

Effects of mobility and location on food access

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Abstract

Access to healthy food has become an important area of investigation for researchers interested in health disparities and inequalities. The debate about the existence and characteristics of 'food deserts' has increased the interest in food availability and equity in health research. This debate is crucial to an understanding of the factors leading to food security. Research reported here used in-depth interviews with respondents without private transport living within and outside food deserts in Adelaide, South Australia. The respondents came from a variety of households, including single and double parent families, and people living alone. The research found that living in a food desert did not, by itself, impose food access difficulties. Far more important was the access to independent transport to shops. A number of features were identified in this research including reliance on supermarkets, difficulties with public transport, and the provision of government schemes and systems that for some made food shopping much easier. The research suggests that food access problems in Adelaide are not so much the product of geographic distance between home and shop, as the social or welfare networks that allow people to access private transport.

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Introduction

There is now extensive research into the relationship between socio-economic status (SES) and diet. In Australia, as elsewhere, people who are socio-economically disadvantaged are more likely than people from more advantaged backgrounds to experience food shortages (Carter and Taylor, 2007); are less likely to purchase foods recommended for good health, including foods lower in fat, salt and sugar, and high in fibre (Turrell, 1996); and generally consume fewer types of fruit and vegetables (Turrell et al., 2002). In an effort to explain these differences there has been a shift from a focus on individual and behavioural factors that influence food choice, to an examination of contextual, structural, or environmental

factors and the geographical distribution of affordable healthy food retail outlets—such as supermarkets, green-grocers, bakers and butchers—to explain SES differences. Such research suggests that foods which are beneficial to health may be more expensive, and more difficult to obtain in deprived areas compared with more affluent areas, and that this may help to explain the lower adherence to healthy eating guidelines consistently reported in less affluent areas (Turrell et al., 2002; Barratt, 1997).

A focus on access to (un)healthy foods has been informed by recent debates about so-called 'food deserts'. Food deserts are defined to be where 'cheap and varied food is only accessible to those who have private transport or are able to pay the costs of public transport if this is available ... access to a cheaper and wider range of food is most restricted for some of the groups who need it most' (Acheson, 1998, p. 65; cited in Wrigley, 2002). People who live in food deserts often have no option but to rely on smaller stores where prices are higher and the quality and variety of fresh food is more limited (Barratt, 1997; Clark et al., 2002; Wrigley, 2002).

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Dowler et al. (2001) were amongst the first to systematically document food deserts using descriptive mapping. In a case study of a UK town they found large networks of streets and estates without any shops selling fresh fruit and vegetables, and where any available fruit and vegetables were expensive.

Since then there have been many published accounts of food deserts. And while the prevalence of food deserts has become contentious (Cummins and Macintyre, 2002), interest in this area has spurred the development of ways to identify and measure geographic areas where access to healthy food is poor.

Most of these studies have taken a geographic approach (Turrell et al., 2002; Clark et al., 2002; Clifton, 2004; Morland et al., 2002; Rose and Richards, 2004; Riedpath et al., 2002; Winkler et al., 2005). Yet qualitative experiences of people are equally valuable to document. In particular, the difficulties imposed by distance from home to shops, especially for people without cars, provide an insight into the effects of location on access to food. Of particular interest is the coping strategies employed by vulnerable groups who may find access to shops difficult (Wilson et al., 2004).

To date, there has been little published information documenting people's experiences of food access. Whelan et al. (2002) and Wrigley et al. (2004) conducted focus groups with residents in Leeds, UK, before and after a large supermarket commenced trading in the area. This work provides a valuable insight into shopping and coping mechanisms in the face of poor food access and the habits of residents when the new supermarket started trading. However, no similar qualitative research of food access has been reported in Australia.

In this paper we report on in-depth interviews undertaken with a variety of participants to better understand the food shopping experiences of households who do not own a car. Cars play an essential role in the lives of Australian households (Hinde and Dixon, 2005). In Australia, as in the USA, car-reliance is high, with four out every five households owning at least one car (Dixon et al., 2007). Thus shopping precincts, suburbs, and even whole cities are developed with car ownership and car mobility in mind, and households with cars can often easily access healthy food (Burns and Inglis, 2007). However, car ownership is not universal in Australia, and according to the 2001 Census, about 10% of Australian households (about 700,000) do not have a car. In Adelaide, the figure is 46,700, or about 10.1% of total households. In environments where mass motorisation is regarded as the norm, inequity may exist for those without a car. The present study aimed to explore the extent to which the combination of not having a car and location of household impose inequalities to food access. The study was set within the context of food security, which includes the 'ready availability of nutritionally adequate, safe foods, and the assured ability to acquire them in socially acceptable ways' (Kendall and Kennedy, 1998). Food security therefore emphasises the importance of the relationship between health and place, when food access is considered.

