

LOCATION, MOBILITY, AND ACCESS TO WORK: A QUALITATIVE EXPLORATION IN LOW-INCOME SETTLEMENTS

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ABSTRACT

Current research and policy debates are shining an intense spotlight on the links between spatial policy, housing (both in terms of type and location), public transport cost and supply patterns, and access to the labour market by the poor. In order to explore these links empirically a qualitative analysis is performed of settlement and mobility patterns observed in 32 low-income settlements across a range of urban and rural locations in Gauteng, Limpopo and Mpumalanga. Data is from in-depth household surveys, supplemented by GIS and transport supply data. Key factors defining the settlement-mobility-livelihoods relationship are regional accessibility (relative to large urban centres and secondary towns), local accessibility, and household characteristics. Of particular importance to regional employment access is the spatial envelope of job opportunities that can be reached with the existing public transport network, which explains the choice of many rural households to urbanise in order to maximise their chances of gaining a foothold in the economy. Within-settlement characteristics such as walking distances to public transport, the age and maturity of settlements, and internal road conditions are also key to mobility. We describe a classification system using these three dimensions, to help identify areas with similar access opportunities and constraints, and to help spatial and transport planners to fashion particular strategies for improving livelihoods in particular areas.

1. INTRODUCTION AND BACKGROUND

Current research and policy debates are shining an intense spotlight on the links between spatial policy, housing (both in terms of type and location), public transport, and access to the labour market by the poor. State housing programmes are fundamental to the national poverty relief project: houses are intended to provide households with an asset cushion to establish savings, keep their children in school

and weather economic shocks – thereby helping poor households pull themselves out of poverty and into full economic participation (Hirsch, 2006). Yet housing delivery practices have been criticised for perpetuating social exclusion by locating subsidised housing in peripheral locations (e.g. Behrens & Wilkinson, 2003; Lall et al. 2008; Cross, 2008). Transport and mobility are key to this argument. Some recent qualitative research has started to examine the transport problems of marginalised people in more detail, seeking to link social exclusion with location and settlement characteristics more explicitly (e.g. Dimitrov, 2010; Lucas, 2010). There appears to be an emerging awareness that transport is central to the character of settlements insofar as their ability to promote sustainable livelihoods is concerned.

This research aims to contribute to this awareness by offering an in-depth look at the relationships between the mobility and access opportunities provided by settlements with various characteristics, and the livelihoods of residents in such settlements. Livelihoods are reflected by travel, employment, activity participation, and satisfaction variables. Given the wide variation in settlement characteristics, it is hypothesised that a typology can be derived that can assist in the classification of low-income settlements according to their mobility and access characteristics. The hypothesis is essentially that *each settlement type has its own characteristic mobility/access profile, which uniquely determines the transport needs, constraints, and opportunities for intervention* that are necessary to reduce exclusion-related poverty. Such a typology might help in fashioning better targeted intervention strategies spanning both housing and transport sectors at the individual settlement level.

The aim of the paper is to explore this hypothesis using empirical qualitative data from 32 low-income settlements in South Africa. The suggested typology is presented together with some thoughts on the direction in which appropriate access-enhancing strategies might lie. Further work to unpack and validate these strategies is currently ongoing and not reported here.

The research forms a part of the Integrated Planning, Development and Modelling (IPDM) project undertaken jointly by the CSIR and the HSRC, and funded by the Department of Science and Technology. During initial phases of the project a settlement typology was developed to characterise the relationships between housing, migration, and demographics (HSRC, 2008). This paper extends the previous work by adding an access/mobility dimension to the analysis.

2. METHODOLOGY

The analysis is based on two parallel sets of data, namely:

- mixed-mode household surveys conducted in a sample of low-income settlements, and
- researcher-collected data on the infrastructure, spatial characteristics, land uses, and transport services within and around each sampled settlement.

