

## Travel impacts arising from office relocation from city to suburbs

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### Abstract:

Suburban offices constitute a growing proportion of the metropolitan office stock in Melbourne. The relocation of around 1700 Coles Myer employees from the city to Tooronga, 8.5 km south east from the GPO, is an example of office decentralisation.

A study of the resultant impacts arising from the relocation has been conducted utilising a 'before-the-move' and 'after-the-move' survey of Coles Myer employees. Both surveys generated response rates in excess of 60%.

Office relocation can have various short and long term impacts on employees and will influence decisions relating to residential location, car ownership and the resultant travel and activity patterns. It is not until these impacts are quantified that planners can gain acceptance for strategies designed to minimise the negative impacts associated with dispersed employment opportunities.

One of the great challenges for transport in the 90's will be the successful management of office location and the resultant impacts on travel.

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## Introduction

Since the early 1960's, employment within the city of Melbourne has been steadily decentralising. Rising car ownership has increasingly enabled workers and employers to locate further afield, well away from established public transport services. The migration of employment has been motivated by rising rentals in inner areas, lack of space and the desire to be nearer to the workforce. However, whereas the process once largely related to the movement of industry to expansive, flat areas, there are now signs that a growing proportion of decentralisation involves high density office employment relocating in response to rapidly improving communication capabilities.

Decentralisation of office employment is already very advanced in many cities in the U.S.A. where enormous, high density "office parks" are rapidly springing up, often in well established urban environments.

In the USA and Australia, the migration of office employment is confronting urban planners with new problems. Certain types of public transport, particularly regional line-haul services are becoming unable to satisfy the mobility needs of commuters, and a mounting reliance on private transport is creating heavy congestion in suburban areas and provoking dissatisfaction amongst commuters and residents.

Similar trends are emerging in Melbourne. Suburban offices comprise a minor but growing proportion of total metropolitan office stock, increasing from around 11 per cent in 1980 to nearly 22 per cent in 1990. A number of factors have stimulated office construction throughout metropolitan Melbourne. These include growth in white collar employment, shifts in population, increases in floor space per office worker and opportunities arising from new communication technology.

## Background to the Study

An example of this trend is the relocation of the Coles Myer head office in Hawthorn, 8.5 km from the city centre. In May 1987, Coles Myer moved approximately 1700 managerial and administrative employees from five Central Business District (CBD) locations consolidating them in one large office development. The background to this decision is well reported in Kilmartin (1986) in which he states that Coles Myer management was very conscious of overseas trends in corporate headquarters and the trend of relocating from 'downtown' to suburban sites. Particular concern was the high usage of company cars by both Coles staff and representatives of wholesalers.

A survey conducted by Coles Myer showed that around 70% of their head office staff lived on the Tooronga side of Melbourne and thus the relocation represented a movement of the company towards the residential heart of its staff.

The metropolitan train network focusses strongly on the city and is further enhanced by the underground rail loop, which was fully opened in 1985. A well developed tram and light rail network also focusses on the city and draws its patronage from people living in the inner and middle suburbs. Coles Myer Ltd provided car parking spaces for some of their senior employees although these car parking spaces were not always close to the office.

The Tooronga site is near to the newly opened (1989) South East Mulgrave Road Link (SEMARL) which generally follows the alignment of Gardiners Creek and connects the South East Freeway to the Mulgrave Freeway.

Public transport in the form of bus, tram and train are available within walking distance of the site. A bus route linking Kew with Chadstone Shopping Centre runs along Tooronga Road. Camberwell-to-the-city trams run along Burke Road and the Tooronga Railway station is located 400 metres to the south west of the site. The office development contains car parking for about 1300 cars.

The relative location of Tooronga to the CAD is shown in Figure 1.