Methodology

The present study was part of earlier research to identify areas of poor food access in Adelaide, South Australia (Fig. 1). The methodology and findings of the earlier research have been reported elsewhere (O'Dwyer and

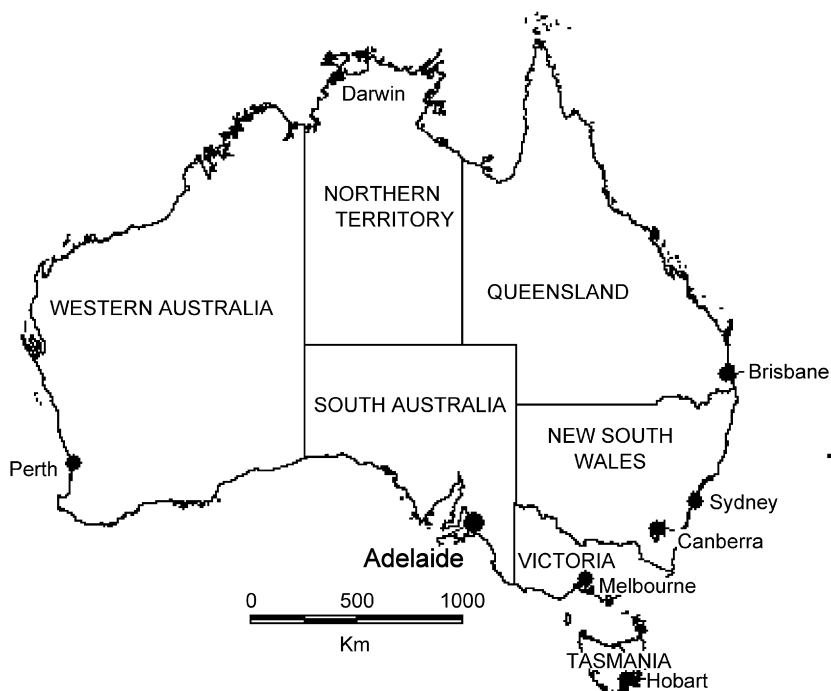


Fig. 1. Location of Adelaide and South Australia.

Coveney, 2006), but briefly we use a geographic information system to measure availability and accessibility of major chain supermarkets in four Adelaide Local Government Areas (LGA). The LGAs were selected because they represent the range of SES and geographic location in relation to the city centre (Fig. 2). Major chain supermarkets were chosen because they are more likely to be able to supply the range of foods core to a healthy diet (Tsang et al., 2007).

The location of supermarkets was analysed in relation to residential dwellings, car ownership and in terms of travel distance along the road network. Our definition of what is reasonable food access was based on the Australian experience of shopping: one where the centrality of cars is assumed in food provisioning. In our earlier study we classified residential dwellings as having ‘bad’ access to healthy food—‘food deserts’—if the census collector district (CD) in which they were located had a high proportion of households without a car at the 2001 Census and if the dwelling was more than 2.5 km from the nearest

supermarket. A ‘high’ proportion was defined as being in the top quartile of the distribution for all CDs in the Adelaide metropolitan area. The full accessibility classification is given in Table 1.

Table 2 estimates the number and percentage of households within specified LGA of Adelaide without a car and Table 3 shows the number of households without a car and living further than 2.5 km from the nearest supermarket.

Our earlier work mapped the location of food deserts in each LGA. But we were also interested in the coping and management strategies of people who had to manage food shopping without use of car and this paper reports on the experiences of people in this situation. In particular, we wanted to compare households that were located within a food desert with those living outside a food desert. In doing so, we wanted to examine the influence of distance from the shops and the imposition placed on households by not having a car.

Distance from shops has been shown to impact on the quality of foods eaten. For example, people who walk to food shops have been shown to have relatively poorer diets, which may be partly attributed to difficulties experienced in