The household surveys consisted of 310 face-to-face in-depth interviews conducted across 32 different settlements in Gauteng, Mpumalanga and Limpopo provinces during October and November 2009 (see Figure 1). The settlements were purposively selected to cover a variety of settlement types and locations, ranging from the urban periphery to isolated rural localities; and with housing stock ranging from informal shack settlements to formal self-built and RDP-type housing. An upper bound to the typical household incomes in an area of around R3 500 per month was specified. The interviews collected demographic, housing, migration history, employment, and travel data at the household level, as well as open-ended responses regarding perceptions of the transport environment, supported by the drawing of cognitive maps to establish a graphic depiction of areas of inclusion and exclusion within the spatial environment.

We take an inductive approach, letting the data suggest features of an access/mobility typology. Other typologies have been developed before to capture the variation in spatial and accessibility characteristics across settlements in South Africa. Examples include the CSIR’s rural typology (Mhlongo et al. 1999) and the National Spatial Development Perspective’s spatial profiles. The typology proposed here extends this work by considering local access patterns – including public transport and road quality factors – at a more detailed level.

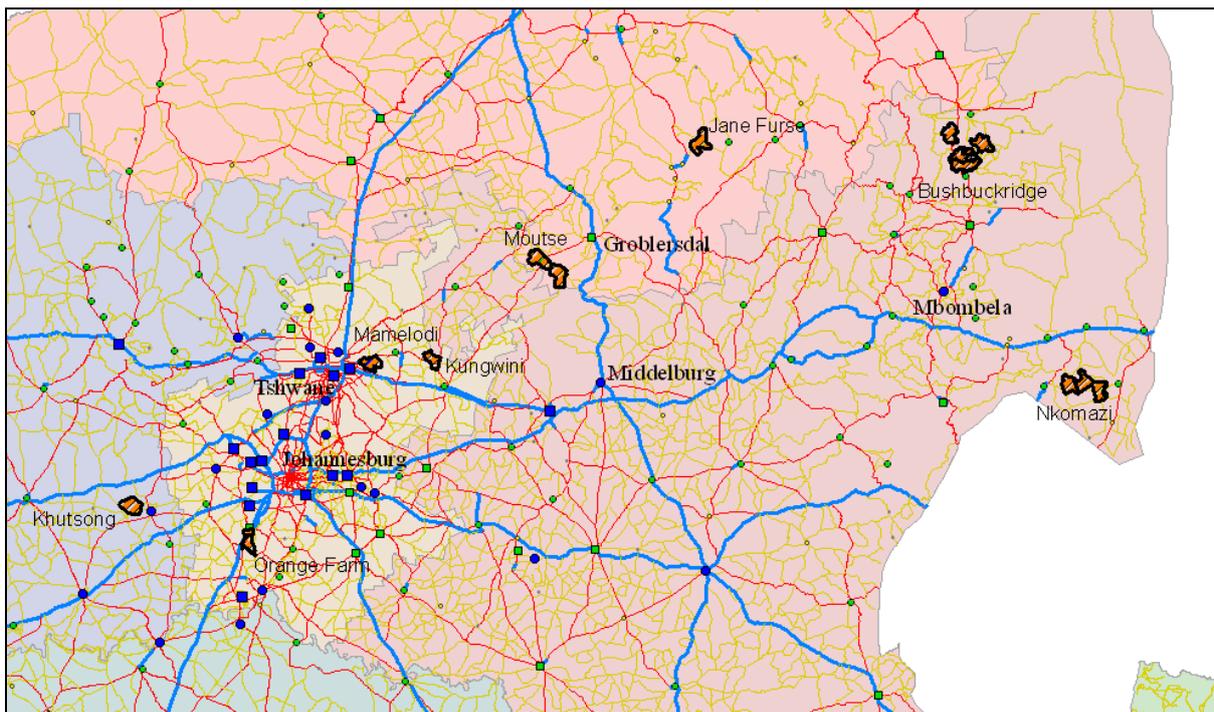


Figure 1: Case study areas

3. PRELIMINARY FINDINGS: FACTORS AFFECTING SETTLEMENT MOBILITY AND ACCESS

Table 1 summarises some key characteristics of each sampled settlement, and key findings from the surveys and mapping exercises. From the data two key insights