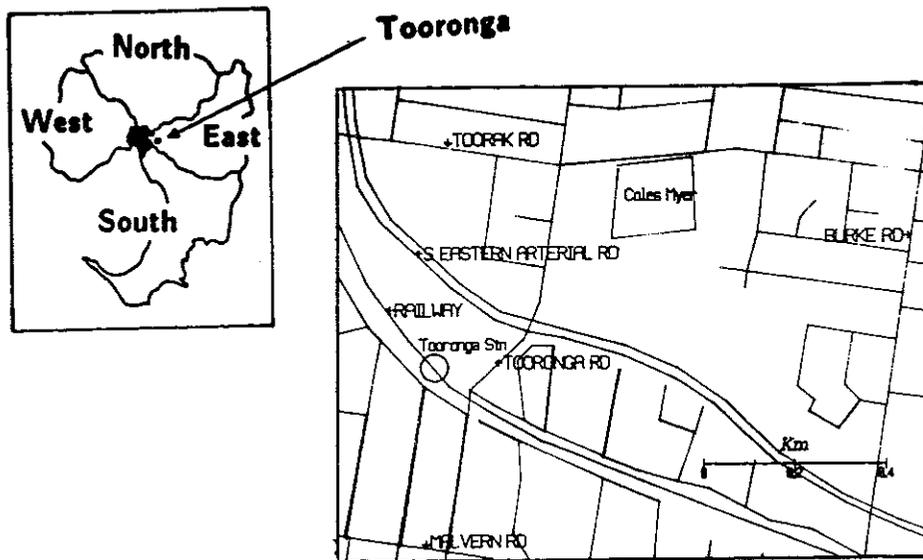


FIGURE 1: LOCALITY MAP

The Coles Myer Ltd move from the city to Tooronga provided an unique opportunity to study office decentralisation. At a *strategic* level, the study provides an opportunity to;

- \* Determine how office decentralisation affects the demand for travel;
- \* Identify the transport problems and opportunities created by changes in the workplace, and
- \* Develop appropriate strategies for managing the transport system in line with changing demand.

At a *micro* level the study helps identify the potential impacts of:

- \* changes in employment location;
- \* changes in residential location;
- \* changes in car ownership and usage;
- \* changes in travel and activity patterns;
- \* changes in household travel behaviour and
- \* implications for public transport.

Moreover, the study could also:

- \* Help formulate new strategies for transport investment, solutions to local transport problems, ways of arresting anticipated declines in public transport patronage and, above all, appropriate ways for handling the decentralisation of employment;
- \* Provide information on the direction that office decentralisation is leading. With forewarning, appropriate planning can take place and controls and other measures instituted to promote broader transport strategies; and
- \* Assist the Ministry of Transport and the Transport Authorities to develop an understanding of the transport implications of major office decentralisation. The Public Transport Corporation is particularly interested in quantifying the effects on public transport patronage; the Roads Corporation is concerned with the traffic consequences of new commercial development.

### Study Design

The move has been investigated by means of 'before' and 'after' employee travel surveys. The 'before' survey was conducted in November/December 1986 (about five months before the move) and the 'after' survey was conducted in February/ March 1988 (about ten months after the move).

In the 'before' survey, the survey instrument was a twelve-page questionnaire booklet in which respondents were requested to record personal information and details of travel on a specified weekday. Five variations of the questionnaire were produced in equal proportions - one variation for each weekday. The questionnaires were randomly distributed to all employees in their workplaces and collected by Coles Myer management. Each work area was allocated a mix of workdays for which they were to complete the survey. Each questionnaire was divided into five sections for recording -

- \* personal data,
- \* travel before work,
- \* travel during work hours,
- \* travel home from work, and
- \* travel after arriving home

Personal data collected, included name and address, sex, age, occupation, household size, household employment details, age distribution within the household, ownership and availability of vehicles and driving licences. Travel data encompassed trip timing, methods of travel, parking information, constraints on choice of travel method, as well as the non-work activities of respondents.

The 'before' survey was carried out in the week commencing November 27, 1986, using a self-administered questionnaire. The 'after' survey was conducted in a similar manner to the 'before' survey, and took place in the week commencing Monday, February 29, 1988.

Most of the questions in the 'after' survey were similar to the 'before' survey though some changes were made to reflect the changed circumstances and some additional questions were asked.

The objective in both surveys was to distribute survey forms to all staff. This objective can never be completely met due to a variety of circumstances which results in staff not being in attendance (eg vacation, sick leave or business etc). In both surveys two V/Line holiday packages were awarded to encourage a high rate of response.