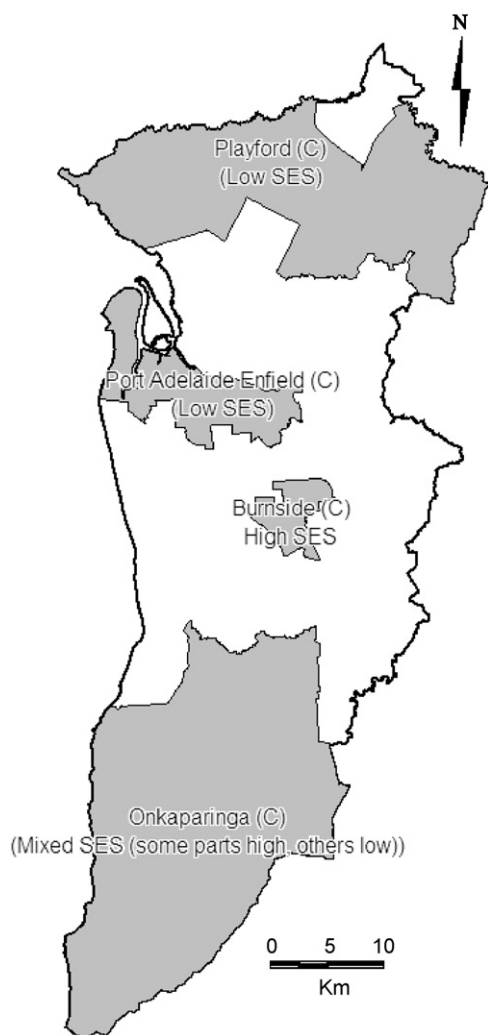


Fig. 2. Location of case study LGAs in Metropolitan Adelaide, South Australia.

Table 1
Accessibility classification

| Level of availability | Closest supermarket | Second closest supermarket |
|-----------------------|---------------------|----------------------------|
| 1. Excellent | Within 1 km | Within 1 km |
| 2. Good | Within 1 km | Within 2.5 km |
| 3. Average | Within 1 km | Further than 2.5 km |
| 4. Fair | Within 2.5 km | Within 2.5 km |
| 5. Poor | Within 2.5 km | Further than 2.5 km |
| 6. Bad (food desert) | Further than 2.5 km | Further than 2.5 km |

Table 2
Households with no car by Case Study LGA

| LGA | N households with no car | Total N households | % |
|-----------------------------|--------------------------|--------------------|------|
| Burnside (high income) | 1507 | 16,835 | 9.0 |
| Onkaparinga (mixed) | 3637 | 54,633 | 6.7 |
| Playford (low) | 3257 | 24,805 | 13.1 |
| Port Adelaide-Enfield (low) | 6692 | 41,972 | 15.9 |

Total households in Adelaide with no car, $N = 46,748$ (10.9%); total households in Australia with no car, $N = 708073$ (10.0%) (Australian Bureau of Statistics, 2001 Census).

Table 3
Number of households with no car and >2.5 km from nearest supermarket

| LGA | N dwellings/households |
|-----------------------|------------------------|
| Burnside | 0 |
| Onkaparinga | 1296 |
| Playford | 4605 |
| Port Adelaide-Enfield | 3407 |

carrying shopping home (Morland et al., 2002; White et al., 2003; Wrigley, 2002).

Sample

The sample was drawn from the LGAs used in our earlier study.

In each LGA, we selected a range of household types, including households comprising small or large families, single-parent families, people with disabilities and occupants over 65 years of age. With ethics approval from the Flinders University Social and Behavioural Research Ethics Committee, households meeting our criteria in each CD were invited to join the study. An information sheet containing a description of the study was provided, which included a request for a face-to-face interview with the person responsible for most of the food shopping in a venue of the respondents' choosing. Participating households were given a small remuneration to cover time given to the study.

Method

Since this was an exploratory study, we used a qualitative research approach. Qualitative research is used to examine hitherto unexplored areas, and it attempts to generate explanations rather than test hypotheses. Other qualitative research in this area used focus groups to document the experiences of food access (Wrigley et al., 2004). We chose to use in-depth interviews as a way of overcoming known problems in focus group discussion (Liamputtong and Ezzy, 2005). To assist the interviews a schedule was developed to address the following: which food shops participants used, how far away from home these were, how often participants shop, how they travel to shops, any social or family factors that made it difficult to access food shops, any neighbourhood factors that influenced food shopping, any help they required to assist with food shopping and where this came from, and participants' views on the availability and quality of food shops in the area.

Interviews using the schedule were conducted in participants' homes by one of a team of three interviewers during 2005. The interviews were audio-taped and transcribed. Each transcription was reviewed by two interviewers against the audiotape. As is standard practice in qualitative research, examination of the data started with the collection of the first interviews. Two interviewers met regularly to discuss the kinds of information arising from the interviews, possible additional questions or clarifications, and to put forward explanatory ideas accounting for the experiences of the respondents. In terms of analysis, each transcript was read several times, summarised and examined alongside other interviews to compare and contrast participants' food shopping experience.

Results

Sample

In all 16 households without cars were recruited for the study. Details of the participants are given in Table 4. Six households were in a food desert—defined according to criteria used in our earlier study, and discussed earlier. The respondents in the total sample came from a variety of socio-economic positions and family situations, ranging from single-member households, single-parent and two-parent households, with or without children of a variety of ages. Ten of the households had children living at home. The 16 respondents were from a various age groups ranging from early 20s to late 70s. The majority (11) of the respondents were female which is unsurprising given that we deliberately sought people who had the main responsibility for shopping, and that in Australia, as elsewhere, food shopping and cooking is largely a woman's role (Coveney, 2002; Charles and Kerr, 1988; DeVault, 1991). Three of the 16 households were homeowners or buyers, the rest were renting privately (5) or from housing trust (8). Three of the respondents were in paid employment (either part- or full-time). The rest were either on a disability, state or private pension. Of the 16 participants, four described their financial circumstances as 'living quite comfortably'. The rest described their current financial circumstances as either 'getting by' or 'finding it a bit difficult'.