emerge. Firstly, the lived-experience accessibility affecting respondents' lives is determined by both macro and micro level accessibility factors. Macro-level factors refer to a settlement's location relative to large metropolitan or urban centres as suppliers of job and other opportunities. Micro-level factors refer to the quality of the within-settlement travel environment and accessibility to opportunities within the settlement (or within walking distance). Macro and micro-level factors are not necessarily correlated – a simple dichotomy equating urban settlements with high access and rural areas with low levels of access is unsatisfactory.

Secondly, accessibility is not spatially deterministic: the extent to which opportunities for access and mobility can be utilised varies from person to person or from household to household, depending on demographic (e.g. income, gender, and disability status), asset (e.g. car ownership) and personal motivation factors. This suggests that a micro-macro typology needs to be overlaid by a third dimension related to household characteristics to adequately explain variations in observed mobility patterns.

3.1 Factors affecting macro-level accessibility

Macro-level accessibility is primarily driven by proximity to large urban conurbations. Several reasons account for this. The first is purely geographic: urban areas by their nature have a **higher density of work and other opportunities**; location in proximity to cities provides better access to a larger number of opportunities within a specified travel time or distance. In fact, data on migration patterns suggest that CBDs tend to function as “beacon destinations” – as a “first stop” for new migrants who might be more familiar with job prospects in CBDs than elsewhere. Later, once they have settled and made local contacts, the job search might expand to other areas of the city where opportunities are less concentrated. Low-income urban households in the sample seemed to exploit this large pool of accessible locations in order to maximise earnings or employment; households in Mamelodi, for instance, accessed jobs across a wide area of Gauteng, including places as distant as Centurion (40km away) and Sandton (80km away). Furthermore, urban jobs are located not just in traditional employment nodes such as CBDs or old industrial areas, but also in suburban areas and lower-density secondary nodes. This suggests that it is not only proximity to the CBD that is of value, but also proximity to non-traditional employment areas in cities.

The second reason for the urban advantage is that cities tend to provide **generally better transport** services, including a larger range of public transport modes (including taxi, bus, and rail). The greater diversity of modes provides differentiated access to various types of locations at various service and price levels, making it more likely that a job-commute combination will be found that meets a person's needs (as compared to rural areas). While rail lines serve traditional CBDs and industrial employment areas, bus networks often include both traditional areas and some suburbs. Taxis excel at providing access to jobs in areas outside traditional nodes served by formal fixed-route bus and rail services. In fact, minibus taxis play a major role in providing access and mobility to low-income travellers: they are present in all the case study areas, and used extensively for work, social and (occasionally) education travel.

Public transport service patterns also help to **stretch the influence area** of the urban economy beyond the mere borders of the metropolitan area. For instance, some residents in Ekangala near Bronkhorstspuit, located 70km from the Pretoria CBD and in the adjacent rural district, reported travelling by bus to work locations as far away as the East Rand.

In terms of mobility consumption, some **very long travel times** were observed across metro peripheral, secondary town and rural areas: these included travel times of up to three hours one-way from Ekangala to the East Rand, and two hours one-way from rural Mamone to Groblersdal. In most cases these very long trips are undertaken by medium-income workers: their incomes are high enough that the cost of a long commute can be carried (in terms of time and money), but not high enough to afford access to a car with which to reduce their commute times. This income-travel time relationship is also consistent with location theory that predicts that households with lower incomes would prefer to locate in closer proximity to jobs than would higher-income households (e.g. World Bank 2002; Turner cited in Gilbert & Gugler 1992:119).

