

SCALING THE BUS STOP – A NEW APPROACH TO PARK AND RIDE

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Abstract

This paper explores how bus-based Park and Ride can be developed within rural and peri-urban areas. It draws on research that examined the implementation and usage of Ellon Park and Ride. Ellon Park and Ride is located almost 15 miles from the periphery of Aberdeen and served by conventional local bus services. A high proportion of users are commuters who would otherwise complete their journey by car. The scheme is relatively cost-effective, while contributing to the viability of the commercial bus network. Based on the research, a new approach to 'Micro Park and Ride' is developed – one that scales conventional Park and Ride down to focus on very local markets. The paper discusses how scaling can be used to access and develop different segments of the public transport market.

1. Introduction

Although Park and Ride sites are increasingly served by local bus services, Park and Ride terminals remain highly specified, while facilities at conventional bus stops are more basic.

This paper explores how Park and Rides can simply be scaled down, such that they offer a level of facility midway between bus stops and traditional Park and Ride. The paper:

- Briefly defines Park and Ride.
- Provides an overview of Park and Ride at Ellon.
- Proposes a hierarchy of bus market segments and a classification of public transport network access facilities.
- Develops the concept of “Micro Park and Rides”.

2. Park and Ride

Park and Ride has been defined (Spillar, 1997) simply as any passenger “intermodal transfer facility”. However, in Great Britain the term implies transfer from private to public mode. Commonly these modes are car to bus or rail.

Park and Ride varies in formality, from highly informal on-street parking in the suburbs with lift-sharing into the town or city centre, to formal dedicated terminals and services with car parking facilities provided.

Park and Ride sites may be regarded as car parks, or interchanges, or some combination of the two.

In the car park analogy, the public transport element of the scheme is largely irrelevant to the users – they simply want to park and access the town/city centre, minimising the cost and time associated with doing so.

The interchange analogy stresses the Park and Ride site as a place to access the network, a hub for safe and reliable transfer between public transport modes, and something that provides tangible evidence of the existence of bus services.

While the interchange aspect of Park and Ride has become slightly more important over time, Park and Ride sites still tend to be situated at “edge of town” locations (TAS, 2003), where they are normally judged to be best able to attract people who would otherwise drive to, and park in, the town/city centre.

3. Ellon

Ellon is a small town of just under 10,000 people, 15 miles north of Aberdeen. Smaller rural villages and hamlets surround it. Half the working population of Ellon travel to work in Aberdeen City – almost 2,000 people.

Ellon lies in the A90 corridor – the route between Aberdeen, Peterhead and Fraserburgh. It is the point at which routes from most of Buchan to Aberdeen converge. The area is not served by rail, leaving bus as the primary form of public transport.

Ellon’s Park and Ride was first developed informally in the early 1980s, through the provision of car parking in the town centre for bus passengers. The current scheme, which includes staffed terminal facilities, was opened in 2000.

Ellon Park and Ride is not typical of most schemes in Great Britain:

- It is located in the rural area close to where its users live, rather than on the edge of the destination city.
- With a maximum of 250 cars, the site has a lower capacity than most Park and Ride.
- The site is linked to the City of Aberdeen using existing commercial bus services, rather than dedicated or contracted services.

The Park and Ride site provides a relatively high standard of interchange from private modes to local bus services. The site is staffed Monday to Saturday daytime. No charge is made for parking, with users paying individually as local bus passengers. Fares to Aberdeen are competitive for individual commuters who would otherwise pay for a full day’s parking in Aberdeen.

Bus services to Aberdeen operate every 15-20 minutes during the day. Other destinations are served less frequently.

The corridor is also served by a more conventional Park and Ride site at Bridge of Don, on the northern fringe of Aberdeen.

The Ellon approach is not entirely unique. Ferrytoll Park and Ride in Fife intercepts traffic bound for Edinburgh before it crosses the Forth Bridge, approximately 10 miles from the city. The site is served only by existing local bus services, with no dedicated routes. The capacity of the site is however larger – 500 cars at opening in 2000, expanded to 1,040 in 2005.

There are a number of examples of “inter-urban” Park and Ride in North America (Spillar, 1997), including routes between Northern New Jersey and New York City, and Dallas and Fort Worth. However within most of the United Kingdom, inter-urban or long-range Park and Ride remains a largely academic concept (Parkhurst, 2000).

Park and Ride sites have been used as hubs for longer-distance coach services. For example, Stagecoach’s Megabus network uses a Park and Ride site at Perth for interchange between routes. One of Preston’s Park and Ride sites – designed primarily for use by passengers travelling into Preston city centre – is also used as a pick up point for commuter services to Manchester.