Findings

This study set out to compare the experiences of households without a car and their location within and outside a food desert. It might be expected that living in a food desert would impose greater food access hardships. However, it became clear that living in a food desert *per se* was not in itself a major misfortune. Far more influential was the degree to which car-less households were able to make alternative travel arrangements to assist with food shopping. As we discuss later, some households were able to take advantage of various forms of social support that overcame the 'tyranny of distance'. The provision of social support was determined by a number of formal and informal arrangements.

In the next sections we summarise the experiences of the 16 households in relation to modes of travel to shops, types of shops used and frequency of shopping. We then go on to discuss our interpretations of the data in relation to various characteristics that we identified in the sample.

Modes of travel to shops

The most common form of transport to food shops was walking. Respondents saw walking as something that had to be endured, 'You have to get into a routine', said one. Walking was sometimes made problematic by the poor

Table 4
Details of study participants

| | Living in FD? | Suburb | Age | Disabled | Children | No. of children | Partner living in house | Level of education | Country born | Relationship status | Currently working? | Work status | Managing financially | Own/rent | Income/week (AUD) |
|---------|---------------|----------|-----|----------|----------|-----------------|-------------------------|--------------------|--------------|---------------------|--------------------|-------------|----------------------------|--------------|-------------------|
| AB (m) | Yes | Playford | na | No | Yes | 1 | Yes | Year 9 | Australia | Separated | No | | Getting by | Rent-private | 200 |
| KV (f) | Yes | Playford | 54 | Yes | No | | No | Year 12 | Australia | Married | No | | Getting by | Own | 250 |
| DL (f) | Yes | Onka | 73 | Yes | No | | No | Year 7 | Australia | Divorced | No | | Getting by | Rent-public | 240 |
| WB (m) | Yes | PtA-Enf | 83 | No | No | | No | Year 10 | Australia | Widowed | No | | Living quite comfortably | Own | 200 |
| CL (f) | Yes | Playford | 29 | No | Yes | 2 | No | Year 9 | Australia | Single | No | | Getting by | Rent-public | 425 |
| MC (f) | Yes | Playford | 35 | yes | Yes | 1 | No | Year 10 | Australia | Single | No | | Finding it quite difficult | Rent-private | 381 |
| VD (f) | No | Playford | na | No | Yes | 3 | No | Year 11 | Australia | Divorced | No | | Getting by | Rent-public | 350 |
| NW (f) | No | Playford | na | No | Yes | 4 | Yes | Year 9 | Australia | Single | Yes | Full-time | Getting by | Rent-private | 550 |
| KH (f) | No | Burnside | 82 | No | No | | No | Year 8 | Australia | Single | No | | Living quite comfortably | Rent-public | 190 |
| KW (f) | No | PtA-Enf | 39 | No | Yes | 2 | Yes | Year 10 | Australia | De-facto | No | | na | Rent-public | 634 |
| J S (f) | No | PtA-Enf | na | No | Yes | 6 | Yes | Year 9 | Australia | De-facto | No | | Living quite comfortably | Rent-public | na |
| J J (f) | No | Onka | 27 | No | Yes | 1 | Yes | Certificate | Australia | De-facto | No | | Getting by | Rent-private | 650 |
| JB (m) | No | Burnside | 61 | No | No | | No | Year 12 | UK | Divorced | No | | Living quite comfortably | Rent-private | 550 |
| GG (f) | No | PtA-Enf | 39 | No | Yes | 1 | No | Year 9 | Australia | Single | Yes | Part-time | Getting by | Rent-public | 250 |
| DA (m) | No | Onka | na | No | Yes | | Yes | Secondary | UK | Married | Yes | Full-time | Finding it quite difficult | Rent-public | 200 |
| AM (m) | No | Playford | 44 | Yes | No | | No | Diploma | Australia | Separated | No | | Getting by | Own | na |

state of the footpath and mentioned was made of the lack of sealed pedestrian paths on some stretches of the journey.

- I² And how is the walk. Is there footpaths and things for the pram, or (...)
- NW To a certain way and then some of the footpaths are all just upended because of the moving and that and then when you walk around from the Council side. Being near the Council you would think they would lay down a footpath track, but it's all dirt with roots coming up everywhere and so it's lift the pram or dodge them and that gets a bit much after a while.
(NW female, Playford, no food desert)

Getting across main roads with no pedestrian crossings was also mentioned as problem.