Notwithstanding the fact that work opportunities are in many cases accessed across a wide range of locations, we observed a weak trend of travel times to work decreasing in settlements where **jobs are located nearby** (and reachable on foot or by taxi). For instance, some workers in Ekangala walk to work in the nearby Ekandustria industrial estate, or travel by taxi to Bronkhorstspuit within 45 minutes. In Jane Furse local jobs are accessed with a 10 minute walk. It thus appears that co-location of pools of labour-seeking households and low-wage job opportunities does seem to benefit people in many cases, suggesting that efforts to develop labour intensive industries near low-income communities should pay off. A further implication is that housing location close to or within the metropole does not necessarily reduce the commuter's travel burden; the urban advantage is rather that of gaining access to a greater set of opportunities that can be exploited within available time and money budgets.

Worst off in terms of regional access appears to be settlements that are **far away from secondary towns**, especially if social services and shopping facilities are not available within walking distance. Examples include Marapong (30km from Groblersdal), Ga-Moretsele in Jane Furse (150km from Groblersdal) and Craighburn B (60km from Bushbuckridge). Evidence of an untenable location includes high levels of dissatisfaction observed with the availability of public transport in these locations, and perhaps low job participation (although this could not be verified in this small sample). In these more isolated locations public transport supply becomes very critical as a means of accessing jobs, services and goods, as walking is often infeasible. The interviewers observed that in many cases residents prefer better access to regional facilities (located in secondary towns or government service centres) to improved local access within the settlement.

However it would be wrong to equate isolated locations with universally problematic access/mobility environments. Rural isolation is in some cases off-set by specific **access-enhancing interventions**, including the provision of some facilities within walking distance. A notable example is the role played by the service centre in Jane Furse, which provides access to shops, government services and some jobs; most

residents in Jane Furse are not unhappy with the level of transport access on offer despite being located 150km from the nearest town. Another effective rural access-enhancing intervention seems to be the provision of subsidised bus services, such as in the Nkomazi area where buses are widely used to travel to more distant economic and service nodes.

Given the importance of public transport in providing regional accessibility and the widespread perception among respondents that it is not priced at affordable levels (Table 1), we examined **taxi fares** in urban and rural areas. In Figure 2 one-way fares are plotted against travel distance for all settlements in the sample. There is a clear relationship between distance and fare, as would be expected: fares rise as trips become longer. There is also a rather wide variation in fares asked for a specific distance – a trip of say 40km can cost a commuter between R10 and R35, depending on where the trip takes place (and perhaps other factors). For the same distance, fares tend to be higher in rural than in urban areas, possibly reflecting differences in the thickness of the market (thinner rural markets reduce profitability and raise fares), the extent of local competition (probably less in rural areas), and road conditions (worse on rural roads). The implication is that rural people are doubly penalised: firstly public transport is less available than elsewhere, thus contributing (to a variable extent) to isolation, joblessness, and lower incomes; secondly, the transport that there is costs them more.

