabs on behalf of the Department of Transport	•Measures accessibility to and from any point based on travel time, cost, distance or generalised cost through road and PT networks. •consider many origin and destination combinations and generates different types of indicators. •Support **multi-modal travel** (including public transport, car, cycling and walking), and flexible routed and demand responsive transport modes.

Category 3

Instrument	Developer	Definition & Aims
SNAMUTS - "Spatial network analysis for multimodal urban transport systems"	Carey Curtis and Jan Scheurer, Australia	•Assesses land use – transport integration by defining and visualising **strengths and weaknesses of a land use - public transport system** in terms of: geographical coverage; efficiency and capability to connect activity locations; strategic importance of network nodes and routes; speed competitiveness between car travel and public transport.
GenMod	Transportation Planning Department of Amsterdam and the University of Amsterdam, Netherland	•A traditional four-step model based on **household surveys and mobility counts**. •Shows the land use - transport system consequences of **land use/ transport alternatives.** •Calculates travel times between 933 zones within the Amsterdam region using extensive public and car transport networks.
TMfS - "Transport Model for Scotland"	MVA Consultancy, UK	•Multi-modal demand and assignment model. •Examine the impact of (and/or interaction between) major inter-urban road and public transport schemes and **major transport policy options** in forecast years.
ACCALC	DHC, UK	•Identifies opportunities and choices of journey destination accessibility, and characteristics of people catchments. •It calculates optimal journey times for very large numbers of zones based on **optimised routing algorithms which closely imitate the behaviour of travellers.**
Space Syntax	Bill Hillier, Julienne Hanson and colleagues at The Bartlett, University College London, UK	•Provides a spatial analysis of **aspects and structure of space**, and helps to describe social activities and human behaviour from a spatial configuration perspective. •Estimates the **connectivity** and, consequently, **accessibility** of architectural or urban spaces.

Recommendations for Improvements

- Other transport modes including **walking and cycling**.
- **Mode choice & interchange options** between PT services of different operators and modes including a **journey planning interface**.
- Accessibility at **specific times of day** for **specific days of the week**.
- Declining attractiveness of potential destinations with increasing travel time (or distance) by using a **distance decay measure** (e.g. Hansen measure).
- **Different walk access speeds** or walk access thresholds (time or distance) according to area and type of population group.
- **Real time updates** due to traffic congestion, roadwork or delay.
- **Physical features** including physical obstructions, steep hills and topographic constraints, and maintenance and surfacing.
- **Type of vehicle** for a specific destination (e.g. airport) or for some population groups (e.g. wheelchair, pushchair).
- **Quality and environment of journey**.
- **Safety and security** factor during the journey.
- **Environmental impact** of transport choices.
- **Changes in demand and land-use patterns** due to accessibility changes in an area.

Thanks