- I And when you walk to the shops, what's it like, the condition of the walk there. Is it safe? Have you got footpaths, is there a crossing?
- GG Yes, we've got footpaths and the road's very difficult to get across unless you are willing to walk down—right down to Gepps Cross and then walk all the way back up. Yes, so I mean at times it's quite difficult to get across the road during peak times
(GG female, Pt Adelaide-Enfield, no food desert)

The danger of roads was a concern for respondent DA.

- DA To the IGA [supermarket] there's one road which is minimal use. To Honeypot you've got to cross Honeypot Road and I wouldn't want a kid walk across Honeypot Road by themselves, because that's a very well used road and it's still got a 60 speed limit on it.
- I Right.
- DA And the cars actually come down the hill a bit faster than 60.
(DA male, Onkaparinga, no food desert)

Other forms of transport for food shopping included:

- Neighbours' or family members' car
- Volunteer transport organised by local council
- Volunteer support transport (a paid community worker who visits disabled people and assists with household chores, including shopping)
- Domiciliary care worker
- Mother carers (a support system for women with high-risk pregnancy)
- Access Taxi system (a voucher system whereby half taxi fare is refunded)

Other family members sometimes helped with food shopping on a regular basis, often using the shopping trip for things other than food. Transport with friends or neighbours, however, was less likely, often because of limited opportunity or feeling the need for self-reliance and independence.

- I All right, so now you go to the Coles [supermarket] about twice a week.
- NW Yes.
- I With your mum. Your mum picks you up and takes you there. Anybody else. Can you get a lift with anybody else?
- NW No, usually everyone else is busy.
(NW, female, Playford, no food desert)
- I Do you ever share your shopping trips with any of your neighbours.
- WB No.
- I No.
- WB No, they've all got cars.
- I Oh. So nobody knocks on the door and says, 'Do you need anything down the shops.'
- WB No. I wouldn't rely on them anyway.
- I You wouldn't.
- WB I don't like that, no.
- I That's not your ... going to ...
- WB I don't like being dependent on other people.
(WB, male Pt Adelaide-Enfield, food desert)

A few respondents used public transport to get to the food shops, with various levels of satisfaction. Two households were close to the bus stop and respondents were familiar with timetables so that they only had to wait a short time for buses. Evening and weekend travel proved difficult, however, with some buses running less frequently. Other respondents were unhappy with public transport reliability and frequency. There were also problems with the lack of bus shelters and seats.

- MC It's pretty easy to catch a bus if you want to, but it's a real pain in the butt because bus stops around here don't have seats. You know, the seated sheltered area, so you've got to stand up, so I'd much prefer to go by cab, but I don't like spending the prices that it costs me in cab. Do you I know what I mean. To get a cab from here to Munno Para and then back is close to \$20.
(MC female, Playford, no food desert)

Some respondents talked about the problem of hauling full shopping bags on and off buses. One family did their weekly shopping by bus over 2 days in order to manage the load. The advent of the 'green' shopping bags was seen by one respondent as a real boon, because plastic bags often rip as you carry them home.

²I = Interviewer; NW = Participant initials used for reporting purposes.

Respondents sometimes took the bus or walked to supermarkets but returned home in a taxi in order to manage heavy shopping loads. Sometimes this was with the aid of the Access Taxi scheme, a government voucher system which allowed passengers with specific pension or medical conditions a 50% reduction on fares.

- WB But I get a subsidy for going in a taxi.
 I Oh, you do. What you get—that's on top of your pension or something, is it.
 WB Yes.
 I Okay. That's interesting. So, can I just ask you about that. Do they give you a taxi voucher or something.
 WB You get a pad like a chequebook.
 I Oh, right.
 WB And every time you go, you give one to the driver and he gives you so much money back.
 I Okay.
 WB It costs you half what it would be normally. It only costs you half.
 (WB male, Pt Adelaide-Enfield, food desert)

Home delivery services offered by some supermarkets were mentioned by some respondents. The costs of home delivery appeared to vary considerably. For some participants it was just as cheap to get a taxi.

- I Do any of them [supermarkets] do delivery?
 GG Yes, they do.
 I Okay.
 GG Yes.
 I How much do they charge for that.
 GG About \$6.
 I Okay.
 GG That's why it's cheaper for me to get a taxi home because it costs around the same.
 (GG female, Pt Adelaide-Enfield, no food desert)

Community buses were rarely mentioned as a form of transport, perhaps because of lack of reliability.

- KW Oh there is a community bus, but you never know when the community bus is going to be running.
 (KW female, Playford, no food desert)

Kinds of shops used

Every household made regular use of a large supermarket sited in a shopping centre even though these were often a considerable distance from home. Respondents were often very specific about which supermarket was chosen and why, mainly for reasons of convenience and location, although price was sometimes a factor. Butchers and fruit and vegetable shops in shopping centres were sometimes mentioned.

Many participants had smaller, local, smaller (IGA) supermarkets close by. For some participants, especially those who lived in a food desert, these smaller supermarkets played an important role in food provision.