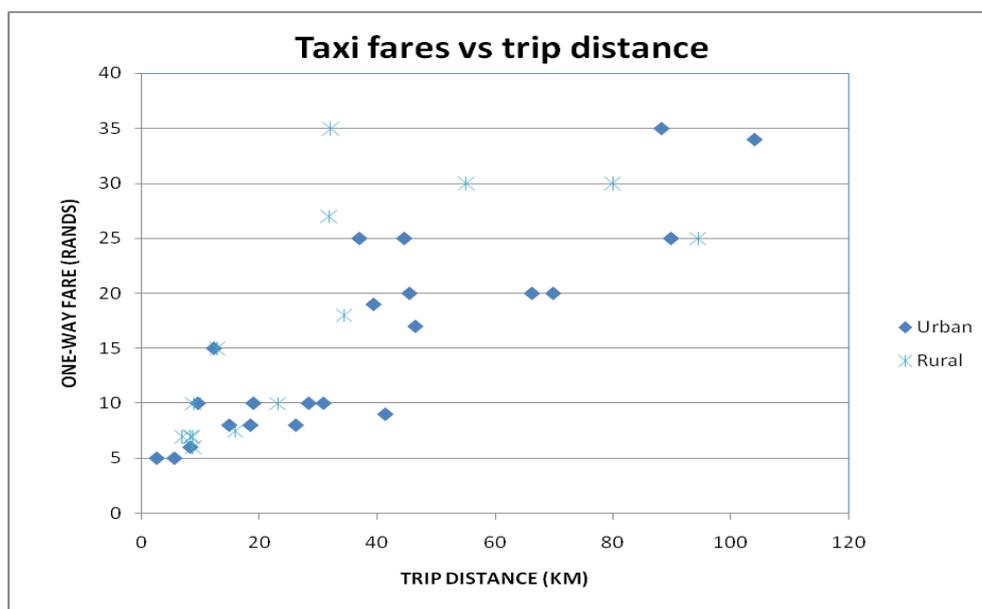


Figure 2: Taxi fares versus distance for minibus-taxi trips in sample

3.2 Factors affecting micro (or within-settlement) accessibility

Three critical factors seem to determine local access/mobility. The first is the **availability of services, schools, and work opportunities within the settlement itself**: where these are locally available (i.e. within walking distance from most

homes), many trips are made on foot and local accessibility is high. Public transport is rarely used for travelling inside a settlement only. However, as low-income residential areas in South Africa have historically not been planned or developed as mixed-use areas, the supply of formal services and opportunities within settlements is relatively rare. In fact, the interviewers reported that most residents in the sample do not see their settlement as a *destination* for travel, apart from some local socialisation trips.

As a counterpoint, in settlements with relatively well-provided street infrastructure laid out around a strong central core, with short walking distances to all surrounding areas, both commercial development (albeit low-intensity) and taxi services seem to be attracted to the centre in a mutually reinforcing relationship. A good example of the advantages of good settlement lay-out is Rethabiseng, with its combination of concentric street patterns located around a central semi-commercial core and well-used taxi rank. Access times to taxis were reported at less than 10 minutes by all respondents in the sample. Highly accessible settlements with strong internal accessibility also tend to be older; they have had more time for a local economy to develop, for residents to accumulate some wealth, and for government services such as clinics, schools, and paved roads to be provided. By contrast, settlements consisting exclusively of RDP housing or new shack dwellings typically have no internal facilities, with accordingly low levels of access to services and transport. This seems to apply across urban and rural locations in the sample (for instance in RDP settlements in both rural Jane Furse and in peri-urban Mamelodi Extension 18).

The second important factor affecting local access/mobility is the **pattern of public transport provision within the area**. Here it should be noted that no settlements in the sample can be said to be completely stranded or isolated – all are served by private taxi operators, if not bus and rail services. Where rail exists (in metropolitan areas), local access to the service is often problematic, as rail stations tend not to be located centrally in the settlement but along its edge. This lengthens walking distances (e.g. it takes 45 minutes to walk from Alaska informal settlement to the nearest train station, and 30 minutes in Orange Farm), increases vulnerability to crime during the walk trip (especially at night), and increases overall travel times considerably. Although feeder taxi services to/from stations or interchanges are often offered within settlements, most low-income respondents indicated that payment of an additional fare for a feeder trip is unaffordable.

A third important factor is the **presence of paved roads** within and adjacent to the settlement. The majority of settlements in the sample have no paved roads. This reduces the convenience of walking (especially in the rainy season when some residents complain specifically about muddy conditions); and, perhaps more importantly, directly affects the provision of public transport services inside the settlement. It was observed that taxi (almost always) and bus services (as a rule, but with a few exceptions in some deep rural locations) keep to paved roads, for reasons most likely related to the higher operating cost and the lower speeds incurred when operating on gravel roads. Where paved roads enter the settlement, taxi operators are much more likely to serve residents directly, reducing walking distances for taxi users and increasing their access to outside locations. Lusaka (Mamelodi Extension 22) is a case in point: this formalised informal settlement has paved roads and taxi routes inside the settlement, which brings down typical work

travel times from 45 minutes (for adjacent areas not directly served by taxis) to 20 minutes simply by decreasing walk times to the taxi.