Use of Ellon Park and Ride was analysed from parking, bus, and traffic trend data, and a survey of 120 users:

- Usage has grown steadily year-on-year since opening in 2000, with particular growth between August and December. Almost 1,000 one-way passenger journeys are now being made to or from the site each week. Ellon Park and Ride appears to have contributed to stabilisation and slight growth in the bus market along the corridor.
- Use is heavily peaked with approximately two thirds of all passengers boarding buses at the site between 06:30 and 08:30. The purpose of most journeys is commuting or education. Ellon Park and Ride is dealing with around 5% of with-flow peak car traffic on the A90 between Ellon and the fringe of Aberdeen.
- Half of users regard driving direct to their destination as a realistic alternative to Park and Ride, but choose to use Park and Ride. This represents a major success – delivering genuine mode shift. This success is only tempered by the limited impact a single scheme of this size can make – the magnitude of mode shift is insufficient to offset the underlying growth in road traffic along the corridor.
- Around a quarter of users of the site do not both “park” and “ride”. In particular, car-based lifts to the site and interchange between buses are both significant ways of accessing bus services from the site.

- The most common reason for first using Ellon Park and Ride was an inability to find parking spaces in Aberdeen, and the ease of access of the Park and Ride site. However, since the service was originally cheaper than the local bus (an issue subsequently resolved), a number of people were first attracted by fare.
- Half of users live in Ellon. A high proportion of those living outside Ellon live in the Ellon-New Deer corridor, a sparsely populated area which is poorly served by bus.

By avoiding significant additional revenue expenditure, the Ellon approach is a very cost-effective means of delivering Park and Ride in a predominantly rural setting. Discounting capital costs over 30 years, the scheme costs the local authority less than £2 per user per day to provide.

The Ellon scheme created a new transport hub, which guided subsequent land use planning decisions. The location of the Park and Ride has already influenced the location of a new supermarket. It is expected that this hub will start attracting other local development in line with the local development plan aspirations.

The approach requires partnership between authority and operator – no one organisation controls the entire scheme, and this can lead to conflict where objectives differ. For example, if vehicles were to start to become overcrowded at peak times, there would be little the authority could do to provide additional capacity. If the operator were not making sufficient revenue from peak-only passengers to justify investment in additional capacity, the scope for further growth might be limited.

4. Park and Ride as a Bus Stop

Two facets of Ellon Park and Ride are particularly worthy of note:

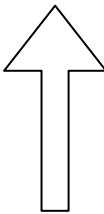
- Users share many of the characteristics of those people who are using buses in urban areas, but who typically are not using buses in many rural areas. The most obvious characteristic of Ellon Park and Ride users is use of the bus to get to work. However there are also characteristics that are more typical of a traditional bus market – notably a bias towards women (who tend to be more income sensitive than males).
- It has an unexpectedly small catchment, primarily made up of people living in local areas that are either not served by bus, or are poorly served by bus.

Each facet is expanded below.

It is possible to categorise different market segments for local bus services by income and car availability. Within an economic model of transport decision-making, these factors are common determinants of willingness or need to use bus services for a specific journey. Figure 1 differentiates rural/near-rural

(“peri-urban”) bus markets based on income/car availability. None of the three markets is discrete – each merges into the next. This is one of a number of alternative methods of segmenting the market.

Figure 1: Simplified Hierarchy of Rural and Peri-Urban Bus Market Segments

	<i>Market</i>	<i>Description</i>
Potential revenue per passenger. Size of potential market. Difficulty in attracting market. 	C. Wealthy, with cars	Possibly the majority of rural residents. Far harder to attract, because bus offers few or no advantages for journeys.
	B. Car owning, but cost-sensitive	People who if living in a large urban area, might choose not to own a car, but in part because of poorer public transport accessibility in rural areas, do own a car. However, they are still somewhat income-sensitive and may be attracted to use buses for certain journeys.
	A. Poor, without car	Reliance on bus due to lack of alternatives. Now the core bus market in many rural areas, but small proportion of total market.