- Interviewer (I) So how often would you go to that IGA.
 CL Umm nearly all the time.
 I Okay, is that every day, or...
 CL Oh,
 CL's friend in attendance Sometimes you have been like every day.
 CL Yes.
 (CL female, Playford, food desert)

Others used the smaller supermarkets on an irregular basis, often to top-up between 'large shops'. 'Delis' (corner stores) were also used by some but much less regularly. One family used a petrol station for easily available food. The higher cost of food from small shops and delis was well known, but convenience was an important factor justifying use.

Other food sources mentioned by respondents were a food co-op (Playford) and a community shop (Pt Adelaide-Enfield) which were well-regarded and considered good quality and cheap.

- KW The Enfield Community Centre is really cheap.
 I Oh okay.
 KW Really, really cheap.
 I Right.
 KW So, like you might spend say a hundred and fifty up at the normal shops. It will cost you \$70 down there.
 (KW female, Pt Adelaide-Enfield, no food desert)
 AM Okay. Bi Lo [supermarket] has pretty much everything I tend to want. There is another place I need to mention to you that my support worker can take me to. It's a food co-op.
 I Oh, right.
 AM Which is part—it's not run by, but it's funded by the Playford Council and it's food co-op which is on Hamblyn Road and they sell a wide range of basic food products, basic stuff though, but at a quite reduced price. For example my support worker was here on Monday and I bought four shopping bags full of gear for forty odd bucks, which is very good.
 (AM male, Playford, no food desert)

The overall use of takeaway foods in this group was unremarkable, with many respondents saying they did not use takeaways regularly, due either to financial constraints or a dislike of 'junk food'. Occasionally however fast food

was a regular part of family life, especially for families with children.

GG Sometimes we will go there [fast food restaurant] and stay there and sometimes we will just grab it and bring it home. Last night my next door neighbour's daughter and my daughter, they walked up there and brought it back here from Hungry Jacks.
(GG female, Pt Adelaide-Enfield, no food desert)

Frequency of shopping

This varied considerably. Some households shopped daily. Others shopped twice per week, some once a week and two respondents shopped fortnightly. The help or assistance available from friends, relatives or paid support often dictated shopping frequency. For those without assistance, shopping frequency was determined by a routine that ensured food was bought regularly.

Social or family factors that influenced shopping

The main factor mentioned that influenced shopping was lack of a family car. This was considered by most to be a major impediment. Having small children in tow also influenced shopping habits.

- I Are there any things about you or your family situation that make it difficult to get down to the shop, besides not having a car, buses [etc].
- CL Yes. But if people have got too many kids, well that's hard for them.
- I Yes. But when your kids were little, littler, you would have had to take them to the shops.
- CL Yes. That's bad.
(CL, female, Playford, food desert)
- I No, do you try to go [shopping] when they are at school.
- JS Yes, because there's too many temper tantrums if they can't have what they like.
(JS, female, Pt Adelaide-Enfield, no food desert)

But for some families, taking the children shopping was a necessity, and was made even more difficult when travelling on foot.

In summary, participants from households without a private car used a range of strategies to access food shops. Some participants resorted to their own devices; however, assistance and facilities were available to some who had been identified by local social or medical authorities. These services were crucial in determining the mobility and the accessibility of food shops for participants. Also important was the type of suburb in which households were located. Older suburbs being more friendly to the car-less,

compared to newer estate-type suburbs built on the urban fringe. These factors are discussed in detail later.

Reasons for not having a car and the impact on food shopping

In terms of not having a car, our participants can be separated into two groups: those who did not have a car because of disability, old age or infirmity, and those who were car-less because of financial reasons. Participants who were disabled or elderly—many of whom were single-member households—were generally provided with support to assist food shopping. This came in the form of a home support person, volunteer services, or access to a taxi voucher scheme. Those without cars because of financial difficulties, however, were generally worse off, regardless of distance from home and shops. They did not receive any benefits or assistance to help with food shopping. Many of these were families on low incomes. The contrast between these two groups is discussed further later.

Inner and outer suburbs

There appeared to be a marked difference between those respondents who lived in more established suburbs, which tended to be closer to the city e.g., Burnside LGA and Pt Adelaide-Enfield LGA (five participants), and those who lived in the outer, more estate-type suburbs of Playford LGA in the north, and Onkaparinga LGA in the south (see Fig. 2). In particular, the two participants from Burnside LGA were especially well provisioned, and, as one-member households, enjoyed a particular degree of flexibility and choice in food shopping. Both regarded the lack of a car as an asset because of excellent public transport facilities, local supply of shops stocking good quality provisions and competitive prices.

