A STUDY OF TRAVEL LINKAGES: IMPLICATIONS FOR URBAN TRANSPORT PLANNING

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ABSTRACT: This paper outlines the importance of trip linking on the journey home from work, and the importance of relating it to the journey to work. It presents some empirical evidence from Canberra to quantify the significance of trip linking.

Some implications for transport planning and policy, and for transport modelling, are discussed. These principally relate to trip generation, mode choice and car pooling.

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A STUDY OF TRAVEL LINKAGES: IMPLICATIONS FOR URBAN TRANSPORT PLANNING.

INTRODUCTION

The trip, in transport planning parlance, is defined as a one-way movement from an origin to a destination for a particular purpose. The transport system is modelled, and by implication largely designed to meet the travel needs created by single purpose, one-way trips.

Transport researchers and planners are gradually coming to realize that this conceptualization is an over simplification. In many cases, there is a functional relationship between one trip and another (e.g. the trip to work and the trip from work; serve passenger trips, etc.) which cannot be handled by most transport models, and hence, by implication, are largely ignored in the preparation of transport plans and strategies. As Bowyer & Tao (1978) have put it:

"The dominant assumption underlying the trip unit is that travel is a singly derived demand, i.e. when a person moves from some location to another, then it is for the single purpose of satisfying a demand for some activity at the latter location. Further, it is assumed that the decisions to make the trip, and to the time and means of travel (i.e. mode and route) are made independently of decisions relating to other trips and will be influenced mainly by measurable socio-economic, land use and transport system factors. This 'trip' concept is appropriate to certain types of urban travel, such as movements between home and workplace. However, intuitively, many movements are more complex, involving some mix of purposes and modes."

There is a growing body of empirical evidence to support the contention that the linkages between trips are a significant factor affecting travel patterns, (Bowyer & Tao, 1978; Hensher, 1976; Jones, 1976; Havers, 1976; Wigan and Richards, 1978; Oster, 1978).

In this paper, some further empirical evidence relating to trip linking is presented, in this case based on data from Canberra. The paper then outlines some implications for travel modelling and transport planning which follow from the realization that actual travel patterns are more complex than have hitherto been assumed. The main factors discussed are related to trip generation and mode use.

TERMINOLOGY

Terminology is important for two reasons. Firstly, agreement among researchers and users on terminology is a necessary prerequisite to the removal of ambiguity and to conceptual clarity (Jones, 1976). Secondly, as Hensher (1976) has suggested, there is a case for analysing journey structure using a classification system based on a hierarchy of dominant journey purposes.

Trip. A trip is a one-way movement, from an origin to a destination for a particular purpose. A trip may comprise one or more legs, if the stop at the end of the "leg" is incidental to the trip purpose (e.g. change mode).

Journey. A journey is a sequence of two or more trips, with the final destination being at the same point as the initial origin (e.g. home-work-shop-home).

Multi-Trip Journey. A multi-trip journey is a journey with three or more trips.

Multi-Purpose Journey. Each trip, by definition is for a single dominant purpose. However, a journey, which comprises several trips may incorporate several different purposes. A multi-purpose journey is thus one which includes at least three different trip purposes, (e.g. home-work, work-shop, shop-home).

A journey may thus be both multi-trip and multi-purpose, or multi-trip without being multi-purpose (e.g. home-shop-shop-home). However, if multi-purpose, it must also be multi-trip since at least three separate trips are involved.

Movement. A movement comprises one or more trips, and is that part of a journey between two main purposes (e.g. a home to work movement, a work to home movement).

JOURNEY STRUCTURE IN CANBERRA

In this section, some results of an analysis of journey structure in Canberra is presented. This material is taken from Graham (1979) using as a data base the data collected in the 1976 Canberra Short Term Transport Study (Pak-Poy, 1977). The emphasis in the following is on the work to home movement, and also its affects on the modal characteristics of the home to work movement.

Activities Visited on the Work to Home Movement

About 26% of workers made one (or more) major stop on the work to home movement. Within this group, single stops were most common, comprising 20% of the total, and multi-stops comprised only 6% of the total. Table 1 shows the variation in mode use with the number of stops. Not surprisingly, bus and taxi use on the movement to work can be seen to have declined as the number of stops on the way home from work increased while use of the "drive alone" mode increased with number of stops.