The study focussed on the short term impacts. It has not been able to study in a detailed manner the medium and long term adjustments that might result from office relocation. However the information collected in the two surveys provides an extremely valuable database from which it is now possible to investigate a variety of other issues relating to transport and land use planning.

### Statistical Interpretation

In the 'before' survey, there were 846 employees who completed the questionnaire satisfactorily out of the 1350 questionnaires distributed to employees. The good response rate (64%) is partly due to the decision to award travel holidays as prizes to two randomly selected participants.

The 'after' survey was conducted in a similar manner to the 'before' survey. An accurate count of the number of questionnaires distributed was not kept, however it is believed to be around 1700 (or the total number of employees at Coles Myer). There were 1071 useable responses which gives a response rate of at least 64% - similar to that achieved in the before survey. Two V/Line holiday packages were again awarded to encourage a high rate of response.

In surveys of this type it is important to establish to what extent are any reported changes due to differences in the sample or to what extent can the differences be attributable to other factors. In this case, we are interested in determining whether the changes are attributable to the move from the city to Tooronga?

To answer this question, we should note that there are three categories of employees represented in the two surveys (i) those who left Coles Myer between the two surveys (ii) those who joined Coles Myer between the two surveys and (iii) those who were present for both surveys. In fact, 50% of the 'before' sample and 40% of the 'after' sample were identified as common to both surveys.

The standard deviation (and hence the confidence limits) for any attribute of the population are a function of the sample size, the size of the population and the

distribution of the attribute being measured. The estimate of the standard deviation, when sampling is made without replacement from a finite population is given by:

$$\text{Standard Deviation } (\sigma) = \sqrt{\frac{p(1-p)}{n}} \sqrt{\frac{N-n}{N-1}}$$

where  $p$  = is the estimate of the population proportion  
 $N$  = Population Size  
 $n$  = Sample Size

The standard deviation for a variety of 'p' values for samples of 846 and 1071 from a finite population of 1700 is given below:

<u>p</u>	<u>n = 846</u>	<u>n = 1071</u>
0.1	0.0073	0.0056
0.2	0.0097	0.0074
0.3	0.0111	0.0085
0.4	0.0119	0.0093
0.5	0.0121	0.0093

Hence if an estimate from the 'before' sample of the number of people who drove to work was 30% (ie  $p=0.3$ ) then the 95% level of confidence is  $p \pm 1.96 \sigma$  or  $(0.30 \pm 0.02)$ . On the basis of the very high response rates, the samples are judged to be an adequate representation of the employees in both the 'before' and 'after' situations. The size of the two samples are considered large enough to ensure that valid comparisons can be drawn.

### Conceptual Structure

Job location is a major conditioner to a particular lifestyle and associated travel patterns. The lifestyle and more particularly the travel patterns associated with a job in the city can be quite different when compared to jobs located elsewhere. Some people specifically choose a job based on its city location. The implications that work location has on people's travel habits are substantial. It can affect not only the mode of travel, but will also influence how other activities are 'programmed' into the day, and the modes used to link activities together.

In the Central Activities District (CAD) for instance, proximity to other business and trading partners can be an important locational criteria from an employer point of view. For employees, there exists the multiplicity of activities within easy access either before, during or after work. Public transport provides a high level of accessibility to the city from almost anywhere in the metropolitan region.

There are advantages and disadvantages associated with the location of a business outside the central city. Obvious advantages are cheaper rent, more space and the opportunity for firms like Coles Myer Ltd to consolidate on one site. From a

transport perspective, access by road is less congested, car parking is easier and public transport opportunities are more limited.

Faced with the prospect of an office relocation, each employee is faced with a series of questions relating to their job, their household, and their travel arrangements. For instance:

- \* Do I stay with the job?
- \* Do I change my residence to provide easier access to work?
- \* Do I review the car ownership requirements of the household?
- \* Do I change the mode of travel?
- \* Do I restructure some household activities?
- \* Do I change the time of travel for certain activities?

Not all these questions are answered immediately nor are they answered in any prescribed sequence, but needless to say the impacts on the worker and other household members can be significant. These questions are dealt with by individuals differently. Some are considered of a long term strategic nature and other questions are answered in the short to medium term horizon.