- I Have you got any other comments about shopping for food in this area.
- JB Not really. I would say you know, it tends to be good quality because of the nature of the area.
- I Yes.
- JB You know, people expect high quality produce here.
- I Yes, is it priced accordingly.
- JB No, I don't think. I think it's still competitive with the other—I don't think so.
(JB male, Burnside, no food desert)

The other Burnside participant shopped daily for food and other goods, using her shopping trip as an opportunity to socialise and exercise. However, Burnside had even more to offer. It is on a major bus route servicing the inner perimeter of suburban Adelaide. Moreover, the Burnside Council provides lunches for older citizens which is another opportunity to socialise.

- KH And you can buy meals at practically round about all over the place. Some are cheaper than others and

that's up to you, then you look at the price before you go in sort of thing and they've got a menu in the window and then sometimes I go to Burnside Civic Centre, you know, the Town Hall or whatever they call it over there, and they have lunches, cooked type lunches and they send—I'm going to a Christmas Party next month there too. They send a little bus around and it picks us up and takes us over there and then we have a meal and then they bring you back and—

I Is that a lunch.

KH Yes, a hot lunch.

In comparison to Burnside, residents from the outer suburbs had very different experiences. Supermarkets were part of large shopping centres designed and built with car users in mind. Bus services from the suburbs were infrequent, with a 30 min service being the norm. A lack of bus shelters and seating arrangements meant that the wait was often uncomfortable. While walking to the shops was an option, this often entailed negotiating unfriendly footpaths and busy roads with limited pedestrian crossing facilities.

Shopping for self vs. shopping for family

The participants in this study can be grouped into single member or family households. Within each group certain characteristics can be identified—for example, significant a number of the single-member household occupants were disabled. While a disability deprived them of car use, it entitled them to a number of supporting services which provided assistance with food shopping. Such services included support workers who transported participants to shops, assisted with shopping, paying bills, etc. Another form of care for disabled participants in this study came from domiciliary nursing services. These services not only make home visits but also assist with shopping. Another service for disabled people in this study consisted of local community members who on a roster basis provided transport to shops. Lastly, for disabled or pensioners there is the Access Taxi scheme, which allows for subsidised taxi fare to assist shopping and other transport. Interestingly, those participants who had support for shopping were also more informed about other forms of social support, for example food coops through support workers and other community assistants whose job is to provide information to clients about community resources.

Respondents from households with families had different stories to tell. Few received any formal support—paid or voluntary. Some were able to receive help from family and friends, but they appeared to rely mainly on their own resources. As most of these households were without cars by virtue of a lack of finance, resources were often in short supply. Participants in this group were more likely to walk or take the bus to the shop. Sometimes this meant taking

young children shopping. This group also made more use of smaller local supermarkets and shops, probably because shopping for a family required several top ups between big shops, and local shops are the most convenient if without a car.

AB It's about a 5 min walk that way to the deli and about a 20 minute walk that way to the supermarket.

(and later)

AB There is so much at the petrol station, the supermarkets and that.

(AB male, Playford, food desert)

The importance of routine

For most people in Adelaide, the use of a car is regarded to be essential for the smooth execution of routines. Cars provide independence, autonomy and, to some extent, flexibility. Cars also allow for greater control over time use, providing travel journeys with a fair degree of latitude and leeway. For those without cars, however, routines take on an entirely different dimension. No longer is one in control of time, but is instead under the control of others, e.g., bus timetables, the acts of goodwill by friends and neighbours, or by government or voluntary support. In this study of the experiences of people without cars, respondents spoke about the importance of establishing a routine and fitting shopping into this. One respondent who travelled daily to her sick husband's hospital bed talked about the importance of using the journey to good effect by fitting in food shopping during bus changes. The use of time, when one is not in charge of the timetable, requires careful planning. And sometimes the economy of time takes priority over the economy of budget. It makes sense to save time by not always shopping in the cheapest places, especially when time and modality of travel are an inconvenience.

No participants in this study shopped for food on the internet, despite reports that internet shopping is popular (Lawrence, 2006). Even the use of a home delivery system, which may alleviate some of the hardship of shopping without the convenience of a car, was not common. Some respondents did use home delivery and found it economical. Others felt that the fee charged was almost equivalent to the price of a taxi fare and could not justify the expense. It may well be that the availability or knowledge of home delivery is limited. Anecdotally, it is a service that does not appear to be widely advertised.

Discussion

The purpose of this study was to explore food access experiences of people in households without cars. Our study was set within the context of concerns about food security, which emphasise the importance of access at all times to an affordable, safe, and accessible healthy food

supply. Given the close relationship between food and health, any factors that interfere with people's access to healthy food could impact greatly on health. In Australia, the consequences of poor access to healthy foods can be seen most starkly in rural/remote indigenous communities, where healthy food is costly, food variety is poor, and there is a high prevalence of diet-related diseases (Carter and Taylor, 2007). These problems are mostly the result of healthy food having to be trucked long distances (Meedeeniya et al., 2000). We argue elsewhere that, in urban settings, access to healthy foods is largely determined by people's proximity to supermarkets and shopping centres (O'Dwyer and Coveney, 2006). Thus, the ability to get to these shops is crucial to a healthy food access, and therefore overall health.