Table 2 shows the distribution of purposes visited on the work to home movement, and the mean duration per stop. It can be seen that over one-half of all stops were for shopping or personal business purposes, with social-recreational purposes accounting for 25%. Social-recreation stops were also the longest (apart from the "other" category, which included education purposes).

Mode	% Distribution of Mode Use on Home-Work Movement by No. of Trips on Work-Home Movement		
	1	2	3 or More
Bus/Taxi	12	8	6
Car Passenger	16	15	16
Car Driver *	17	16	20
Drive Alone	47	53	51
Other	8	8	8
Total	100%	100%	100%

* with passenger(s)

TABLE 1: VARIATION OF TRIP LINKING WITH MODE USE

Table 2 also shows the variation of mode use (on the home to work movement) with purpose visited on the way home. The main point of interest is the significantly higher use of the drive-alone mode by persons who make a stop on the way home for employers business or social-recreational purposes.

Mode Switching

Most transport studies explicitly assume that the same mode of travel is used on the workbound movement as on the homebound movement. This is far from being the case, even for workers who make no stops on the way home; in Canberra 18.7% of workers who made no stops on the way home switched modes. The figure increased to 44.7% for travellers who did make a stop on the way home and for this category the major mode switching occurred amongst travellers who use the bus or taxi to travel to work (Table 3); of those workers who travelled to work by public transport and who stopped on the way home, 57% used private transport for at least part of their homebound movement.

Vehicle Occupancy

Vehicle occupancy is greater on multi-trip work to home movements (Table 4) reflecting the degree to which the driver of a car meets another person on the way home either in a "serve passenger" sense, or following an agreement to meet to engage in a further activity (e.g. shopping). It

Work to Home Movement			Mode Use on Home to Work Movement (%)†					
Purpose Visited	% of Stops	Mean Duration/Stop (minutes)	Bus/ Taxi	Car Pas	Car Driver*	Drive Alone	Other	Total (Rows)
Shopping								
Personal Business	51	20.1	8	18	21	46	7	100%
Employer's Business	7	17.2	3	8	8	73	8	100%
Social/Recreation	25	27.1	9	13	8	60	10	100%
Serve Passenger	3	13.4	0	0	47	33	20	100%
Other	14	41.1	6	16	15	56	7	100%
Total	100%	-	7.8%	15.1%	16.9%	52.0%	8.2%	100%

† Linked trips only

* With passenger(s)

TABLE 2: NUMBER & DURATION OF STOPS, AND MODE USE, BY PURPOSE OF STOP, CANBERRA, 1976

Mode Use on Home to Work Movement	Mode Use on Work to Home Movement									
	One Mode Used					Two Modes Used				
	Bus/ Taxi	Car Pass	Car Driver †	Drive Alone	Walk/ Bike	Bus/Taxi/ Walk	Bus/Taxi/ Car	Car Driver *	Other	Total
Bus/Taxi	15	18	–	–	–	28	18	–	21	100%
Car Passenger	3	68	4	6	–	–	8	1	10	100%
Car Driver †	–	3	41	25	–	–	–	25	5	100%
Drive Alone	–	1	7	76	–	–	–	12	4	100%
Walk/Bike	6	24	–	6	35	–	–	–	29	100%
Car Driver *	–	–	20	40	–	–	–	30	10	100%
Other	–	7	–	–	–	–	14	7	71	100%

†With passenger(s)

* Car Driver with passenger(s) for part of movement, drive alone for remainder

TABLE 3: MODE SWITCHING (FOR LINKED TRIPS ONLY)

is worth noting that the practice of car-sharing in Canberra almost wholly involves members of a single household (Bowyer & Toh, 1978).

Number of Vehicle Occupants	% of Total Work-Home Movements by Car	Distribution of Occupancy by No. of Trips on Work to Home Movement	
		1	2 or More
1	64%	73%	27%
2	29%	71%	29%
3 or more	6%	69%	31%
Total	100%	74%	26%

TABLE 4: VARIATION OF TRIP LINKING WITH VEHICLE OCCUPANCY

TABLE 3: MODE SWITCHING (FOR LINKED TRIPS ONLY)

Time of Day

Multi trip work to home movements are more common proportionally before the afternoon-peak period (Table 5). 45% of workers who left work before 3.30 p.m. stopped somewhere on the way home, compared with only 17% of those who left after 5.30 p.m. As with many other aspects of this discussion, which is cause and which is effect is not immediately obvious.