Where settlements are either too small or too sparse to attract good taxi services, the **size and density of nearby settlements** becomes important to accessibility. Shack settlements appear to benefit especially from being located near more formal, well-serviced settlements, without incurring the higher household costs associated with owning or living in formal dwellings. Examples include Joe Slovo informal settlement in Khutsong and Alaska in Mamelodi.

3.3 Household factors affecting mobility and access

Household characteristics are correlated with settlement accessibility and mobility through two important mechanisms. Firstly, households with similar incomes and lengths of tenure tend to settle in areas with similar access/mobility properties. The data clearly show that **higher income households** tend to live in more settled areas with more well-developed street and activity spaces, and therefore tend to enjoy the benefits of higher local access as described above. **Length of tenure** is also important as a determinant of the size of the space economy that is likely to be accessible to a job seeker: the longer people live in area, the more information they are likely to have about job opportunities, and the more widely their travel envelopes are spread out (if we think of the envelope as the extent of space that is visited in daily travel, in the aggregate). Thus there seems to be a difference between mobility patterns across particular settlements depending both on how old the settlement is, and on when the migrants in question arrived there.

Secondly, the particulars of travel demand are correlated with household characteristics such as income and gender. As expected (Venter et al. 2007; Sohail et al. 2003) there is a correlation between **income and mode use**: households with a higher income seem to use the **private car** more frequently, although typically as paying passengers rather than owner-drivers, as car ownership remains generally low among the sampled populations. The car is used to gain faster access to job destinations that are somewhat more distant (e.g. from Ekangala to KwaMhlanga (35 km one-way) and to Pretoria (45 km one-way)).

The car mode thus seems to allow those with a higher value of time to access jobs with higher pay rates. In almost all rural settlements occasional car use was also reported as a means of travelling to local towns for shopping and medical treatment. In these cases the car probably serves as either an “in-fill” mode that is used opportunistically when available, or as an emergency mode on the rare occasion when transport is urgently needed but no taxis or buses are running. In either case, the car is perhaps a more significant mode than typically thought. Its role in reducing vulnerability and improving livelihoods might bear further scrutiny.

Is there a correlation between walking as a mode and income? In all settlements **walking** is used extensively, especially for spaza shopping and educational trips. There is no noticeable evidence that walking is used less by higher income households. It is possible, though, that low-income residents' *satisfaction* with the extent of walking they undertake might vary according to their level of urbanisation. It has been argued that people's travel preferences and expectations are affected by the extent to which they associate with the values of modern, urban society – and

these values might include the desire to use motorised rather than walking as a mode of transport (HSRC, 2008). If such context-dependent values were present, one would expect to see more dissatisfaction with the adequacy of public transport the more urban or the younger a settlement is, consistent with people's higher expectations regarding mobility and service quality.

Lastly, **gender** can be an important mediating factor determining whether the access benefits of being located in a specific place can actually be realised. There are indications in this data that women and women-headed households are less able to benefit from urban locations (in terms of gaining access to the economy) than men, especially if women's households include children (Cross, 2009).

4. TOWARDS A TYPOLOGY OF SETTLEMENT MOBILITY AND ACCESS

The qualitative factors identified above suggest that a typology for settlement mobility and access can be constructed along three dimensions, as indicated in Table 2. Macro-level accessibility ranges from highly accessible locations near urban opportunities through urban periphery, rural town, and rural isolated locations. The differentiation between these categories is for now qualitative; more specific criteria are currently being developed for identifying each more precisely. The macro-types offer structurally different levels of access to the space economy, explaining the logic of urbanisation which remains a key feature of our demographic landscape. In terms of access-enhancing interventions, a first step would seem to be to strengthen the transport web linking these locations together, for instance by paying attention to the needs of regional transport operators and rural taxi associations providing key basic mobility services.