Our overall findings in the study reported here are that distance from shops *per se* does not appear to be a problem. For respondents in this study, living within 2.5 km of shops could be just as problematic as living in a food desert if access to private transport is not available. For many, public transport was not an option and walking was even more difficult, and sometimes dangerous with scant regard paid in many areas to the importance of quality footpaths or safe road crossing points. The research highlights an issue noted by researchers more than 30 years: car-dominated societies like Australia disadvantage the car-less for whom public and perambulatory transport options appear to be strictly limited (Schaeffer and Sclar, 1975).

Some respondents, particularly those in the wealthier Burnside area, found shopping without a car imposed few difficulties. However, these cases are unusual in that the Burnside respondents lived close to a high quality shopping facility and had access to a wide range of alternative transport if needed. Burnside respondents were also financially better off and were able to access alternative transport (e.g., taxi). In contrast, families in parts of the lower income Playford area were not furnished with the same facilities. Although small local shops are available in estate-type developments in the outer suburbs, they are not seen as selling competitively priced food of good quality, so residents travel to get value for money. And travelling is made difficult when public transport is inconvenient, irregular and uncomfortable.

Overall, our research demonstrates that food access problems are not confined to food deserts. In places like Adelaide, where car use is regarded as the norm, and social and residential spaces are planned with automobility in mind, lack of private transport can severely limit access to places selling healthy foods. Whether a car mentality in Australia will continue is debatable; fuel prices are increasing and climate change is an increasing concern thus the number of car users may decline. Moreover, the prospect of an ageing population—for who car use may be curtailed—means that numbers of car-less will escalate.

Given the limitations placed on frequency of food shopping (some households only shopped once a fort-

night), questions about the amounts of fresh food consumed—especially fruits and vegetables—and the freshness of these foods must be raised. There is now an emphasis on eating more fruits and vegetables but the shopping difficulties mentioned in these interviews are not likely to make this easy to achieve. Rose and Richards (2004) found that distance from home to food store to be inversely associated with household fruit consumption. That most respondents in the study reported here are low income, and thus most likely to benefit from more fruit and vegetables, is of particular concern. The research highlights major structural barriers for many people who are already financially worse off. It also raises questions of food insecurity for those groups who do not have easy access to affordable, good quality food.

But there are also indications in the research about how life has been made easier for some disadvantaged groups. The use of neighbourhood volunteers, carers, and taxi voucher systems that made up for lack of private transport for the disabled or infirm was an unexpected outcome from this research, and there are lessons that may be learned from this that can be applied to other disadvantaged groups. This is especially true given the continued planning of shopping centres, as opposed to more localised suburban shopping facilities. Even where they exist, local shops like delis, smaller supermarkets and grocers, are unlikely to be able to compete with economies of scale of larger supermarket chains. Thus 'access for all', will be an important consideration in any debate on food deserts and food security.

The limitations of this study need to be mentioned. Our sample was small. Our decision to stop recruiting at 16 households was based partly recruitment problems, and partly on our belief that our sample was diverse enough to provide an adequate picture of food access without a car. However, while a sample of 16 is appropriate for a qualitative study, care must be taken before generalising to other households and other areas. We were also aware that in some areas—e.g. Burnside—we had few respondents. Again caution must be exercised before assuming that the majority enjoys the degree of ease of food access mentioned by Burnside participants in this study. Even with these provisos, however, our research sheds light on some important shopping experiences of people without independent transport.

Conclusions

To our knowledge this is the first reported use in Australia of in-depth interviews exploring food access in a car dominated society. It also sheds light on ways in which food access problems in Australia may differ from those experienced elsewhere (see for example, Donkin et al., 2000; Furey et al., 2002; Whelan, et al., 2002). Our study found that access to food supplies is made easier for some who have been given support or an allowance because of disability or infirmity. Assistance given to people in these situations is reassuring. More worrying is the lack of

assistance for those on low income and who cannot afford independent transport. For these people, getting to the food shops appears to be very difficult, whether or not they are from a food desert. Many have developed pragmatic ways to address these difficulties, such as walking or taking the bus to shops and getting a taxi home. However, these families receive no financial assistance for this travel even though they are financially needy. They are thus doubly disadvantaged by both isolation and by cost of transport for food shopping. Schemes that could make life easier—such as home delivery—are not well advertised. In some cases, home delivery was considered to be expensive. The food access perspective provided here gives a insight into a problem which may only worsen, given the escalating costs of private transport through rising fuel prices and concerns about climate change. The problem will no doubt be greater for low-income households, who are more likely to be vulnerable to food insecurity, and who already carry the greatest burden of diet-related disease.

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