Time Left Work	% of Total Work-Home Movements	Distribution of Time Left Work by No. of Trips on Work to Home Movement	
		1	2 or More
Before 1530	10.8	55%	45%
1531 - 1630	24.1	72%	28%
1631 - 1730	46.3	77%	23%
After 1730	18.8	83%	17%
Total	100.0%	74%	26%

TABLE 5: VARIATION OF TRIP LINKING WITH TIME LEFT WORK

The "time of day" variable is also important in terms of starting time at work. The practice of employees working flexible hours has become more widespread in recent years, particularly in the office and professional categories which are so basic to Canberra's employment. Consequently, it is not surprising to find that over one-half of workers had a starting time at work that was either formal flexitime or flexible in practice (Table 6). For the purpose of this paper however, what is even more interesting is that workers whose start time was flexible tended to have a more complex trip pattern on the way home; 30% of those on formal flexitime stopped at least once on the way home, compared with only 22% of workers whose start time was fixed.

Status of Start Time at Work	% of Total Work-Home Movements	Distribution of Work Status by No. of Trips on Work to Home Movement	
		1	2 or more
Firm	45	78%	22%
Flexible in Practice	21	73%	27%
Formal Flexitime	34	70%	30%
Total	100%	74%	26%

TABLE 6: VARIATION OF TRIP LINKING WITH STATUS OF START TIME AT WORK

Land Uses

As noted earlier, 6% of work to home movements involved 3 or more trips. The land uses mostly responsible for generating these larger number of trips are non-food retail stores (reflecting travel associated with comparison shopping) and domestic premises (Table 7).

Mode Availability

Using explicit definitions of mode availability it is possible to estimate the extent to which the availability of a particular mode on the work to home movement affects the choice of mode for the home to work movement.

For this study, a person was deemed to have a car available for the work to home movement if he or she owned a vehicle, did not forego its use, and used it to travel to work, or if he or she actually used it to drive home. A bus was considered to be available if the walk time from work to

Land Use	% of Total Work to Home Movements	Distribution of Land Use Visited by No. of Trips on Work to Home Movement		
		1	2	3 or more
None	74.2%	100%	0	0
Foodstores	4.3%	-	96	4
Other Retail	5.9%	-	86	14
Education	1.4%	-	93	7
Social, Restaurants, etc.	4.2%	-	96	4
Domestic Premises	3.3%	-	89	11
All other	6.7%	-	43	57
Total	100.0%	74%	20%	6%

TABLE 7: VARIATION OF TRIP LINKING WITH LAND USES VISITED

the bus stop was less than 5 minutes, from the bus stop to the residence was less than 5 minutes, no more than one transfer was required, and the waiting or lost time on the bus was not greater than 5 minutes. If these conditions were not satisfied, the car traveller was taken to have no bus option available.

Table 8 shows that for the workbound movement 41% of workers had a choice of car and bus. However, only 71% of these also had a choice for the work to home movement. By contrast, 47% of workers were captive to the car for the trip to work, and 93% of these had no choice on the home-bound movement either. Only 6% were captive to the bus on the home to work movement but 69% of these had a bus available for the return movement home.

The actual mode use figures on the workbound movement for the various availability categories are shown in Table 9. Those who had only a car available (according to the above criteria) not surprisingly overwhelmingly used the car, while those who had only a bus available used bus or taxi (84%) or the walk/cycle/motor cycle modes. Of those who had a choice, only 4% used public transport.

Those for whom neither mode satisfied the availability criteria (but who may have had a less satisfactory bus service available) used either bus/taxi or walk/cycle/motor cycle modes.

Mode Availability on Home to Work Movement		Mode Availability on Work to Home Movement				
Mode	% of Total	Choice Bus/Car	Car Only	Bus Only	Neither*	Total (Rows)
Choice - Bus/Car	41%	71	24	4	1	100%
Car Only	47%	3	93	0	4	100%
Bus Only	6%	12	10	69	9	100%
Neither*	6%	1	22	2	75	100%
Total	100%	32%	55%	6%	7%	

* Neither mode satisfied "availability" criteria - see text.