The micro-level accessibility dimension differentiates between places with high and low local accessibility, regardless of their macro-level access. Criteria such as walkability, supply of local amenities, and proximity to public transport determine micro-level access.

Apart from better co-location of housing and social service facilities, key transport interventions to improve local accessibility might include:

- upgrading of access roads up to a standard where at least one paved feeder route extends all the way through the centre of the settlement (to encourage proximate taxi service);
- providing all-weather pedestrian links in strategic locations within settlements; and
- improving accessibility and safety for public transport users on major roads adjacent to settlements, for instance by formalising taxi stops and promoting community-oriented commercial development, even if it means reducing the mobility function (and ceiling speeds) of through roads at these locations.

The third dimension of household characteristics is for now defined in terms of high and low mobility expectations. This refers to the extent of mobility that is actually consumed, determined by factors such as income, car ownership, length of tenure,

and gender. Specific interventions would be targeted at households/individuals with specific characteristics, including poverty levels, gender, and migration status. From a policy perspective it is important to note that mobility-enhancing interventions should be both place-based and person-based in order to address the full extent of variation in needs across people.

Table 2: Proposed typology of settlement mobility and access

Dimension	Levels	Description
Macro-level accessibility	Urban core	Close to metro CBDs. High access to jobs and services by walking or public transport (PT).
	Urban periphery	Further from metro CBDs but within urban influence sphere. Access to large pools of jobs in metro area but with long travel distances. Generally good PT services offered.
	Rural town	Functionally linked to adjacent or nearby secondary town providing jobs and services. Reasonable access and mobility levels at reasonably low cost; opportunities for walking.
	Rural isolated	Long distances to towns and jobs, but frequently local access to farming, clinics, and some shops. Low mobility and restricted access to PT.
Local (micro) accessibility	High local access	Local amenities, shops, clinics available within walking distance. Good internal roads/paths. Taxi services within or on edge of settlement.
	Low local access	Few or no local amenities, shops, clinics. Poor internal roads mean taxis only available on edge or further away from settlement.
Household characteristics	High mobility expectations	Higher income households, frequent access to car (own or shared trip). Longer duration of tenure, more established social networks, leads to more mobile lifestyle and higher mobility expectations.
	Low mobility expectations	Lower income households in newer settlements, limited or no access to car. Newer migrants, limited mobility and lower mobility expectations. Vulnerable to price rises.

5. CONCLUSIONS

The qualitative exploration of linkages between settlement location and characteristics, transport, and mobility patterns in low-income settlements suggests that both macro-level factors (i.e. location relative to metropolitan or urban centres) and micro-level factors (i.e. the ease with which residents can move around inside their settlement and access local services) determine the level of access enjoyed by residents. Access levels were seen to vary on a fine scale – within a larger settlement, walking distances and public transport provision can vary significantly, thus providing very different experiences to residents regarding place-based exclusion from opportunities in the space economy. Within urban settlements it is often the newcomers, the workseekers, and shack dwellers who seem to be access-disadvantaged by being located on the periphery of existing settlements, and having restricted access to both information and physical opportunities.

In contrast, many residents of older settlements near secondary towns seem to enjoy relatively high levels of access to services and jobs, at a lower level of transport cost (in terms of time and money). The situation is also dynamic: in areas where local incomes and population densities are high enough, private developers have started putting up little shopping centres (often called “malls”) which markedly improve access to household supplies and even provide some jobs for local residents.

It is argued that by understanding these broad dimensions of access needs, spatial and transport planners may be better able to fashion interventions that address problems of exclusion, tailored to the specific needs and constraints of a locality.