The framework in which this study was conducted is illustrated in Figure 2. The diagram illustrates the principal linkages that occur, once the work place is identified (whether it be in the city or suburbs). It separately identifies the medium to long term decisions (residential location and vehicle ownership) and the short to medium term decisions (relating to mode choice, the time of day for work trips, participation in non work activities, mode choice for non work trips and the time of day for non work trips which are made by the worker.

For instance, the location of the workplace will impact on decisions concerning residential location (in the long term) on vehicle ownership (in the medium term) and on the mode choice (in the short term). The choice as to workplace and mode will directly impact on the incidence of non work trips as well as the selection of mode and time of day. All factors will influence the travel choices and patterns of other household members.

Changes in the manner in which people (especially workers) organise non-work activities are quite complex. Activities can be programmed to occur at a number of alternative locations and at various times throughout the week. Some activities can be cancelled or at least allocated to other members of the household. Faced with the time constraints, workers normally attempt to 'optimise' the location and timing of non work activities.

For activities which are undertaken outside the home, workers can choose to undertake these activities either:

- \* before setting out for work;
- \* en route to work;
- \* from work (presumably at lunch time);
- \* en route from work;
- \* after returning home from work

The choice of modes of transport used in performing the chosen activities vary for a variety of reasons. The choice of mode is integrally linked to the location of the desired activity and the available means of travelling to and from the chosen destination.

Three classes of activity can be identified as a basis for examining the modal choices:

- \* Activities which are home-based (eg before leaving home and after returning home from work) These are influenced by modes available at the home;
- \* Activities which are work-based (eg lunch time) These are influenced by the available modes from the work place;
- \* Activities made en route to or from work In most cases the mode choice for trips to work which involve other activities is closely linked to the mode chosen to travel to work or can be made jointly with the decision to undertake activities