TABLE 8: MODE AVAILABILITY

Mode Availability on Home to Work Movement	Mode Use on Home to Work Movement					
	Bus/ Taxi	Car Pass	Car Driver*	Drive Alone	Other	Total (Rows)
Choice - Bus/Car	4	20	22	51	3	100%
Car Only	1	16	17	58	8	100%
Bus Only	84				16	100%
Neither†	66				34	100%

* With passenger(s)

† Neither mode satisfied "availability" criteria - see text.

TABLE 9: VARIATION IN MODE USE WITH MODE AVAILABILITY

Travel During the Day

Thirty percent of Canberra workers made a work based journey (i.e. work-other purpose-work) during the course of the day. Of these, 10% made more than one such journey. (These statistics do not of course include such people as truck drivers or salespersons.)

It is intuitively obvious that a proportion of workers are affected in their choice of mode by the need to undertake such travel during the day; this would particularly lead to increased car use if their car was required. Some support for this contention is given in Table 10, which shows that as the distance travelled on work-based journeys increases, so the likelihood that the car will be used for the movement to work increases.

These work-based movements add an important dimension to the complexity of travel. For example, it was earlier noted that 74% of Canberra workers made no stops on the way home from work. However, only 51% neither made stops on the way home nor undertook a work based journey during the day. In other words, only just on one-half of Canberra workers had a simple two trip home-work-home journey structure.

Distance Travelled on Work - (Other Purpose) - Work Journeys) - km	Percentage of Work Trips by Car
0 - 5	66%
5.1 - 10	89%
> 10	93%

TABLE 10: VARIATION OF WORK TRIP MODE CHOICE WITH LENGTH OF TRAVEL ON WORK-BASED JOURNEYS

IMPLICATIONS FOR TRANSPORT PLANNING AND POLICY

The previous section has reviewed some of the characteristics of travel in Canberra particularly with respect to the linking of trips. In this section, some implications are presented for transport planning and transport policy which arise from the evidence that trip making is more complex than has generally been implicitly assumed.

First, however, it should be noted that Canberra is a unique type of metropolitan area, and the results for Canberra cannot be directly extrapolated to other cities without a certain amount of caution. However, bearing this point in mind, it is possible to present some conclusions which are considered to be of general validity, even though they rely partly on the evidence provided by the analysis of Canberra data.

Trip Generation

About three-quarters of workers travelled directly home from work without a stop. These trips are properly conceptualized in the transport planning process; their

origin, destination, purpose, mode and route characteristics give a realistic impression of the actual load which they place on the transport system.

The same cannot generally be said of the sizeable minority (26% in Canberra) of movements which involve one or more stops on the way home. In the past, various classifying arrangements have been utilized to hide the true nature of these trips; linked trips have been classified by a "dominant" mode, the point at which a modal change occurred (and the event itself)were lost, and the separate purposes of the various trip segments were not identified. Although in recent years, with the development of more disaggregated modelling approaches, these problems have been recognised, shortcomings such as these have tended to distort the transport plans of most Australian cities.

The question then arises of whether these conceptual shortfalls have led to practical inadequacies in transport planning. It is suggested that in some areas they might have done so.

Firstly in residential street design, a key design parameter is the amount of traffic carried by local streets. Partly for the reasons outlined above, and partly because many transport studies have not included "intrazonal" trips in their surveys, these data sources are notoriously unreliable as a means of establishing residence-based vehicle trip generation rates.

Secondly, by linking several trip segments into a single through trip for a dominant purpose on the last trip in the sequence, the trips generated by the subsidiary land uses along the way have been "lost". This has implications for local area traffic design, and for local parking ordinances, since the amount of traffic is consistently underestimated. Moreover, for the same reason the route taken by a vehicle which makes a (unrecorded) stop may well be different from the route it would otherwise have taken; this has obvious importance for assessing the accuracy of trip assignment techniques, and the validity of screenline counts. Similarly, information on access/egress trips to line haul public transport is often "lost" in transport studies; recent analysis has indicated that these components of a public transport trip are probably more important determinants of mode choice than the line haul component itself, (Bowyer, Hutchinson & Symons, 1979).

Thirdly, trips made during the day have not hitherto been seriously considered in the preparation of most transport plans. To an extent, this has been understandable since generally the aim has been to concentrate on peak period travel demands. As transport policy moves away from the notion of supplying sufficient transport facilities to meet peak hour demand, and moves to a situation of "demand-management", off-peak considerations will become more important. Peak periods will occupy more hours of the day, and trips which previously were off-peak will increasingly be

made in congested conditions, since part of the notion of "demand-management" is to shift demand to other times of the day. For these reasons, trips made during the day cannot any longer be ignored by transport planners.