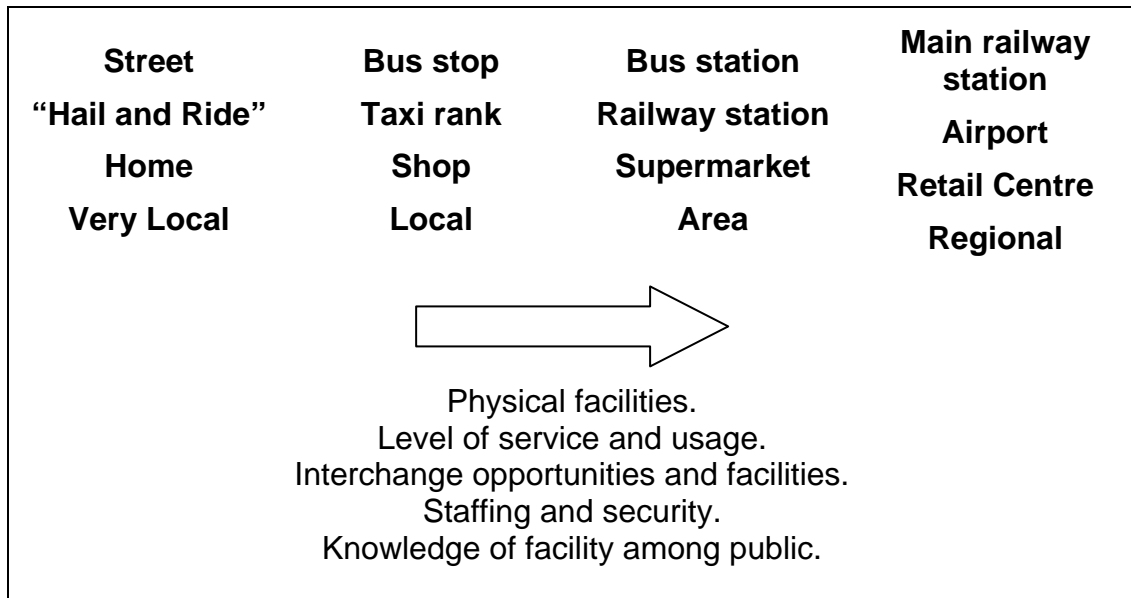
Generally bus operators gain market “A” by default – people have little choice. However the number of people in this market is in long-term decline. Even in urban areas, bus operators struggle to gain any part of market “C” – these people have alternatives available and have few financial pressures that prevent the use of those alternatives. The interesting market is “B” – people who have a choice, but are prepared to make trade-offs between factors such as price, journey time, and travel environment. These are the people who often will be found using buses in urban areas, but generally won’t be found using them in rural areas. But Ellon Park and Ride does appear to be attracting the “B” group.

The ability to attract this second market segment is very significant. The potential market is probably larger than the existing bus market, so even if only a proportion can be attracted, overall volumes will be significant. Although still somewhat income sensitive, these people probably can be made to yield greater revenue per head than existing bus users, if a suitable method of differentiation can be found.

Ellon Park and Ride’s catchment is larger than a conventional bus stop, even though the level of service is comparable to bus stops in the centre of Ellon. To understand these differences, and the role sites like Ellon Park and Ride

play in the network, it is useful to develop a theoretical framework in which to compare different types of public transport network access facility. Figure 2 shows this sliding scale of facilities for accessing public transport networks.

Figure 2: Classification of Public Transport Network Access Facilities



There are no absolute definitions of facility – there is a sliding scale from no facility at all (such as Hail and Ride bus operation), to facilities such as major international airports.

The figure also highlights the importance of integrating public transport with land use policy – relating the scale of public transport facilities to, for example, the scale of retail facilities.

It might be argued that traditional Park and Ride sites do not belong on this scale: This depends on the extent to which they are regarded as “car parks” and the extent to which they are regarded as offering “bus services”. Assuming the latter is significant, Park and Ride is broadly comparable to a bus or railway station, and not a bus stop.

There is quite a large gap between “bus stops” and Park and Ride facilities. This only partly reflects the increased volume of traffic at Park and Ride sites: There is also a tendency for local authority-sponsors to over-specify Park and Ride facilities to compensate for perceptions of poor bus stops.

However, Park and Ride style facilities can simply be scaled down, such that they offer a level of facility midway between bus stops and traditional Park and Ride. In doing so, we aim to continue to attract the market segment “B”, in a way that creates genuine mode shift to bus and strengthens the performance of existing bus networks.

5. Micro Park and Ride

“Micro Park and Ride” is intended to provide a practical “park and ride-like” solution for large rural areas with significant passenger flows to large towns or cities. The concept builds on the existing bus network, scaling the Ellon concept of inter-urban Park and Ride down to be applicable to other areas.

It has a higher level of facility than a bus stop, but lower than a conventional Park and Ride site: For example, provision of heated waiting facilities and car parking with some form of security monitoring, but not continuously staffed and not necessarily providing facilities such as toilets or televisions.

As with Ellon, the bus services provided are those that would already pass the location.

The overall emphasis is less on Park and Ride as a car park, and more on a way to improve access to (and use of) bus services among those who live away from frequent bus routes.

Rather than attempting to market these Micro Park and Rides to everyone, marketing will be focused on a very local area – perhaps a few thousand households living in the immediate hinterland of the site. Marketing needs to emphasise locality, and be perceived less as part of a huge, complex, public transport network: At Ellon 90% of passengers were going to the same place – marketing one single journey is a relatively easy message to convey, if targeted to a discrete market segment.