This is the framework in which the results of the two surveys have been analysed

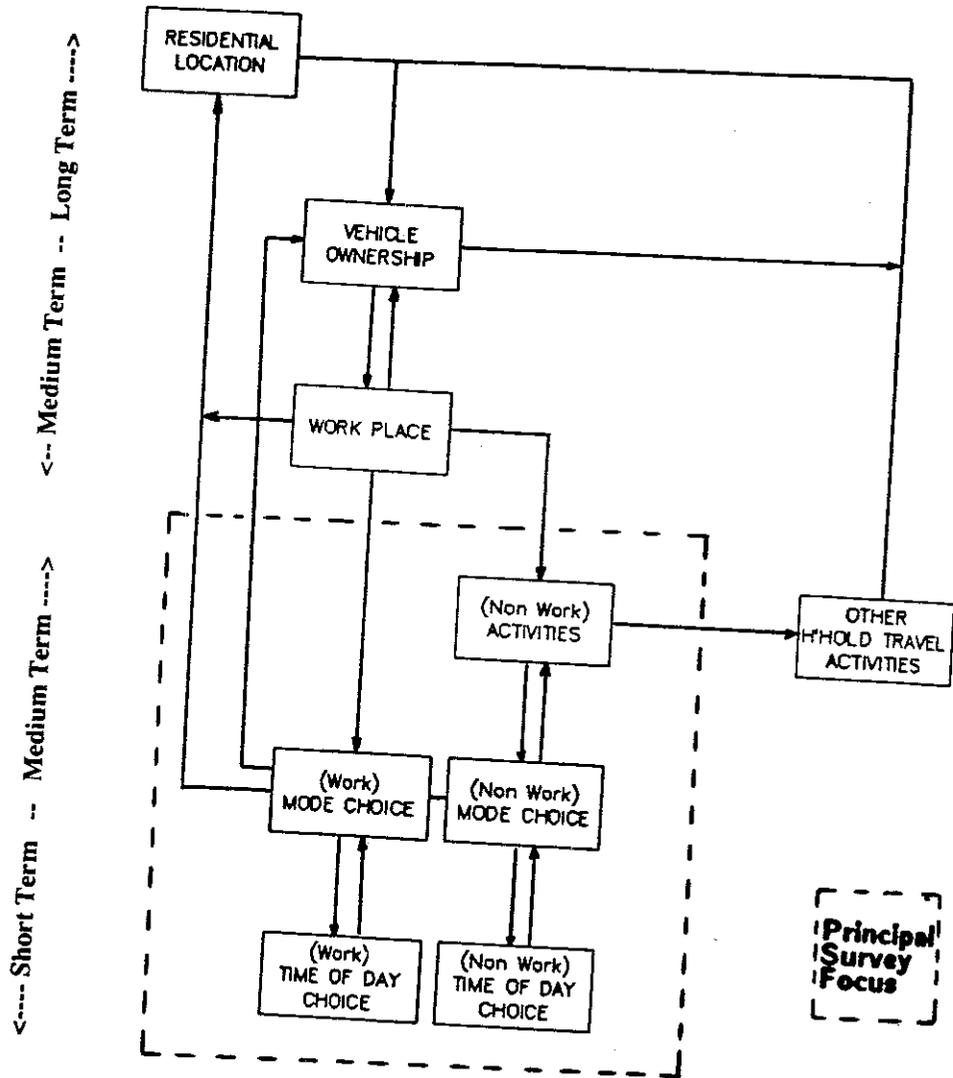


FIGURE 2: CONCEPTUAL FRAMEWORK

## The Results

This section compares the results of the two surveys. It highlights the differences in the activity and travel patterns of Coles Myer employees in two employment situations; the first, when Coles Myer is located in the city and the second, where Coles Myer is located at a suburban location. As previously stated, the responses from the two surveys are judged to be sufficiently representative of the two classes of employees.

### Socio-Demographic Differences

A number of changes in the composition of the employees were noted. For instance, there is a slight increase in the percentage of females (up from 50.7% to 53.1%). The age structure has altered resulting in an older profile among employees. There are now a smaller percentage of people in the 16-24 category (down from 27.6% to 23.0%) and more people aged 25-44 (up from 54.2% to 60.3%).

The major change in vehicle ownership is that there are fewer one car households (down from 28.9% to 24.8%). In the 'after' survey, there were 8.2% who reported buying an 'extra' car because of the new work location. More people reported holding a driving licence (up from 92.0% to 94.0%).

These results suggest that job location is a factor in job selection. It appears that the Iooronga location is less attractive (or provides less opportunity) to those who rely on public transport, namely the teenage/young adult workers or those in one car households.

The impact on the residential location of employees has been immediate, although it was initially envisaged that this would be a longer term decision factor. In the 'after' survey, 15.4% reported moving their place of residence since starting work; 2% of whom claimed it was directly related to their work location.

A geographical division of Melbourne into North, South, East, West and Central (see Figure 1), reveals significant changes in the spatial distribution of employees. There are now more people who live in the 'east' region (up from 48.2% to 54.7%) and significantly fewer in the North (down from 13.2% to 10.2%) and West (down from 11.1% to 7.5%).

### Differences in Activities

The move to Iooronga also influenced the range of activities undertaken by employees. For the purpose of this analysis, activities are defined as work or non work. Non work activities are those activities which involve an element of travel and which exclude that travel associated with travelling to or from work, noting that non work activities can be undertaken en route to or from work (eg taking children to school).

Non work activities of employees can also be categorised as essential or discretionary. Discretionary activities are those that can be re-assigned to other members of the household, performed on other occasions or deferred indefinitely.

On many occasions, the transport requirements which enable that activity to be performed will change significantly as a result of the change in the workplace location.

Overall there was a 10% reduction in the number of activities per person (from 2.2 to 2.0 activities per person per day). This is consistent with expectations that a city location offers employees far greater opportunities to undertake activities. Table 1 shows the range of all non-work activities reported in both the 'before' and 'after' surveys. These activities purport to represent a normal day, and have been constructed by averaging the activities reported over the whole week. Ten categories of activities have been identified.

In the 'before' situation, shopping was the most frequent activity (24% of all activities) followed by leisure and social (17%), food and eating (15%) and personal business (14%). In the 'after' case, shopping was less important (15%) and leisure and social dropped to 13%. The number who were serving a passenger (ie taking adults or children somewhere) increased significantly from a relatively low base.