The importance of trips made during the day is amplified when they are looked at as part of a worker's total daily travel structure. As noted earlier, only about one-half of all Canberra workers had a simple home-work-home journey structure, with the other half making a stop on the way to or from work and/or a journey during the day.

It has been shown (Table 5) that trip linking is more common with workers who leave work before the afternoon peak. Two interpretations of this observation are possible, and both probably apply to a significant extent. Either workers leave work early because they have an activity (e.g. shopping, recreation) to visit on the way home, or having left work early they utilize that time to visit an activity rather than go straight home. Both interpretations have policy implications. With the former, the implication is that the visit (which results in the phenomenon of trip linking) is sufficiently important to affect the days activity plan. If this is so, the transport modeller can hardly afford to overlook this aspect in the construction of a choice model. To the extent that the latter interpretation holds, the observation (Table 6) that with flexible working hours, more complex trip making occurs is also relevant. Since it is likely that flexitime, as well as shared jobs, part-time jobs and the like will increase (Ogden, 1978), it is clear that the transport planner will be less able to safely ignore trip linking in the preparation of transport plans.

Moreover, it is worth noting, as Bowyer, Hutchinson & Symons (1979) have done, that while trip linking features in only a minority of work to home movements at present, this is a reflection in part of the relatively low cost of car use. If, as seems likely, car operating costs rise and car use is restrained, motorists are likely to adapt by making more efficient use of their vehicles, and using a single journey to satisfy several trip purposes. Hence, instead of a series of individual journeys from (say) home to work, shop, recreation, etc., it may be that these purposes will tend to be accommodated within a single journey. The implications of this may be quite important. It will mean that sites where multiple desires can be satisfied with a single stop will be more attractive (e.g. regional shopping centres or shops with library, sporting facility etc. nearby); this may tend to lead to significant changes in urban structure (Wheeler, 1972).

From a transport planning viewpoint, the distinction between purpose and land use will become less meaningful, or more accurately, a joint land use/purpose definition will need to be used. The whole transport modelling and planning framework will need to be adapted, for example along the lines suggested by Bowyer, Hutchinson & Symons (1979), or entirely new frameworks may be needed (e.g. the activity modelling framework - Jones, 1977).

The range of purposes visited on the way home from work is important also (Table 7). About 10% of all Canberra workers visit a retail outlet on the way home, or, to put it another way, about 40% of all trip linking on the way home is for the purpose of shopping. Both foodstores and "other" retail outlets are important, but the latter is significant in that it is more commonly associated with multiple trips, reflecting people travelling from one store to another on (presumably) comparison shopping expeditions. This is important from a planning viewpoint, as it affects parking requirements, and also from a modelling viewpoint because, as Hansen (1977) has suggested, models of trip linking should be delineated by land use. Another noteable feature is the relative unimportance of education as a land use visited. Education travel is important, but not it seems, in connection with trip linking on the trip home from work. Related to this is the question of trip purpose (Table 2). Over one-half of all linked trips are for shopping or personal business purposes, with one-quarter being for social or recreational engagements. These latter tend to be of rather longer duration, averaging nearly half an hour.

Mode Use

There are several implications of the material presented earlier which are of importance to mode use. Perhaps the most obvious is the information on mode availability and its affects on mode use. According to the criteria adopted, less than one-half of the working population of Canberra had a real choice of mode. (Table 8). Even allowing for data specification problems and arguments about the validity of the availability criteria, this is an important result. Most mode choice models are just that - choice models. If travellers have no choice then clearly the modelling framework is inadequate.

Of importance also is the relative sizes of the "captive" markets. Nearly one-half of Canberra workers were captive to the car, while only 6% were captive to the bus mode.

In the context of this paper, the linking between the home to work movement and the work to home movement is of particular interest. Of those who had a choice on the work bound movement less than three-quarters also had a choice on the way home, and most of the rest were captive to the car (Table 8). Thus, taking the full days travel into account, this latter group was essentially captive to the car also. By contrast, those who had no choice but to use a car for the workbound movement had, for the most part, no choice on the way home either, thus cementing their captivity to that mode.