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TABLE 1: Summary of main variables from qualitative survey (n=310 households)

PROVINCE	SAMPLED AREA (Province)	SETTLEMENT	AREA TYPE			MEDIAN HH INCOME			MAJOR WORK LOCATIONS ACCESSED (indicative only)	TYPICAL TRAVEL TIME TO WORK (indicative only)	LOCAL ROAD ACCESS				CLOSEST TAXI ACCESS			PUBLIC TRANSPORT ACCESS: AVG WALK TIME TO NEAREST...			PREDOMINANT TRANSPORT MODE USE					PERCEPTIONS OF TRANSPORT PROBLEMS				
			Metro peripheral	Sec. town	Rural modern	Rural traditional	Low (<R1000/mo)	Med (R1000-2500/mo)			High (>R2500/mo)	Unpaved/informal roads within settlement	Paved road(s) in other nearby settlmt	Paved road(s) adjacent to settlmt	Paved road(s) within settlmt	Inside settlement	On edge of settlement	Outside settlement	Taxi	Bus	Train	Taxi	Bus	Train	Walking	Private car	Peak PT availability	Off-peak PT availability	PT affordability	
Gauteng	Mamelodi (GP)	Extension 11					350	--	--	--									5	5	20						60		100	
		Alaska						1500	Pta East, Silverton, JHB	60-90 min									10	12	45						33		56	
		Lusaka (Ext 22)						2300	Pta East, CBD	30-60 min									5	8	30									70
	Khutsong (GP)	Extension 18						1500	Pta East, CBD	45-60 min									5	10	20									67
		Extension 2						5000	--	--									10	--	--						33		50	
		Khutsong South						2925	Khutsong local, Carlet'nv	10-30min									10	--	--						60		70	
		Old Khutsong						525	--	--									15	--	--									100
		Joe Slovo						1900	Carletonville	30min									25	--	--									86
		Orange Farm (GP)	Orange Farm Proper						1850	Or. Farm local, JHB South	10-60min									15	10	30								
	Orange Farm Ext 2							2350	Or. Farm local, JHB South	10-60min									10	10	15						33		67	
	Extension 4							2125	--	--									5	5	30									100
	Stretford Ext 9							2200	--	--									5	10	30									100
	Kungwini (GP)	Rethabiseng						1500	Ekaandustria	15min									5	5	--									50
		Enkangala Block D						3625	Ekaandustria, Bronkh, Kwam	15-45min									5	5	--									40
		Enkangala Block B						1500	Ekaandustria, Pta	15-45min									10	10	--						33		40	
Enkangala Block F							3100	Ekaandustria, East Rand	15-180min									15	15	--						33		67		
Limpopo and Mpumalanaga	Moutse (LP/MP)	Marapong						1125	Moutse, Groblersdal	15-60 min									10	10	--						67		75	
		Five Morgen/Dennilton						1650	Moutse	15 min									10	10	--						33		82	
		Elandsdoorn						3050	Moutse	15 min									10	10	--						67		33	
		OR Tambo						2300	Witbank, Moutse	15-60 min									10	10	--						50		88	
	Jane Furse (LP)	Mamone						750	Jane Furse, Groblersdal	20-120 min									10	10	--									55
		Ga-Moretsele						2200	--	--									20	20	--									
		Jane Furse RDP						1275	Jane Furse local	10min									5	30	--									75
	BushbuckRidge (LP)	Vergelegen B						2625	Jane Furse local	<10min									10	10	--									71
		Boikutso B						2200	Bushbuckridge	30 min									30	30	--									83
		Shatale RDP						925	Bushbuckridge	30 min									20	20	--									83
		Craigburn B						2200	--	--									35	20	--						73		91	
	Nkomazi (MP)	Thulamahashe A						3500	--	--									10	10	--						33		33	
		KaMhlotshwa						2550	KaMhlotshwa, Malelane	10-60min									5	5	--									91
		Langelooop						1100	KaMhlotshwa, White River	20-180min									5	5	--									88
		Mangweni						1825	Malelane	60min									15	15	--									90
		Mzinti					350	--	--									30	30	--									100	
								-- no observations										-- not available												