These results essentially conform with expectations and are illustrative of the reduced opportunities for shopping at Tooronga. As will be shown later, the increase in the number of trips to 'serve a passenger' (ie taking adults/children somewhere) is related to the switch towards the use of cars.

**Table 1 Non-Work Activities (Total)**

ACTIVITY	BEFORE(%)	AFTER(%)
Took Adults	4.3	7.7
Took Children	5.3	7.3
Shopping	23.8	15.2
Food & Eating	15.0	15.4
Personal Business	14.1	15.1
Health	1.3	2.2
Recreation & Sport	7.5	10.1
Employer Business	6.9	6.4
Leisure & Social	17.3	13.2
Other	4.5	7.4

#### Differences in the Timing of Activities

Perhaps the simplest change that could occur to a person's activity pattern, when confronted with a change such as the relocation of his/her workplace is the rescheduling of activities throughout the day. There are two indicators of activity levels which can be applied to each time slot. The first is the number of people

involved in those activities (table 2) and the second is the total number of activities (table 3).

These two tables shows that there has been considerable change in the timing of non work activities, both in terms of the number of participants and the number of activities.

**Table 2 Percent of People Involved in Activities**

TIME PERIOD	BEFORE(%)	AFTER(%)
before work	5.9	7.6
en route to work	19.1	16.0
during the day	51.3	38.1
en route from work	30.1	37.5
in the evening	43.0	42.2

**Table 3 Average Activities per 100 Employees**

TIME PERIOD	BEFORE	AFTER
before work	7.2	8.3
en route to work	23.5	18.7
during the day	99.4	53.1
en route from work	43.4	53.2
in the evening	50.1	61.9

The major change was the reduction in the number of people undertaking activities during the day (presumably at lunch time). On the other hand, more people undertook activities en route home from work. This probably reflects the relative isolation experienced at Toorong, from shops and a whole range of activities generally associated with the central area.

The changes in behaviour with respect to the timing of activities conforms fairly well with prior expectations. A number of key results related to the move are :

- \* The total number of non work activities performed by workers was about 10% less.
- \* There is a slight increase in the level of activity which takes place before setting off for work. This is principally related to 'taking adults somewhere' which may reflect the different arrangements required as a result of the decision to drive 'the car' to Toorong.
- \* There are less activities en route to work. Shopping for food and doing personal business are activities which are significantly reduced during this time.

- \* The major change in the timing of activities occurs during the day, when significantly fewer activities occur. The percent undertaking activities in this period was reduced from 51% to 38%.
- \* Some of the activities foregone during the day are picked up en route home from work. There are 7.4% more employees who undertake activities in this period especially for reasons of personal business, recreation and sport
- \* The surveys show that similar numbers undertake activities in the evening. They also show there is not a major change in the type of activities undertaken.

#### Differences in the Choice of Mode

The impact that workplace location has on the choice of modes is a major finding of the study. A summary of all modes used for all trips is given in Table 4. Overall the use of the car (both company car and private car) increased significantly from 34% in the 'before' case to 76% in the 'after' case. The use of public transport dropped from 30% to 10%. The number of times that walking was used decreased from 36% to 13%. Note the differences are even greater, when consideration is given to the priority mode, compared to the case when each mode used is counted equally, as in the results quoted above. Analysis of priority mode is made in Table 6.

**Table 4 Modes Used (Total)**

MODE	BEFORE(%)	AFTER(%)
Train	16.6	5.7
Bus	3.3	1.9
Tram	9.7	2.4
Company car	10.1	18.4
Private car	23.8	57.2
Walk	35.5	12.7
Other	0.8	1.6
Total	100.0	100.0

As previously discussed, three different trip types can be identified: home based, work based and trips to and from work. These provide a useful basis for the analysis of the choice of mode. Table 5 presents the division between private car transport and public transport for the various trip types.

*Work based* trips are normally undertaken at lunch time. In the city, employees are able to walk to many destinations. This explains why walking represents 72% of the modes used by employees working in the city compared to 41% at Toorong. Some use is made of public transport in the city (especially trams 9%), however

public transport is not at all relevant at Toorong. Car journeys contribute 13% of trips in the city, compared to 54% at Toorong.