When the actual useage figures are examined (Table 9), it can be seen that very few (4%) travellers used public transport if they also had a car available. This supports the conclusion of Richardson (1970) who found that the only significant choice of public transport use is for travel to and from the central business districts (CBD) of the large

cities, and is due mainly to road congestion. In Canberra, where road congestion is minor and parking is easy, there is very little incentive for choice public transport ridership. The same could be said for most non-CBD travel in other large metropolitan areas in Australia.

A factor which apparently has an important affect on mode use for the trips to and from work is the need which some workers have to use the car during the day. It has been clearly shown (Table 10) that as the distance travelled on work-based journeys increases, the use of a car for the home-work movement increases. This affect is rarely considered by planners, or by modellers, who usually conceptualize the choice process in much simpler terms.

The data on mode switching is also of importance. Firstly, it shows that a significant proportion of workers use a different mode on the homebound movement, as compared to the workbound movement. Even among those who made no stops on the way home, about 19% switched mode; the percentage was higher among those who made one or more stops on the way home. Once again, this emphasizes the complexity of real travel patterns, and the need for transport planners to accommodate actual travel, not their idealized versions of it.

From a policy viewpoint, this mode-switching activity suggests that a significant minority of travellers use public transport as a "fall back" mode, for use when their main mode of transport is not available temporarily. This is a valid use, and is in fact one of the arguments often put forward to support the maintenance of an adequate public transport system. The policy issue though is to devise a means of ensuring that such travellers pay a fair share of the cost of running the public transport system; it is probably of more value to them than the occasional fare which they have to pay. The development of equitable pricing and subsidy policies for public transport is considered to be one of the key issues facing Australian cities today.

Moving back to the data on trip linking on the work to home movement, it can be seen that this is much more likely to happen with car travellers (Table 1). However, the cause-effect relationship here is far from clear; does the car traveller stop because the inherent flexibility of the car readily permits it, or does he use the car because he has to stop on the way home? Present data does not give any guidance on this, although it is a fruitful area of research. It is reasonable to say however that, irrespective of which way the relationship flows, the car user obtains more utility from his trip simply because he can (and often does) use it to achieve more than one purpose.

This interaction between trips, to the extent that it is pre-planned and deliberate, implies a more complex choice process than is generally assumed in any modelling framework. The use of choice models in a non-choice environment has already been mentioned, but what is being

suggested here is that the real mode-purpose-destination choices which are open to a traveller are more constrained the complex his intended pattern of daily travel.

Another unknown cause-effect relationship occurs in the observation that trips undertaken for social-recreational purposes on the way home tend to be disproportionately associated with the drive-alone mode. This perhaps has some implications for car-sharing; a driver is less likely to become part of a car pool if he wishes to engage in a social-recreational activity on the way home.

However, it can probably generally be said that any desire on the part of a prospective car pooler to stop regularly for any purpose on the way home is likely to deter him from entering a car pool. As noted earlier, most car pooling in Canberra involves members of the same family, and this is borne out in Table 2, which shows that only 3% of stops were for the purpose of serve-passenger and this would include stops to pick up a member of the driver's family to take him or her home.

On first sight then, the observation (Table 4) that car occupancy rises with trip linking may appear strange. However, the explanation would appear to be that mentioned earlier, namely that a driver meets another person (usually from the same family) on the way home, and at the same stop one or both of them engage in a further activity (most commonly shopping), with the result that the stop is considered as being for the purpose of (say) stopping. Two planning implications follow from this. Firstly, the planner/modeller must be aware of the existence and importance of multi-purpose stops; how important these are is hard to judge, but intuitively it would seem that if a traveller can achieve more than one objective at a single stop he is likely to be more attracted to it than to two or more alternative locations where he can only satisfy only one objective (perhaps this is a partial explanation of the popularity of regional shopping centres). The second implication has again to do with car sharing. If a person in a car pool cannot make a stop on the way home, he may be inclined to make an additional trip in his own vehicle later in the day; these secondary affects of car sharing are not well understood at the moment.

CONCLUSION

This paper has introduced the importance of trip linking on the journey home from work, and the importance of relating it to the journey to work. It has presented some empirical evidence from Canberra to quantify the significance of trip linking.

Some implications for transport planning and policy, and for transport modelling, have been discussed. These principally relate to trip generation, mode choice, and car pooling.

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