The lack of dedicated services – which many Park and Ride promoters would perceive as a problem – was not perceived by current users of Ellon Park and Ride as a problem. In part this reflects the nature of the people using the service – those that probably would have used a local bus service, had a suitable one been available for them. Consequently users may be more prepared to accept potentially confusing conditions of use, such as the need to understand return services by a range of numbers, rather than a single consistently branded vehicle. In essence, the target market for these Micro Park and Rides, are those prepared to use conventional local bus services.

The importance of frequency is less clear from the research undertaken at Ellon. Many users living in the suburbs of Ellon clearly had been attracted by the increased frequency, although there are a significant proportion of users who have no local bus service at all, and who might still have been attracted to a less frequent Park and Ride. Perceptions of frequency do vary between urban and rural areas: More Ellon users praised the service as frequent than criticised it for being infrequent, in spite of frequencies rarely reaching every 15 minutes, the point at which most urban bus users would begin to perceive the service as frequent.

Unfortunately it is difficult to conclude that a corridor on which the current bus service was only hourly would have sufficient frequency to attract users. Such frequencies are common in rural areas. However, it should be noted that because people are living locally to the site, and tend to use it regularly (90%

of those using Ellon did so at least once a week), concepts such as “turn up and go” are far less important than they might be in a conventional Park and Ride scheme which aims to capture casual users who perhaps happen to be driving past the site on the main road.

It is not clear how different geographic markets would respond to Micro Park and Ride. More deprived or wealthy areas might not yield the same proportion of additional users as Ellon, either because there is already relatively high bus use in the area or there are a disproportionate number of people who will never use a local bus service, regardless of how it is made available to them. Underlying propensity to travel to work in larger towns or cities may also be a factor.

Capacity of vehicles remains a concern. Peak-only increases in patronage may not result in sufficient revenue to justify operation of additional vehicles, should any current excess capacity be filled.

Although traditionally a local authority role, there are few constraints on an operator developing their own Micro Park and Ride sites – the planning restraints are similar to those facing any business that attempts to develop land. The main advantage of local-authority lead infrastructure is certainty of access to services run by any operator.

The integration of Park and Ride into mainstream local bus services is both a blessing and a curse. It prevents Park and Ride extracting from the existing bus network, contributes to maintaining the commercial viability of the local bus service, and avoids the creation of a two-tier public transport system (segmentation of society based on car ownership). However, it also prevents operators from differentiating between each of these markets on price. The ability to differentiate is likely to become increasingly important as a means of generating greater revenue per passenger among those groups that are prepared to pay more. Those attracted to Park and Ride tend to have more money than much of the traditional bus market.

Although non-car interchange at Ellon is a small proportion of total usage, Micro Park and Ride sites have the potential to play an important interchange role between the core bus network and public transport for individuals or small groups – taxis and/or Demand Responsive Transport (DRT). The use of Micro Park and Ride sites as hubs for local DRT services is attractive: A basic level of interchange facility has already been provided for those using car, so does not require additional investment. Micro Park and Rides used in this way also allow users a choice of either DRT or their own transport for the local part of their journey. While DRT may still primarily have a social (transport of last resort) function, at least the longer distance aspects of the journeys will use a common service.

In spite of encouraging evidence from Ellon, Micro Park and Rides are a high-risk strategy: there is no guarantee that the concept would be successful elsewhere. While revenue risk is low (no additional services are envisaged), capital may be better invested in schemes where returns (policy or financial) could be estimated with greater certainty. However, Micro Park and Rides

offer the potential to deliver growth in a rural bus network, with real mode shift at the times of day when the highways into major towns and cities are closest to capacity.

6. Conclusions

Ellon demonstrates that Park and Ride can effectively be reduced in scale and still be cost-effective. It delivers genuine mode shift onto bus services by tapping into traditionally hard-to-serve rural and peri-urban local markets.

“Micro Park and Rides” provide a way of scaling conventional Park and Ride down, creating a local facility with more features than a bus stop, but less infrastructure than a conventional Park and Ride site. Sites would be served by existing bus services. Such schemes would allow a very focused, localised and individualised marketing approach, with emphasis on one core service from one local place to the most important destination. The current network/area-wide approach to marketing is largely irrelevant to people living in discrete rural areas with very limited regular bus services. Micro Park and Rides could also provide a key interchange between local socially orientated Demand Responsive Transport and the commercial bus network.

Micro Park and Rides are a high-risk strategy. There are several unknowns: How important is service frequency? How critical are the socio-demographic characteristics of the area? Can sufficient bus capacity be provided for peak-only travel? These risks tend to be short-run because of the capital-intensive nature of Micro Park and Rides – if there is no requirement for additional services, the additional long-run revenue implications are minimal.

Successful Micro Park and Ride could be revolutionary: the potential to deliver growth in a rural bus network, with real mode shift at the times of day when the highways into Aberdeen are closest to capacity.

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