Changes in *home based* trips are relatively minor, although the small change appears to be in the direction of greater use of car at the expense of both public transport and other modes. This is consistent with the trend to increased use of car as demonstrated throughout the study.

**Table 5 Changes in Private and Public Transport**

TRIP TYPE	BEFORE(%)	AFTER(%)
<b>CAR TRANSPORT</b>		
Work based	13.0	54.0
Home based	80.0	88.0
To work *	32.0	76.0
From work	32.0	72.0
Total	34.0	76.0
<b>PUBLIC TRANSPORT</b>		
Work based	12.0	2.0
Home based	6.0	2.0
To work	34.0	12.0
From work	35.0	12.0
Total	30.0	10.0
<b>OTHER TRANSPORT</b>		
Work based	75.0	48.0
Home based	14.0	10.0
To work	34.0	12.0
From work	33.0	16.0
Total	36.0	14.0

The use of modes for trips *to work* show only a slight difference from trips from work. The surveys show that relocation to Toorong results in a major impact on the use of modes. The percentage of trips to work by car increased from 32% to 76% at the expense of public transport modes, which decreased its mode share from 34% to 12%. Walking as a mode decreased from 33% to 10%. The need to undertake activities en route to or from work can directly influence the mode(s) used. It would be expected that a car provides considerably more flexibility to undertake a wider range of activities than if public transport was chosen. To measure this impact, analysis was undertaken to assess the influence of the need to undertake activities en route to work. It was concluded that work trips which involve other activities are more likely to favour use of car.

The impacts of the changes in the preceding analysis can be partly obscured by counting each mode equally. Hence in transport planning terminology, a priority (or major) mode is often identified and used in analysis. The priority mode is determined

by a hierarchy of modes based upon the assessment as to which is the most important mode.

The hierarchy used in this study is:

\*\*\* TRAIN - TRAM - BUS - CAR - WALK \*\*\*

such that if train and car are both chosen for one trip then its priority mode is train (or the first mode from the above list). Similarly if car and walk are both used, the priority mode is car

Table 6 reports the priority modes used in the journey to work. Using this method of analysis, public transport is reduced from 63.0% in the 'before' case to 10.6% in the 'after' case. The increase in car trips (company and private) is from 36.0% to 86.5%, although the majority of this increase arises from use of private cars.

It is concluded that public transport is not considered a viable (or at least attractive) alternative for most employees working at Toorong.

**Table 6 Priority Mode to Work**

PRIORITY MODE	BEFORE(%)	AFTER(%)
Train	47.3	9.0
Tram	13.0	0.7
Bus	2.7	0.9
Comp Car - drive	19.3	22.9
Private Car - drive	10.4	55.1
Car - Passenger	6.3	8.4
Other	0.1	3.0
TOTAL:	100.0	100.0

### Changes in Travel Time

Two parameters of travel time are of importance and interest for journeys to and from work, namely (i) the time of day and (ii) the elapsed time.

A significant proportion of employees were observed to change their time of travel to work as a result of the shift to Toorong. A half hour shift in departure time from home is observed mainly from the 7.30-7.59 am time slot to 7.00-7.29 am. Arrival times at Toorong are now mostly concentrated between 7.30 and 8.30 am. The percentage in each category is shown in Table 7

This result corresponds with the revisions to starting times introduced by the Coles Myer management. Starting time at work in the city was 8.45 am, however to ease the traffic situation, employees at Toorong, employees are allowed to commence work at 8.00am or 8.30am.

Table 7 Departure Times to Work and Arrival Times at Work

TIME PERIOD	BEFORE(%)	AFTER(%)
<b>DEPARTURE TIME</b>		
< 7.00 a.m	18.7	20.4
7.00 - 7.29	33.1	40.7
7.30 - 7.59	35.0	26.0
8.00 - 8.29	9.5	8.7
> 8.30 a.m	3.7	4.2
<b>ARRIVAL TIME</b>		
< 7.00 a.m	2.8	5.0
7.00 - 7.29	4.4	9.9
7.30 - 7.59	14.9	36.1
8.00 - 8.29	32.7	33.3
> 8.30 a.m.	45.2	15.7

The travel times for journeys to and from work are summarised in Table 8. The evidence from the two surveys shows a decrease in travel time of around 10 minutes (or 15%) from 66 to 56 minutes for journey to work and 9 minutes (or 11%) in the journey from work.

Table 8 Average Travel Times to/from Work (mins)

TRIP TYPE	BEFORE	AFTER
<b>TRIPS TO WORK</b>		
All Journeys	66	56
Journeys (no activities)	65	55
Journeys (with activ.)	69	64
<b>TRIPS FROM WORK</b>		
All Journeys	79	70
Journeys (no activities)	58	43
Journeys (with activ.)	120	113

The elapsed time for journeys depends on whether other activities are performed en route. Journeys which include an activity take a longer time, especially for trips after work. Even so the elapsed time for comparable trips with activities was reduced by (9%) for journeys to work and 6% for journeys from work.

Trips without activities are a better indicator of the minimum travel time required. Decreases of 15% in the morning and 26% in the afternoon were observed between the two surveys

## Conclusions

The decentralisation of employment to suburban locations is a phenomenon which is already well advanced in other countries particularly the USA. There is substantial evidence that suburban offices are a growing proportion of total metropolitan office stock in Melbourne.

The move by Coles Myer Ltd to relocate around 1,700 employees to a suburban location, 8.5 km from the city is an example of a relocation away from the Central City to the suburbs. The opportunity to study the travel related impacts was identified and with the assistance of Coles Myer Ltd and their employees, the Ministry of Transport (Victoria) conducted a survey five months before the move and another survey ten months after the move.

The paper has explored the changes in a variety of travel related parameters. Changes have been noted in the socio-demographic mix of employees, the range of non work activities performed by employees throughout the day, the time of travel and the modes used in travelling between home, work and other destinations.

As a result of the move from the city to Tooronga, the major change from a transport perspective is the shift in modes from public transport to car based travel. Based on the 'priority' mode, the relocation resulted in a decrease in the number of public transport journeys from 63.0% to 10.6%. On a positive note, the travel time for employees decreased on average by about 10 minutes each way. The shorter journey times result from the fact that Tooronga is more central to a majority of employees and the faster travel time afforded by car, in an environment where congestion is not a serious problem and car parking is readily and freely provided by the employer.

Overall there was a 10% reduction in the number of non work activities throughout the day. Some rearrangement of activities occurred both in the timing and range of activities undertaken by Coles Myer employees. Such changes are sufficiently large that they could result in major changes to travel patterns and traffic flows if the trends towards continued suburban offices continue. The proportion of activities undertaken during the day was substantially reduced. Many more chose to perform non work activities en route home from work, presumably facilitated by the convenience and flexibility of using their own car.

The surveys provided a detailed examination of factors pertaining to the choice of mode. The surveys reported a multiple of reasons why each person chose a car in preference to public transport. The results reveal a lot about the relative attractiveness of public transport to a city location compared to Tooronga. Some reported that they needed a car at Tooronga either to give people a lift or to go places after work. A much greater number found driving to be faster, more reliable, less expensive, more comfortable, cleaner and more convenient.

An important feature related to the decision to drive is the availability of free car parking. The percentage with free car parking close to the office in the city was 38% compared to almost 100% at Tooronga.

The general conclusion is that public transport is the preferred choice for a majority of work trips to the CAD, with 63% of the journeys comprising a public transport component. The comparable figure for trips to Tooronga is 11%. In essence, public transport is no longer preferred choice for many but the last resort for a few.

The Coles Myer relocation represented an unique opportunity to study the impacts of office relocation. Data from the two surveys have been consolidated such that it now constitutes an extremely valuable data base with detailed survey information from almost 2,000 responses. The Coles Myer databases provide an opportunity to further examine the complex decision process related to office relocation. The quality and coverage of the survey suggest a variety of alternative approaches to examining a range of important issues that affect not just the travel related issues but also questions relating to the location of activities and the nature of the interaction between landuse and transport.

The study was successful in identifying and quantifying the travel related impacts resulting from the relocation of a major CAD employer, which are both positive and negative depending on one's perspective. It is the responsibility of planners to balance these impacts when addressing similar problems in the future.

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